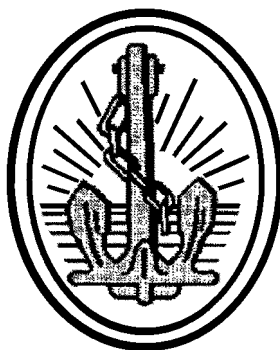


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Godina LXIV



NAUTIČKI GODIŠNJAK

— ZA —
2007
— GODINU —

UPRAVA ZA POMORSKU SIGURNOST CRNE GORE
BAR – CRNA GORA

UKUPNA POPRAVKA VISINE

PRVA POPRAVKA VISINE ZA SUNCE, ZVEZDE I PLANETE		
Opažena visina	☉	★ i planeta
	refrakcija paralaksa radijus = 16'	refrakcija
6 30	+ 8.2	- 7.9
6 40	8.4	7.7
6 50	8.6	7.6
7 00	8.7	7.4
7 10	8.9	7.2
7 20	+ 9.0	- 7.1
7 30	9.2	7.0
7 40	9.3	6.8
7 50	9.5	6.7
8 00	9.6	6.6
8 10	+ 9.7	- 6.4
8 20	9.8	6.3
8 30	10.0	6.2
8 40	10.1	6.1
8 50	10.2	6.0
9 00	+ 10.3	- 5.9
9 20	10.5	5.7
9 40	10.6	5.5
10 00	10.8	5.3
10 20	11.0	5.2
10 40	+ 11.2	- 5.0
11 00	11.3	4.9
11 30	11.5	4.7
12 00	11.7	4.5
12 30	11.9	4.3
13 00	+ 12.0	- 4.1
13 30	12.2	4.0
14 00	12.3	3.8
15 00	12.6	3.6
16 00	12.8	3.4
17 00	+ 13.0	- 3.2
18 00	13.2	3.0
19 00	13.3	2.8
20 00	13.5	2.6
22 00	13.7	2.4
24 00	+ 14.0	- 2.2
26 00	14.1	2.0
28 00	14.3	1.8
30 00	14.4	1.7
32 00	14.6	1.6
34 00	+ 14.7	- 1.4
36 00	14.8	1.3
38 00	14.9	1.3
40 00	15.0	1.2
50 00	15.3	0.8
60 00	+ 15.5	- 0.6
70 00	15.7	0.4
80 00	15.8	0.2
90 00	16.0	0.0

DRUGA POPRAVKA VISINE ZA VISINU OKA			
Visina oka	depresija	Visina oka	depresija
metara	/	metara	/
0.5	- 1.3	18	- 7.5
1.0	1.8	19	7.7
1.5	2.2	20	7.9
2.0	2.5	21	8.1
8.5	2.8	22	8.3
3.0	- 3.1	23	- 8.5
3.5	3.3	24	8.7
4.0	3.5	25	8.9
4.5	3.8	26	9.0
5.0	3.9	27	9.2
5.5	- 4.1	28	- 9.4
6.0	4.3	29	9.6
6.5	4.5	30	9.7
7.0	4.7	50	12.6
7.5	4.9	75	15.4
8.0	- 5.0	100	- 17.7
8.5	5.2	125	19.9
9.0	5.3	150	21.8
9.5	5.4	175	23.5
10.0	5.6	200	25.1
11.0	- 5.9	250	- 28.1
12.0	6.1	300	30.8
13.0	6.4	350	33.2
14.0	6.5	400	35.5
15.0	6.9	450	37.7
16.0	- 7.1	500	- 39.7
17.0	7.3	600	43.5

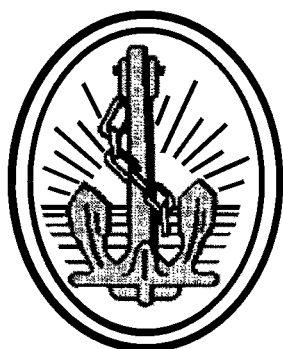
TREĆA POPRAVKA VISINE ZA VISINU PLANETE S OBZIROM NA PARALAKSU						
Opažena visina planete	Horizontska paralaksa					
	/	/	/	/	/	/
0	/	/	/	/	/	/
10	0.1	0.2	0.3	0.4	0.5	0.6
30	0.1	0.2	0.3	0.3	0.4	0.5
50	0.1	0.1	0.2	0.3	0.3	0.4
70	0.0	0.1	0.1	0.2	0.2	0.2

TREĆA POPRAVKA VISINE ZBOG PARALAKSE I PROMENE RADIJUSA SUNCA												
	Jan.	Feb.	Mart	Apr.	Maj	Jun	Jul	Avg.	Sep.	Okt.	Nov.	Dec.
od 1. do 15.	/	/	/	/	/	/	/	/	/	/	/	/
od 16. do kraja	+0.3	+0.2	+0.1	0.0	-0.1	-0.2	-0.2	-0.2	-0.1	+0.1	+0.2	+0.3
	+0.3	+0.2	+0.1	-0.1	-0.2	-0.2	-0.2	-0.2	0.0	+0.1	+0.2	+0.3

☉ Za gornji rub Sunca korekcija = tablična vrednost manje dvostruki radijus (2r)

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PRVO IZDANJE

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IZDAVAČ:

**UPRAVA ZA POMORSKU SIGURNOST BAR
MATEMATIČKI FAKULTET BEOGRAD**

GLAVNI I ODGOVORNI UREDNIK:

Prof. Dr **STEVO ŠEGAN**

RECENZENT:

Kap.d.plov. **KRSTO RAKOČEVIĆ**

LEKTURA I KOREKTURA:

PROF. DR **STEVO ŠEGAN**

UREĐIVAČKI ODBOR:

Kap.d.plov. **KRSTO RAKOČEVIĆ**

PROF. DR **STEVO ŠEGAN**

SLOG:

PROF. DR **STEVO ŠEGAN**

ŠTAMPA: STUDIO PLUS, Beograd

POVEZ: STUDIO PLUS, Beograd

TIRAŽ:

150 PRIMERAKA

ADRESA IZDAVAČA:

**UPRAVA ZA POMORSKU SIGURNOST CRNE GORE
MARŠALA TITA 7, 85000 BAR**



PRVO IZDANJE

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var = promenljivi deo Nautičkog godišnjaka
const = stalni deo Nautičkog godišnjaka

PREDGOVOR

Uprava za pomorsku sigurnost Crne Gore iz Bara prvi put ove godine izdaje svoj prvi broj NAUTIČKOG GODIŠNJAKA, koji je četrnaesti u jednom drugom nizu i šezdesetičetvrti u ukupnom nizu izdanja ove publikacije na našim prostorima.

Za šezdesetičetiri broja Nautičkog godišnjaka, do sada, možemo zahvaliti jednoj maloj armiji ljudi, entuzijasta i naučnika, koji su dali svoj nesebični doprinos da ova publikacija bude prisutna među pomorcima Kraljevine Jugoslavije, Socijalističke Jugoslavije, Saveza Republika Srbije i Crne Gore, a sada i samo Crne Gore.

Put je išao preko preuzimanja ruskih Nautičkih godišnjaka, koji su prevedeni na naš jezik i kada su ručno ukucavane brojevnosti efemerida, tablica popravki i svih ostalih delova Godišnjaka, do današnje računarske obrade podataka.

Od 1983. godine, zahvaljujući prof. dr Stevi Šeganu, počelo se sa računarskom obradom Nautičkog godišnjaka.

Algoritme i softver za potrebna izračunavanja, kao i računarsku pripremu za štampu i za ovaj broj, kao i za prethodnih dvadeset, izvršio je prof. dr Stevo Šegan, profesor na Katedri za astronomiju Matematičkog fakulteta u Beogradu.

Svi podaci potrebni za navigaciju izračunati su polazeći od heliocentričnih pravougljih koordinata nebeskih tela za standardnu epohu J2000.0, a izračunavanja su usklađena sa preporukama i rešenjima Međunarodne astronomske unije (IAU 1976–1983 i XXIV GA 2000). Takvim postupkom osigurana je maksimalna tačnost u današnje vreme.

Podaci u Nautičkom godišnjaku izračunati su i prerađeni isključivo za potrebe astronomske navigacije.

Godišnjak se sastoji iz dva dela—*efemeridskog* (var) i *stalnog* (const). Efemeridski deo sadrži efemeride Sunca, Meseca, četiri velike planete (Venere, Marsa, Jupitera i Saturna) i pedeset četiri najsajjnije (nautičke) zvezde za celu godinu i tablice za određivanje geografske širine pomoću visine i azimuta Severnjače. Stalni deo Godišnjaka sadrži interpolacione i pomoćne tablice.

Svi vremenski podaci u Nautičkom godišnjaku odnose se na Grinički meridijan. Prema tome, argument u svim efemeridama je univerzalno vreme, koje se računa od ponoći (00^h.00).

Tačnost astronomskih podataka data je u ugaonoj meri od jedne desetine minuta, u vremenskoj skali od jedne sekunde, odnosno, gde je to bilo potrebno, do jedne desetine sekunde. Podaci izračunati u interpolacionim tablicama imaju približno istu tačnost.

Izbor i sastav efemerida ostao je neizmenjen i u ovom izdanju. Raspored efemerida je, kao i ranije, po datumima, po dva na svakoj stranici. Efemeride zvezda i tablice za izračunavanje geografske širine pomoću visine i azimuta Severnjače izdvojene su posebno. Interpolacione tablice, zajedničke za ispravke časovnog ugla i deklinacije, takođe su date posebno.

Sve primedbe, koje smo dobili nakon izlaženja prethodnih brojeva, ukoliko se pokazalo da su tačne, uvažili smo.

Molimo da nam i u buduće dostavite, eventualne i opravdane primedbe i ispravke, koje ćemo, sa punim uvažavanjem, razmotriti.

KATEDRA ZA ASTRONOMIJU
UNIVERZITETA U BEOGRADU

PROF. DR STEVO ŠEGAN

DIREKTOR
UPRAVE ZA POMORSKU SIGURNOST CRNE GORE

KAPETAN DUKE PLOVIDBE
KRSTO RAKOČEVIĆ

ASTRONOMSKI ZNACI, SKRAĆENICE I KONSTANTE

NAŠI I ENGLJSKI NAZIVI ZA ZNAKOVE Domestic and English Names for Symbols

☉ ... Sunce	The Sun
☾ ... Mesec	The Moon
★ ... Zvezda	A Star
♀ ... Venera	Venus
♂ ... Mars	Mars
♃ ... Jupiter	Jupiter
♄ ... Saturn	Saturn
♈ ... Prolećna tačka	First Point of Aries
● ... Mlad Mesec	New Moon
◐ ... Prva četvrt	First Quarter
◑ ... Pun Mesec	Full Moon
◓ ... Poslednja četvrt	Last Quarter
° ... Stepen	Degree
' ... Minut (luka)	Minute of Arc
" ... Sekunda (luka)	Second of Arc

ZODIJAČKI ZNACI I SAZVEŽĐA

♈ ... Ovan	Aries
♉ ... Bik	Taurus
♊ ... Blizanci	Gemini
♋ ... Rak	Cancer
♌ ... Lav	Leo
♍ ... Devojka	Virgo
♎ ... Vaga	Libra
♏ ... Škorpija	Scorpius
♐ ... Strelac	Sagittarius
♑ ... Jarac	Capricornus
♒ ... Vodolija	Aquarius
♓ ... Ribe	Pisces
♈ ... Prolećna tačka	
♏ ... Jesenja tačka	

OPŠTI ASTRONOMSKI ZNACI

☉ ... Sunce	♅ ... Uran
☾ ... Mesec	♆ ... Neptun
☿ ... Merkur	♇ ... Pluton
♀ ... Venera	☄ ... Kometa
♁ ... Zemlja	● ... Mlad Mesec
♂ ... Mars	◐ ... Prva četvrt
♃ ... Jupiter	◑ ... Pun Mesec
♄ ... Saturn	◓ ... Poslednja četvrt

SKRAĆENICE

d ... dan	} vremena
h ... čas	
min ... minut	
s ... sekunda	
° ... stepen	} ugla
' ... minut	
" ... sekunda	
+	{ severne geografske širine i deklinacije; istočne geografske dužine
-	{ južne geografske širine i deklinacije; zapadne geografske dužine

OSNOVNE ASTRONOMSKE KONSTANTE IAU(1976) XXIV(2000)

DEFINICIONE KONSTANTE

Gausova gravitaciona konstanta $k = 0.017\ 202\ 098\ 95$
Brzina svetlosti $c = 299\ 792\ 458\ m/s$

OSNOVNE KONSTANTE

Svetlosno vreme $\tau_A = 499.004\ 786\ s$
Ekvatorski poluprečnik Zemlje $a_e = 6\ 378\ 137\ m$
Dinamički faktor oblika Zemlje $J_2 = 0.001\ 082\ 64$
Geocentrična gravitaciona konstanta $GE = 3.986\ 004 \times 10^{14}\ m^3/s^2$
Konstanta gravitacije $G = 6.673 \times 10^{-11}\ m^3/kg\ s^2$
Masa Meseca u jedinicama mase Zemlje $\mu = 0.012\ 300\ 04$
Opšta precesija u longitudi,
za Julijansko stoleće $\rho = 5029''.7970$
Nagib ekliptike $\epsilon = 23^\circ 26' 21''.448$

IZVEDENE KONSTANTE

Konstanta nutacije $N = 9''.2052$
Jedinica rastojanja (astronomska jed.) $c\tau_A = A = 1.495\ 978\ 71 \times 10^{11}\ m$
Paralaksa Sunca $\arcsin(a_e/A) = \pi_\odot = 8''.794\ 143$
Konstanta aberacije $\alpha = 20''.495\ 51$
Faktor Zemljine spljoštenosti $f = 0.003\ 352\ 82 = 1/298.256$
Heliocentrična gravitaciona konstanta $GS = 1.327\ 124\ 42 \times 10^{20}\ m^3/s^2$
Masa Sunca u jedinicama mase Zemlje $GS/GE = S/E = 332\ 946.0$
Masa Sunca $GS/G = S = 1.9884 \times 10^{30}\ kg$
Relativne mase planeta:
Merkur 6023 600
Venera 408 523.7
Zemlja + Mesec 328 900.6
Mars 3098 708
Jupiter 1 047.349
Saturn 3 497.9
Uran 22 903
Neptun 19 412
Pluton 135 200 000

NAŠE I ENGLLESKE SKRAĆENICE I KLJUČNE REČI

Domestic and English Abbreviations and Key Words

<p>UT Univerzalno (svetsko) vreme</p> <p>T_p Griničko pravo vreme</p> <p>T_z Griničko zvezdano vreme</p> <p>T_m Srednje vreme gornjeg prolaza kroz meridijan u Griniču</p> <p>T_m Srednje vreme donjeg prolaza kroz meridijan u Griniču</p> <p>t_s Mesno srednje vreme</p> <p>t_p Mesno pravo vreme</p> <p>t_z Mesno zvezdano vreme</p> <p>t_x Zonsko vreme</p> <p>t_{zv} Zvanično vreme</p> <p>e Jednačina vremena</p> <p>S Grinički časovni ugao</p> <p>s Mesni časovni ugao</p> <p>δ Deklinacija</p> <p>α Rektascenzija</p> <p>(360° – α) Surektascenzija</p> <p>γ Prolećna tačka</p> <p>π Horizontska paralaksa</p> <p>φ Geografska širina</p> <p>λ Geografska dužina</p> <p>r Poluprečnik</p> <p>Pl. Planete</p> <p>Br. Broj</p> <p>Vel. Veličina</p> <p>d Dan</p> <p>h Čas</p> <p>min Minut</p> <p>s Sekunda</p>	<p>UT Universal Time</p> <p>GAT Greenwich Apparent Time</p> <p>GST Greenwich Sidereal Time</p> <p>T_U Greenwich Mean Time of the Upper Transit on the Meridian of Greenwich</p> <p>T_L Greenwich Mean Time of the Lower Transit on the Meridian of Greenwich</p> <p>LMT Local Mean Time</p> <p>LAT Local Apparent Time</p> <p>LST Local Sidereal Time</p> <p>ZT Zone Time</p> <p>LCT Local Civil Time</p> <p>Eq.T. Equation of Time (App.-Mean)</p> <p>GHA Greenwich Hour Angle</p> <p>LHA Local Hour Angle, Meridian Angle</p> <p>Dec. Declination</p> <p>RA Right Ascension</p> <p>SHA Sidereal Hour Angle</p> <p>γ First Point of Aries</p> <p>H.P. Horizontal Parallax</p> <p>Lat. Latitude</p> <p>Long. Longitude</p> <p>SD Semidiameter</p> <p>Pl. Planets</p> <p>No. Number</p> <p>Mag. Magnitude</p> <p>d Day</p> <p>h Hour</p> <p>min Minute of Time</p> <p>s Second of Time</p>
---	--

Pregled zvezda	Review of Selected Stars
Prividni položaji zvezda	Apparent Places of Selected Stars
Popravka časovnog ugla	Increment to GHA
Druga popravka za časovni ugao i deklinaciju	Correction to GHA and Declination
Vreme prolaza zvezda	Upper Transit of Stars at Greenwich
Popravka	Correction
Tablice za određivanje geografske širine i azimuta pomoću Severnjače	Latitude and Azimuth by Polaris
Interpolacione tablice	Interpolation Tables
Izlaz, zalaz	Rise, Set
Trajanje sumraka	Twilight Duration
Građanski	Civil
Astronomski	Astronomic
Mesečeve mene	Moon Phases
Starost Meseca	Moon Age
Perigej	Perigee
Apogej	Apogee

PODACI O MESECU I POČETKU GODIŠNJIH DOBA

MESEČEVE MENE																
mesec	MLAD MESEC			PRVA ČETVRT			PUN MESEC			POSLEDNJA ČETVRT			mesec			
	●		●	●		●	○		○	●		●				
	dan	h	min	dan	h	min	dan	h	min	dan	h	min		dan	h	min
Januar				19	4	1										Januar
Februar				17	16	14										Februar
Mart				19	2	43										Mart
April				17	11	36										April
Maj				16	19	27										Maj
Jun				15	3	13										Jun
Jul				14	12	4										Jul
Avgust				12	23	2										Avgust
Septembar				11	12	44										Septembar
Oktobar				11	5	1										Oktobar
Novembar				9	23	3										Novembar
Decembar				9	17	40										Decembar

PERIGEJ I APOGEJ MESECA										
mesec	PERIGEJ				APOGEJ					
	dan	h	min		dan	h	min	mesec		
Januar	22	12	25.0				10	16	27.0	Januar
Februar	19	9	35.0				7	12	40.0	Februar
Mart	19	18	40.0				7	3	38.0	Mart
April	17	5	56.0				3	8	39.0	April
Maj	15	15	11.0							Maj
Jun	12	17	8.0							Jun
Jul	9	21	39.0							Jul
Avgust	3	23	53.0	31	0	14.0				Avgust
Septembar				28	1	54.0				Septembar
Oktobar				26	11	52.0				Oktobar
Novembar				24	0	13.0				Novembar
Decembar				22	10	12.0				Decembar

VIDLJIVOST PLANETA												
Osenčeni deo dijagrama pokazuje kada je planeta nevidljiva												
Planeta	Jan.	Feb.	Mart	Apr.	Maj	Jun	Jul	Avg.	Sep.	Okt.	Nov.	Dec.
♀ Venera								13. VIII	22. VIII			
♂ Mars												
♃ Jupiter											10. XII	
♄ Saturn							6. VIII		10. IX			

POČECI GODIŠNJIH DOBA			
PROLEĆE	LETO	JESEN	ZIMA
21. mart u 0 ^h 7 ^m 0	21. jun u 18 ^h 6 ^m 0	23. septembar u 9 ^h 51 ^m 0	22. decembar u 6 ^h 8 ^m 0

POMRAČENJA SUNCA I MESECA u 2007. godini

DEŠIĆE SE UKUPNO ČETRI POMRAČENJA:
DVA DELIMIČNA POMRAČENJA SUNCA
DVA POTPUNA POMRAČENJA MESECA

1.	3./ 4. MART	POTPUNO POMRAČENJE MESECA	univerzalno (svetsko) vreme dan h min
•	→	ULAZAK MESECA U POLUSENKU	3 20 18.2
•••	←	PRVI KONTAKT SA SENKOM	3 21 30.4
••••	↔	SREDINA POMRAČENJA	3 23 20.9
•••	←	POSLEDNJI KONTAKT SA SENKOM	4 1 11.5
•	←	IZLAZAK MESECA IZ POLUSENKE	4 2 23.7
2.	19. MART	DELIMIČNO POMRAČENJE SUNCA	univerzalno (svetsko) vreme dan h min
•	→	POČETAK POMRAČENJA	19 0 38.4
••••	↔	MAKSIMUM POMRAČENJA	19 2 31.9
•	←	KRAJ POMRAČENJA	19 4 25.0
		VIDLJIVOST: SEVEROISTOČNA AFRIKA, BLISKI ISTOK, AZIJA, ARKTIK, ALJASKA	
3.	28. AVGUST	POTPUNO POMRAČENJE MESECA	univerzalno (svetsko) vreme dan h min
•	→	ULAZAK MESECA U POLUSENKU	28 7 53.6
•••	←	PRVI KONTAKT SA SENKOM	28 8 51.3
••••	↔	SREDINA POMRAČENJA	28 10 37.4
•••	←	POSLEDNJI KONTAKT SA SENKOM	28 12 23.5
•	←	IZLAZAK MESECA IZ POLUSENKE	28 13 21.0
4.	11. SEPTEMBAR	DELIMIČNO POMRAČENJE SUNCA	univerzalno (svetsko) vreme dan h min
•	→	POČETAK POMRAČENJA	11 10 25.8
••••	↔	SREDINA POMRAČENJA	11 12 31.3
•	←	KRAJ POMRAČENJA	11 14 36.6
		VIDLJIVOST: JUŽNA AMERIKA, JUGOZAPADNI ATLANTIK, ANTARKTIK	

KALENDAR

za prostu 2007. godinu

JANUAR				FEBRUAR				MART				APRIL				MAJ				JUN			
Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum
			245				245				245				245				245				245
PO	1	1	4101.5	ČE	1	32	4132.5	ČE	1	60	4160.5	NE ¹³	1	91	4191.5	UT	1	121	4221.5	PE	1	152	4252.5
UT	2	2	4102.5	PE	2	33	4133.5	PE	2	61	4161.5	PO	2	92	4192.5	SR	2	122	4222.5	SU	2	153	4253.5
SR	3	3	4103.5	SU	3	34	4134.5	SU	3	62	4162.5	UT	3	93	4193.5	ČE	3	123	4223.5	NE ²³	3	154	4254.5
ČE	4	4	4104.5	NE ⁵	4	35	4135.5	NE ⁹	4	63	4163.5	SR	4	94	4194.5	PE	4	124	4224.5	PO	4	155	4255.5
PE	5	5	4105.5	PO	5	36	4136.5	PO	5	64	4164.5	ČE	5	95	4195.5	SU	5	125	4225.5	UT	5	156	4256.5
SU	6	6	4106.5	UT	6	37	4137.5	UT	6	65	4165.5	PE	6	96	4196.5	NE ¹⁸	6	126	4226.5	SR	6	157	4257.5
NE ¹	7	7	4107.5	SR	7	38	4138.5	SR	7	66	4166.5	SU	7	97	4197.5	PO	7	127	4227.5	ČE	7	158	4258.5
PO	8	8	4108.5	ČE	8	39	4139.5	ČE	8	67	4167.5	NE ¹⁴	8	98	4198.5	UT	8	128	4228.5	PE	8	159	4259.5
UT	9	9	4109.5	PE	9	40	4140.5	PE	9	68	4168.5	PO	9	99	4199.5	SR	9	129	4229.5	SU	9	160	4260.5
SR	10	10	4110.5	SU	10	41	4141.5	SU	10	69	4169.5	UT	10	100	4200.5	ČE	10	130	4230.5	NE ²³	10	161	4261.5
ČE	11	11	4111.5	NE ⁶	11	42	4142.5	NE ¹⁰	11	70	4170.5	SR	11	101	4201.5	PE	11	131	4231.5	PO	11	162	4262.5
PE	12	12	4112.5	PO	12	43	4143.5	PO	12	71	4171.5	ČE	12	102	4202.5	SU	12	132	4232.5	UT	12	163	4263.5
SU	13	13	4113.5	UT	13	44	4144.5	UT	13	72	4172.5	PE	13	103	4203.5	NE ¹⁹	13	133	4233.5	SR	13	164	4264.5
NE ²	14	14	4114.5	SR	14	45	4145.5	SR	14	73	4173.5	SU	14	104	4204.5	PO	14	134	4234.5	ČE	14	165	4265.5
PO	15	15	4115.5	ČE	15	46	4146.5	ČE	15	74	4174.5	NE ¹⁵	15	105	4205.5	UT	15	135	4235.5	PE	15	166	4266.5
UT	16	16	4116.5	PE	16	47	4147.5	PE	16	75	4175.5	PO	16	106	4206.5	SR	16	136	4236.5	SU	16	167	4267.5
SR	17	17	4117.5	SU	17	48	4148.5	SU	17	76	4176.5	UT	17	107	4207.5	ČE	17	137	4237.5	NE ²⁴	17	168	4268.5
ČE	18	18	4118.5	NE ⁷	18	49	4149.5	NE ¹¹	18	77	4177.5	SR	18	108	4208.5	PE	18	138	4238.5	PO	18	169	4269.5
PE	19	19	4119.5	PO	19	50	4150.5	PO	19	78	4178.5	ČE	19	109	4209.5	SU	19	139	4239.5	UT	19	170	4270.5
SU	20	20	4120.5	UT	20	51	4151.5	UT	20	79	4179.5	PE	20	110	4210.5	NE ²⁰	20	140	4240.5	SR	20	171	4271.5
NE ³	21	21	4121.5	SR	21	52	4152.5	SR	21	80	4180.5	SU	21	111	4211.5	PO	21	141	4241.5	ČE	21	172	4272.5
PO	22	22	4122.5	ČE	22	53	4153.5	ČE	22	81	4181.5	NE ¹⁶	22	112	4212.5	UT	22	142	4242.5	PE	22	173	4273.5
UT	23	23	4123.5	PE	23	54	4154.5	PE	23	82	4182.5	PO	23	113	4213.5	SR	23	143	4243.5	SU	23	174	4274.5
SR	24	24	4124.5	SU	24	55	4155.5	SU	24	83	4183.5	UT	24	114	4214.5	ČE	24	144	4244.5	NE ²⁵	24	175	4275.5
ČE	25	25	4125.5	NE ⁸	25	56	4156.5	NE ¹²	25	84	4184.5	SR	25	115	4215.5	PE	25	145	4245.5	PO	25	176	4276.5
PE	26	26	4126.5	PO	26	57	4157.5	PO	26	85	4185.5	ČE	26	116	4216.5	SU	26	146	4246.5	UT	26	177	4277.5
SU	27	27	4127.5	UT	27	58	4158.5	UT	27	86	4186.5	PE	27	117	4217.5	NE ²¹	27	147	4247.5	SR	27	178	4278.5
NE ⁴	28	28	4128.5	SR	28	59	4159.5	SR	28	87	4187.5	SU	28	118	4218.5	PO	28	148	4248.5	ČE	28	179	4279.5
PO	29	29	4129.5					ČE	29	88	4188.5	NE ¹⁷	29	119	4219.5	UT	29	149	4249.5	PE	29	180	4280.5
UT	30	30	4130.5					PE	30	89	4189.5	PO	30	120	4220.5	SR	30	150	4250.5	SU	30	181	4281.5
SR	31	31	4131.5					SU	31	90	4190.5					ČE	31	151	4251.5				

JUL				AVGUST				SEPTEMBAR				OKTOBAR				NOVEMBAR				DECEMBAR			
Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum
			245				245				245				245				245				245
NE ²⁶	1	182	4282.5	SR	1	213	4313.5	SU	1	244	4344.5	PO	1	274	4374.5	ČE	1	305	4405.5	SU	1	335	4435.5
PO	2	183	4283.5	ČE	2	214	4314.5	NE ³⁵	2	245	4345.5	UT	2	275	4375.5	PE	2	306	4406.5	PE	2	336	4436.5
UT	3	184	4284.5	PE	3	215	4315.5	PO	3	246	4346.5	SR	3	276	4376.5	SU	3	307	4407.5	PO	3	337	4437.5
SR	4	185	4285.5	SU	4	216	4316.5	UT	4	247	4347.5	ČE	4	277	4377.5	NE ⁴⁴	4	308	4408.5	UT	4	338	4438.5
ČE	5	186	4286.5	NE ³¹	5	217	4317.5	SR	5	248	4348.5	PE	5	278	4378.5	PO	5	309	4409.5	SR	5	339	4439.5
PE	6	187	4287.5	PO	6	218	4318.5	ČE	6	249	4349.5	SU	6	279	4379.5	UT	6	310	4410.5	ČE	6	340	4440.5
SU	7	188	4288.5	UT	7	219	4319.5	PE	7	250	4350.5	NE ⁴⁰	7	280	4380.5	SR	7	311	4411.5	PE	7	341	4441.5
NE ²⁷	8	189	4289.5	SR	8	220	4320.5	SU	8	251	4351.5	PO	8	281	4381.5	ČE	8	312	4412.5	SU	8	342	4442.5
PO	9	190	4290.5	ČE	9	221	4321.5	NE ³⁶	9	252	4352.5	UT	9	282	4382.5	PE	9	313	4413.5	PE	9	343	4443.5
UT	10	191	4291.5	PE	10	222	4322.5	PO	10	253	4353.5	SR	10	283	4383.5	SU	10	314	4414.5	PO	10	344	4444.5
SR	11	192	4292.5	SU	11	223	4323.5	UT	11	254	4354.5	ČE	11	284	4384.5	NE ⁴⁵	11	315	4415.5	UT	11	345	4445.5
ČE	12	193	4293.5	NE ³²	12	224	4324.5	SR	12	255	4355.5	PE	12	285	4385.5	PO	12	316	4416.5	SR	12	346	4446.5
PE	13	194	4294.5	PO	13	225	4325.5	ČE	13	256	4356.5	SU	13	286	4386.5	UT	13	317	4417.5	ČE	13	347	4447.5
SU	14	195	4295.5	UT	14	226	4326.5	PE	14	257	4357.5	NE ⁴¹	14	287	4387.5	SR	14	318	4418.5	PE	14	348	4448.5
NE ²⁸	15	196	4296.5	SR	15	227	4327.5	SU	15	258	4358.5	PO	15	288	4388.5	ČE	15	319	4419.5	SU	15	349	4449.5
PO	16	197	4297.5	ČE	16	228	4328.5	NE ³⁷	16	259	4359.5	UT	16	289	4389.5	PE	16	320	4420.5	NE ⁵⁰	16	350	4450.5
UT	17	198	4298.5	PE	17	229	4329.5	PO	17	260	4360.5	SR	17	290	4390.5	SU	17	321	4421.5	PO	17	351	4451.5
SR	18	199	4299.5	SU	18	230	4330.5	UT	18	261	4361.5	ČE	18	291	4391.5	NE ⁴⁶	18	322	4422.5	UT	18	352	4452.5
ČE	19	200	4300.5	NE ³³	19	231	4331.5	SR	19	262	4362.5	PE	19	292	4392.5	PO	19	323	4423.5	SR	19	353	4453.5
PE	20	201	4301.5	PO	20	232	4332.5	ČE	20	263	4363.5	SU	20	293	4393.5	UT	20	324	4424.5	ČE	20	354	4454.5
SU	21	202	4302.5	UT	21	233	4333.5	PE	21	264	4364.5	NE ⁴²	21	294	4394.5	SR	21	325	4425.5	PE	21	355	4455.5
NE ²⁹	22	203	4303.5	SR	22	234	4334.5	SU	22	265	4365.5	PO	22	295	4395.5	ČE	22	326	4426.5	SU	22	356	4456.5
PO	23	204	4304.5	ČE	23	235	4335.5	NE ³⁸	23	266	4366.5	UT	23	296	4396.5	PE	23	327	4427.5	NE ⁵¹	23	357	4457.5
UT	24	205	4305.5	PE	24	236	4336.5	PO	24	267	4367.5	SR	24</										



Efemeride

*SUNCA, MESECA, VENERE,
MARSA, JUPITERA I SATURNA*

1. JANUAR

2007.

PONEDELJAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	11.8	-23	3.0	100	15.8	161	56.6	-22	14.9	202	52.7	-23	14.3	
2	209	11.2	-23	2.6	130	20.8	191	54.9	-22	13.8	232	53.7	-23	14.6	
4	239	10.6	-23	2.2	160	25.7	221	53.2	-22	12.7	262	54.7	-23	15.0	
6	269	10.0	-23	1.8	190	30.6	251	51.4	-22	11.7	292	55.7	-23	15.4	
8	299	9.4	-23	1.4	220	35.5	281	49.7	-22	10.6	322	56.7	-23	15.7	
10	329	8.8	-23	1.0	250	40.5	311	48.0	-22	9.5	352	57.7	-23	16.1	
12	359	8.2	-23	.6	280	45.4	341	46.2	-22	8.4	22	58.7	-23	16.5	
14	29	7.7	-23	.2	310	50.3	11	44.5	-22	7.3	52	59.7	-23	16.8	
16	59	7.1	-22	59.8	340	55.3	41	42.8	-22	6.2	83	.7	-23	17.2	
18	89	6.5	-22	59.4	11	.2	71	41.0	-22	5.1	113	1.7	-23	17.5	
20	119	5.9	-22	59.0	41	5.1	101	39.3	-22	3.9	143	2.7	-23	17.9	
22	149	5.3	-22	58.6	71	10.0	131	37.6	-22	2.8	173	3.7	-23	18.2	
Δ		-3		2				-9		5			5		-2

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 2	15 5	0 57	2 44	11 52	1.7	8 6	3.6
55	8 25	15 42	0 45	2 17	12 58	2.1	7 1	3.1
50	7 59	16 8	0 38	1 59	13 37	2.3	6 22	3.0
45	7 38	16 29	0 34	1 46	14 6	2.3	5 53	2.9
40	7 22	16 45	0 30	1 37	14 29	2.4	5 31	2.8
35	7 8	16 59	0 28	1 30	14 48	2.4	5 13	2.8
30	6 56	17 11	0 26	1 25	15 4	2.4	4 57	2.7
20	6 35	17 32	0 24	1 18	15 32	2.5	4 30	2.6
10	6 17	17 50	0 23	1 15	15 55	2.5	4 7	2.6
0	5 60	18 7	0 22	1 15	16 18	2.5	3 46	2.5
10	5 42	18 24	0 23	1 17	16 40	2.5	3 25	2.5
20	5 24	18 43	0 24	1 24	17 4	2.6	3 2	2.4
30	5 2	19 5	0 27	1 36	17 32	2.6	2 36	2.3
35	4 49	19 17	0 30	1 46	17 48	2.6	2 20	2.2
40	4 35	19 32	0 33	2 2	18 8	2.6	2 2	2.2
45	4 17	19 50	0 37	2 30	18 31	2.6	1 41	2.1
50	3 55	20 12	0 44	:::	19 2	2.6	1 13	1.9
55	3 26	20 41	0 57	:::	19 45	2.7	0 36	1.7
60	2 42	21 24	1 36	:::	21 1	2.7	23 59	2.6
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	35	32.9	53	26	25.2	64	213	42.7	-20	59.2	313	5.7	14	30.3	
2	64	21.5	52	26	37.9	60	243	46.5	-20	59.4	343	10.8	14	30.4	
4	93	9.9	51	26	49.9	57	273	50.4	-20	59.5	13	16.0	14	30.4	
6	121	58.0	50	27	1.2	53	303	54.2	-20	59.7	43	21.1	14	30.5	
8	150	46.0	49	27	11.8	49	333	58.0	-20	59.9	73	26.3	14	30.6	
10	179	33.9	48	27	21.7	46	4	1.9	-21	.0	103	31.4	14	30.7	
12	208	21.6	48	27	30.8	42	34	5.7	-21	.2	133	36.6	14	30.8	
14	237	9.1	47	27	39.3	39	64	9.6	-21	.4	163	41.7	14	30.9	
16	265	56.6	47	27	47.0	35	94	13.4	-21	.5	193	46.9	14	31.0	
18	294	43.9	46	27	54.0	31	124	17.3	-21	.7	223	52.0	14	31.1	
20	323	31.2	46	28	.2	28	154	21.1	-21	.8	253	57.2	14	31.2	
22	352	18.5	46	28	5.7	24	184	25.0	-21	1.0	284	2.3	14	31.3	
Δ								19		-1			26		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 3 12.7	-1.2	16.3	T _m	22 32	2.5	58.6	16.0	
12	- 3 26.8	T _{m☉}	12 h 3.5 min	Starost	11.4 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 13	.1	62	-3.8	♄	9 44	.0	113	-1.6
♂	10 28	.1	103	1.5	♂	3 7	.0	213	.3

2. JANUAR

UTORAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	4.7	-22	58.1	101	15.0	161	35.9	-22	1.7	203	4.7	-23	18.6	
2	209	4.1	-22	57.7	131	19.9	191	34.2	-22	.6	233	5.8	-23	18.9	
4	239	3.5	-22	57.3	161	24.8	221	32.4	-21	59.4	263	6.8	-23	19.3	
6	269	3.0	-22	56.8	191	29.8	251	30.7	-21	58.3	293	7.8	-23	19.6	
8	299	2.4	-22	56.4	221	34.7	281	29.0	-21	57.1	323	8.8	-23	20.0	
10	329	1.8	-22	56.0	251	39.6	311	27.3	-21	56.0	353	9.8	-23	20.3	
12	359	1.2	-22	55.5	281	44.5	341	25.6	-21	54.8	23	10.8	-23	20.6	
14	29	.6	-22	55.1	311	49.5	11	23.9	-21	53.7	53	11.8	-23	21.0	
16	59	.0	-22	54.6	341	54.4	41	22.2	-21	52.5	83	12.8	-23	21.3	
18	88	59.5	-22	54.2	11	59.3	71	20.5	-21	51.4	113	13.8	-23	21.7	
20	118	58.9	-22	53.7	42	4.3	101	18.8	-21	50.2	143	14.7	-23	22.0	
22	148	58.3	-22	53.2	72	9.2	131	17.1	-21	49.0	173	15.7	-23	22.3	
Δ		-3		2				-9		6			5		-2

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 2	15 6	0 57	2 44	12 32	3.4	9 33	1.8
55	8 25	15 43	0 45	2 17	13 49	3.0	8 16	2.2
50	7 59	16 9	0 38	1 59	14 32	2.8	7 33	2.3
45	7 38	16 30	0 34	1 46	15 2	2.8	7 2	2.4
40	7 22	16 46	0 30	1 37	15 26	2.7	6 39	2.4
35	7 8	16 60	0 28	1 30	15 46	2.7	6 19	2.4
30	6 56	17 12	0 26	1 25	16 3	2.6	6 2	2.4
20	6 35	17 33	0 24	1 18	16 31	2.6	5 34	2.5
10	6 17	17 51	0 23	1 15	16 55	2.5	5 9	2.5
0	6 0	18 8	0 22	1 15	17 18	2.5	4 47	2.5
10	5 43	18 25	0 23	1 17	17 41	2.4	4 24	2.5
20	5 24	18 43	0 24	1 24	18 5	2.3	3 59	2.5
30	5 3	19 5	0 27	1 36	18 34	2.3	3 31	2.5
35	4 50	19 18	0 30	1 46	18 51	2.2	3 14	2.6
40	4 35	19 32	0 33	2 1	19 10	2.1	2 54	2.6
45	4 18	19 50	0 37	2 29	19 34	2.1	2 31	2.6
50	3 56	20 12	0 44	:::	20 5	1.9	1 60	2.6
55	3 27	20 40	0 56	:::	20 48	1.7	1 17	2.6
60	2 44	21 23	1 34	:::	22 6	1.0	...	.0
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	21	5.7	46	28	10.5	20	214	28.8	-21	1.2	314	7.5	14	31.4	
2	49	52.9	46	28	14.6	17	244	32.7	-21	1.3	344	12.6	14	31.5	
4	78	40.1	46	28	17.9	13	274	36.5	-21	1.5	14	17.8	14	31.6	
6	107	27.3	46	28	20.4	9	304	40.3	-21	1.7	44	23.0	14	31.7	
8	136	14.6	47	28	22.3	5	334	44.2	-21	1.8	74	28.1	14	31.8	
10	165	1.9	47	28	23.3	2	4	48.0	-21	2.0	104	33.3	14	31.9	
12	193	49.4	48	28	23.7	-2	34	51.9	-21	2.1	134	38.4	14	31.9	
14	222	36.9	48	28	23.3	-5	64	55.7	-21	2.3	164	43.6	14	32.0	
16	251	24.6	49	28	22.2	-9	94	59.6	-21	2.5	194	48.7	14	32.1	
18	280	12.4	50	28	20.4	-13	125	3.4	-21	2.6	224	53.9	14	32.2	
20	309	.4	51	28	17.8	-16	155	7.3	-21	2.8	254	59.1	14	32.3	
22	337	48.5	52	28	14.6	-20	185	11.1	-21	2.9	285	4.2	14	32.4	
Δ								19		-1			26		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	- 3 41.0	-1.2	16.3	T _m	23 32	2.5	58.

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 57.7	-22 52.8	102 14.1	161 15.4	-21 47.8	203 16.7	-23 22.6	
2	208 57.2	-22 52.3	132 19.0	191 13.7	-21 46.7	233 17.7	-23 23.0	
4	238 56.6	-22 51.8	162 24.0	221 12.0	-21 45.5	263 18.7	-23 23.3	
6	268 56.0	-22 51.4	192 28.9	251 10.3	-21 44.3	293 19.7	-23 23.6	
8	298 55.4	-22 50.9	222 33.8	281 8.6	-21 43.1	323 20.7	-23 24.0	
10	328 54.8	-22 50.4	252 38.8	311 6.9	-21 41.9	353 21.7	-23 24.3	
12	358 54.3	-22 49.9	282 43.7	341 5.2	-21 40.7	383 22.7	-23 24.6	
14	28 53.7	-22 49.4	312 48.6	11 3.6	-21 39.5	53 23.7	-23 24.9	
16	58 53.1	-22 49.0	342 53.5	41 1.9	-21 38.2	83 24.7	-23 25.2	
18	88 52.5	-22 48.5	12 58.5	71 .2	-21 37.0	113 25.7	-23 25.6	
20	118 52.0	-22 48.0	43 3.4	100 58.5	-21 35.8	143 26.7	-23 25.9	
22	148 51.4	-22 47.5	73 8.3	130 56.8	-21 34.6	173 27.7	-23 26.2	
Δ	-3	2		-8	6	5	-2	

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	6 36.9	53 28	10.6	-23	215 15.0	-21 3.1	315 9.4	14 32.5
2	35 25.5	54 28	5.9	-27	245 18.8	-21 3.3	345 14.5	14 32.6
4	64 14.3	55 28	.6	-30	275 22.7	-21 3.4	15 19.7	14 32.7
6	93 3.4	57 27	54.5	-34	305 26.6	-21 3.6	45 24.9	14 32.8
8	121 52.7	58 27	47.8	-37	335 30.4	-21 3.7	75 30.0	14 32.9
10	150 42.3	60 27	40.4	-40	5 34.3	-21 3.9	105 35.2	14 33.0
12	179 32.3	61 27	32.3	-44	35 38.1	-21 4.0	135 40.4	14 33.1
14	208 22.5	63 27	23.5	-47	65 42.0	-21 4.2	165 45.5	14 33.2
16	237 13.1	65 27	14.2	-50	95 45.8	-21 4.4	195 50.7	14 33.3
18	266 4.0	66 27	4.1	-53	125 49.7	-21 4.5	225 55.9	14 33.4
20	294 55.3	68 26	53.5	-56	155 53.5	-21 4.7	256 1.0	14 33.5
22	323 46.9	70 26	42.2	-59	185 57.4	-21 4.8	286 6.2	14 33.6
Δ					19	-1	26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 1	15 8	0 56	2 44	13 53	4.2	10 16	.6
55	8 24	15 45	0 45	2 16	15 0	3.5	9 8	1.4
50	7 58	16 11	0 38	1 59	15 40	3.2	8 28	1.6
45	7 38	16 31	0 34	1 46	16 9	3.0	7 59	1.8
40	7 22	16 47	0 30	1 37	16 31	2.9	7 36	1.9
35	7 8	17 1	0 28	1 30	16 50	2.8	7 17	2.0
30	6 56	17 13	0 26	1 25	17 5	2.7	7 0	2.1
20	6 36	17 33	0 24	1 18	17 32	2.5	6 33	2.2
10	6 18	17 51	0 23	1 15	17 55	2.4	6 9	2.3
0	6 1	18 8	0 22	1 15	18 17	2.3	5 47	2.4
10	5 44	18 25	0 23	1 17	18 38	2.2	5 24	2.5
20	5 25	18 44	0 24	1 23	19 1	2.1	5 0	2.6
30	5 4	19 5	0 27	1 36	19 28	1.9	4 32	2.7
35	4 51	19 18	0 29	1 46	19 44	1.8	4 15	2.7
40	4 36	19 32	0 33	2 1	20 2	1.7	3 56	2.8
45	4 19	19 50	0 37	2 29	20 24	1.6	3 32	2.9
50	3 57	20 11	0 44	:::	20 52	1.4	3 2	3.1
55	3 28	20 40	0 56	:::	21 29	1.0	2 19	3.3
60	2 46	21 22	1 33	:::	22 29	.3	1 1	4.1
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 4 8.9	-1.1	16.3	T _m	1.0	57.6	15.7		
12	- 4 22.7	T _{m☉}	12 h 4.4 min	Starost	13.4 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 16	.1	59	-3.8	♄	9 38	.0	113	-1.6
♂	10 27	.1	101	1.5	♅	2 59	.0	213	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 50.8	-22 47.0	103 13.3	160 55.2	-21 33.3	203 28.6	-23 26.5	
2	208 50.3	-22 46.5	133 18.2	190 53.5	-21 32.1	233 29.6	-23 26.8	
4	238 49.7	-22 46.0	163 23.1	220 51.8	-21 30.9	263 30.6	-23 27.1	
6	268 49.1	-22 45.4	193 28.0	250 50.2	-21 29.6	293 31.6	-23 27.4	
8	298 48.6	-22 44.9	223 33.0	280 48.5	-21 28.4	323 32.6	-23 27.7	
10	328 48.0	-22 44.4	253 37.9	310 46.8	-21 27.1	353 33.6	-23 28.0	
12	358 47.4	-22 43.9	283 42.8	340 45.2	-21 25.8	383 34.6	-23 28.3	
14	28 46.9	-22 43.4	313 47.8	10 43.5	-21 24.6	53 35.5	-23 28.6	
16	58 46.3	-22 42.8	343 52.7	40 41.9	-21 23.3	83 36.5	-23 28.9	
18	88 45.7	-22 42.3	13 57.6	70 40.2	-21 22.0	113 37.5	-23 29.2	
20	118 45.2	-22 41.8	44 2.5	100 38.5	-21 20.8	143 38.5	-23 29.5	
22	148 44.6	-22 41.2	74 7.5	130 36.9	-21 19.5	173 39.5	-23 29.8	
Δ	-3	3		-8	6	5	-2	

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	352 38.9	72 26	30.4	-62	216 1.2	-21 5.0	316 11.4	14 33.7
2	21 31.3	74 26	17.9	-65	246 5.1	-21 5.2	346 16.5	14 33.8
4	50 24.1	76 26	4.9	-68	276 9.0	-21 5.3	16 21.7	14 33.9
6	79 17.3	78 25	51.3	-71	306 12.8	-21 5.5	46 26.9	14 34.0
8	108 11.0	80 25	37.1	-74	336 16.7	-21 5.6	76 32.0	14 34.1
10	137 5.0	82 25	22.4	-76	6 20.5	-21 5.8	106 37.2	14 34.2
12	165 59.4	84 25	7.1	-79	36 24.4	-21 5.9	136 42.4	14 34.3
14	194 54.3	87 24	51.3	-81	66 28.2	-21 6.1	166 47.6	14 34.4
16	223 49.6	89 24	35.0	-84	96 32.1	-21 6.2	196 52.7	14 34.5
18	252 45.4	91 24	18.2	-86	126 36.0	-21 6.4	226 57.9	14 34.6
20	281 41.6	93 24	.9	-89	156 39.8	-21 6.6	257 3.1	14 34.7
22	310 38.2	95 23	43.2	-91	186 43.7	-21 6.7	287 8.3	14 34.8
Δ					19	-1	26	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 1	15 9	0 56	2 43	15 35	4.2	10 31	.2
55	8 24	15 46	0 45	2 16	16 24	3.6	9 41	.8
50	7 58	16 12	0 38	1 58	16 56	3.3	9 7	1.1
45	7 38	16 32	0 34	1 46	17 21	3.0	8 42	1.4
40	7 22	16 48	0 30	1 37	17 40	2.9	8 22	1.5
35	7 8	17 1	0 28	1 30	17 56	2.7	8 5	1.6
30	6 57	17 13	0 26	1 25	18 10	2.6	7 51	1.8
20	6 36	17 34	0 24	1 18	18 33	2.4	7 26	1.9
10	6 18	17 52	0 23	1 15	18 53	2.3	7 4	2.1
0	6 1	18 9	0 22	1 15	19 12	2.1	6 44	2.2
10	5 44	18 26	0 23	1 17	19 31	2.0	6 24	2.3
20	5 26	18 44	0 24	1 23	19 51	1.8	6 2	2.5
30	5 4	19 5	0 27	1 35	20 14	1.6	5 36	2.7
35	4 52	19 18	0 29	1 46	20 27	1.5	5 21	2.8
40	4 37	19 32	0 32	2 1	20 43	1.3	5 4	2.9
45	4 20	19 50	0 37	2 28	21 1	1.2	4 42	3.0
50	3 58	20 11	0 44	:::	21 24	1.0	4 15	3.3
55	3 29	20 40	0 56	:::	21 54	.6	3 39	3.6
60	2 47	21 21	1 31	:::	22 37	.1	2 39	4.3
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 4 36.5	-1.1	16.3	T _m	0 31	2.3	57.1	15.6	
12	- 4 50.1	T _{m☉}	12 h 4.8 min	Starost	14.4 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 17	.1	58	-3.8	♄	9 35	.0	113	-1.6
♂	10 26	.1	100	1.5	♅	2 55	.0	213	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS										
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂									
h	°	'	°	'	°	'	°	'								
0	178	44.0	-22	40.7	160	35.2	-21	18.2	203	40.5	-23	30.1				
2	208	43.5	-22	40.2	190	33.6	-21	16.9	233	41.4	-23	30.4				
4	238	42.9	-22	39.6	220	31.9	-21	15.6	263	42.4	-23	30.7				
6	268	42.4	-22	39.1	194	27.2	250	30.3	-21	14.3	293	43.4	-23	31.0		
8	298	41.8	-22	38.5	224	32.1	280	28.7	-21	13.0	323	44.4	-23	31.3		
10	328	41.2	-22	38.0	254	37.0	310	27.0	-21	11.7	353	45.4	-23	31.5		
12	358	40.7	-22	37.4	284	42.0	340	25.4	-21	10.4	23	46.3	-23	31.8		
14	28	40.1	-22	36.8	314	46.9	10	23.8	-21	9.1	53	47.3	-23	32.1		
16	58	39.6	-22	36.3	344	51.8	40	22.1	-21	7.7	83	48.3	-23	32.4		
18	88	39.0	-22	35.7	14	56.7	70	20.5	-21	6.4	113	49.3	-23	32.7		
20	118	38.5	-22	35.1	45	1.7	100	18.9	-21	5.1	143	50.2	-23	32.9		
22	148	37.9	-22	34.6	75	6.6	130	17.2	-21	3.8	173	51.2	-23	33.2		
Δ		-3		3				-8		7				5		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 60	15 11	0 56	2 43	17 16	4.0	10 36	.1
55	8 24	15 47	0 45	2 16	17 50	3.5	10 0	.5
50	7 58	16 13	0 38	1 58	18 15	3.2	9 35	.8
45	7 38	16 33	0 33	1 46	18 33	2.9	9 15	1.0
40	7 22	16 49	0 30	1 37	18 48	2.8	8 59	1.2
35	7 9	17 2	0 28	1 30	19 1	2.6	8 45	1.4
30	6 57	17 14	0 26	1 25	19 12	2.5	8 33	1.5
20	6 36	17 34	0 24	1 18	19 31	2.3	8 12	1.7
10	6 18	17 52	0 23	1 15	19 47	2.1	7 54	1.9
0	6 2	18 9	0 22	1 15	20 3	1.9	7 37	2.0
10	5 45	18 26	0 23	1 17	20 18	1.8	7 20	2.2
20	5 26	18 44	0 24	1 23	20 34	1.6	7 1	2.3
30	5 5	19 5	0 27	1 35	20 52	1.4	6 40	2.6
35	4 53	19 18	0 29	1 45	21 3	1.2	6 27	2.7
40	4 38	19 32	0 32	2 0	21 15	1.1	6 13	2.8
45	4 21	19 49	0 37	2 27	21 30	.9	5 55	3.0
50	3 59	20 11	0 43	:::	21 47	.7	5 34	3.2
55	3 31	20 39	0 56	:::	22 9	.4	5 5	3.6
60	2 49	21 20	1 30	:::	22 39	.0	4 24	4.1

UT	MESEC				JUPITER		SATURN									
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄								
h	°	'	°	'	°	'	°	'								
0	339	35.3	98	23	24.9	-93	216	47.5	-21	6.9	317	13.4	14	34.9		
2	8	32.8	100	23	6.3	-96	246	51.4	-21	7.0	347	18.6	14	35.0		
4	37	30.8	102	22	47.2	-98	276	55.3	-21	7.2	17	23.8	14	35.1		
6	66	29.2	104	22	27.6	-100	306	59.1	-21	7.3	47	29.0	14	35.2		
8	95	28.1	106	22	7.6	-102	337	3.0	-21	7.5	77	34.1	14	35.3		
10	124	27.4	109	21	47.3	-104	7	6.9	-21	7.6	107	39.3	14	35.4		
12	153	27.1	111	21	26.5	-106	37	10.7	-21	7.8	137	44.5	14	35.5		
14	182	27.3	113	21	5.4	-107	67	14.6	-21	7.9	167	49.7	14	35.6		
16	211	27.9	115	20	43.9	-109	97	18.4	-21	8.1	197	54.9	14	35.7		
18	240	28.9	117	20	22.1	-111	127	22.3	-21	8.3	228	.0	14	35.8		
20	269	30.4	119	19	59.9	-113	157	26.2	-21	8.4	258	5.2	14	35.9		
22	298	32.3	121	19	37.3	-114	187	30.0	-21	8.6	288	10.4	14	36.0		
Δ								19		-1				26		1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 5	3.7	-1.1	16.3	T _m	1 25	2.0	56.5	15.4
12	- 5	17.1	T _m ☉	12 h 5.3 min	Starost	15.4 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	56	-3.8	♀	h min	'	°
♂	13 18	.1	99	1.5	♂	9 32	.0	113	-1.6
♂	10 25	.1	99	1.5	♂	2 51	.0	213	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS										
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂									
h	°	'	°	'	°	'	°	'								
0	178	37.3	-22	34.0	160	15.6	-21	2.4	203	52.2	-23	33.5				
2	208	36.8	-22	33.4	190	14.0	-21	1.1	233	53.2	-23	33.8				
4	238	36.2	-22	32.8	220	12.4	-20	59.7	263	54.1	-23	34.0				
6	268	35.7	-22	32.2	195	26.3	250	10.7	-20	58.4	293	55.1	-23	34.3		
8	298	35.1	-22	31.7	225	31.2	280	9.1	-20	57.0	323	56.1	-23	34.6		
10	328	34.6	-22	31.1	255	36.2	310	7.5	-20	55.7	353	57.0	-23	34.8		
12	358	34.0	-22	30.5	285	41.1	340	5.9	-20	54.3	23	58.0	-23	35.1		
14	28	33.5	-22	29.9	315	46.0	10	4.3	-20	52.9	53	59.0	-23	35.4		
16	58	32.9	-22	29.3	345	51.0	40	2.7	-20	51.6	83	60.0	-23	35.6		
18	88	32.4	-22	28.7	15	55.9	70	1.1	-20	50.2	114	.9	-23	35.9		
20	118	31.9	-22	28.1	46	.8	99	59.5	-20	48.8	144	1.9	-23	36.1		
22	148	31.3	-22	27.5	76	5.7	129	57.9	-20	47.4	174	2.9	-23	36.4		
Δ		-3		3				-8		7				5		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 59	15 13	0 56	2 42	18 51	3.7	10 38	.0
55	8 23	15 49	0 45	2 16	19 14	3.3	10 13	.4
50	7 58	16 14	0 38	1 58	19 30	3.0	9 55	.6
45	7 38	16 34	0 33	1 46	19 44	2.8	9 40	.8
40	7 22	16 50	0 30	1 37	19 54	2.6	9 28	1.0
35	7 9	17 3	0 28	1 30	20 4	2.5	9 17	1.2
30	6 57	17 15	0 26	1 25	20 12	2.4	9 8	1.3
20	6 36	17 35	0 24	1 18	20 25	2.1	8 52	1.5
10	6 19	17 53	0 23	1 15	20 37	1.9	8 38	1.7
0	6 2	18 9	0 22	1 15	20 49	1.8	8 25	1.8
10	5 45	18 26	0 23	1 17	20 60	1.6	8 12	2.0
20	5 27	18 44	0 24	1 23	21 12	1.4	7 58	2.2
30	5 6	19 5	0 27	1 35	21 25	1.2	7 41	2.4
35	4 53	19 18	0 29	1 45	21 33	1.1	7 32	2.5
40	4 39	19 32	0 32	2 0	21 42	.9	7 20	2.7
45	4 22	19 49	0 37	2 26	21 52	.8	7 7	2.9
50	4 0	20 10	0 43	:::	22 4	.6	6 51	3.1
55	3 32	20 39	0 55	:::	22 19	.3	6 31	3.4
60	2 51	21 19	1 28	:::	22 39	.0	6 3	3.8

UT	MESEC				JUPITER		SATURN									
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄								
h	°	'	°	'	°	'	°	'								
0	327	34.6	124	19	14.5	-116	217	33.9	-21	8.7	318	15.6	14	36.1		
2	356	37.3	126	18	51.3	-117	247	37.8	-21	8.9	348	20.8	14	36.2		
4	25	40.4	128	18	27.9	-119	277	41.6	-21	9.0	18	26.0	14	36.3		
6	54	43.9	130	18	4.1	-120	307	45.5	-21	9.2	48	31.1	14	36.4		
8	83	47.8	132	17	40.1	-121	337	49.4	-21	9.3	78	36.3	14	36.5		
10	112	52.1	133	17	15.8	-123	7	53.2	-21	9.5	108	41.5	14	36.6		
12	141	56.8	135	16	51.3	-124	37	57.1	-21	9.6	138	46.7	14	36.8		
14	171	1.9	137	16	26.5	-125	68	1.0	-21	9.8	168	51.9	14	36.9		
16	200	7.3	139	16	1.4	-126	98	4.8	-21	9.9	198	57.1	14	37.0		
18	229	13.1	141	15	36.2	-127	128	8.7	-21	10.1	229	2.3	14	37.1		
20	258	19.2	142	15	10.7	-128	158	12.6	-21	10.2	259	7.4	14	37.2		
22	287	25.7	144	14	45.0	-129	188	16.5	-21	10.4	289	12.6	14	37.3		
Δ								19		-1				26		1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 5	30.4	-1.1	16.3	T _m	2 14	1.9	55.8	15.2
12	- 5	43.6	T _m ☉	12 h 5.7 min	Starost	16.4 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 30.8	-22 26.8	106 10.7	159 56.3	-20 46.0	204 3.8	-23 36.6	
2	208 30.2	-22 26.2	136 15.6	189 54.7	-20 44.6	234 4.8	-23 36.9	
4	238 29.7	-22 25.6	166 20.5	219 53.1	-20 43.2	264 5.8	-23 37.1	
6	268 29.1	-22 25.0	196 25.5	249 51.5	-20 41.8	294 6.7	-23 37.4	
8	298 28.6	-22 24.4	226 30.4	279 49.9	-20 40.4	324 7.7	-23 37.6	
10	328 28.1	-22 23.7	256 35.3	309 48.3	-20 39.0	354 8.7	-23 37.9	
12	358 27.5	-22 23.1	286 40.2	339 46.7	-20 37.6	24 9.6	-23 38.1	
14	28 27.0	-22 22.5	316 45.2	9 45.1	-20 36.2	54 10.6	-23 38.4	
16	58 26.4	-22 21.8	346 50.1	39 43.6	-20 34.8	84 11.5	-23 38.6	
18	88 25.9	-22 21.2	16 55.0	69 42.0	-20 33.3	114 12.5	-23 38.9	
20	118 25.4	-22 20.5	47 .0	99 40.4	-20 31.9	144 13.5	-23 39.1	
22	148 24.8	-22 19.9	77 4.9	129 38.8	-20 30.5	174 14.4	-23 39.3	
Δ	-3	3		-8	7	5	-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 58	15 14	0 55	2 42	20 20	3.5	10 38	.0
55	8 23	15 50	0 44	2 15	20 33	3.2	10 22	.3
50	7 57	16 15	0 38	1 58	20 43	2.9	10 10	.5
45	7 38	16 35	0 33	1 46	20 51	2.7	10 0	.7
40	7 22	16 50	0 30	1 37	20 58	2.5	9 52	.9
35	7 9	17 4	0 28	1 30	21 3	2.4	9 45	1.0
30	6 57	17 16	0 26	1 25	21 8	2.3	9 39	1.1
20	6 37	17 36	0 24	1 18	21 17	2.0	9 28	1.4
10	6 19	17 53	0 23	1 15	21 24	1.8	9 18	1.5
0	6 2	18 10	0 22	1 14	21 31	1.7	9 9	1.7
10	5 46	18 27	0 23	1 17	21 38	1.5	9 0	1.9
20	5 28	18 45	0 24	1 23	21 45	1.3	8 50	2.1
30	5 7	19 6	0 27	1 35	21 54	1.1	8 39	2.3
35	4 54	19 18	0 29	1 45	21 59	1.0	8 33	2.4
40	4 40	19 32	0 32	1 52	22 4	.8	8 25	2.6
45	4 23	19 49	0 37	2 25	22 10	.7	8 16	2.8
50	4 2	20 10	0 43	:::	22 18	.5	8 6	3.0
55	3 34	20 38	0 55	:::	22 27	.3	7 53	3.2
60	2 53	21 18	1 26	:::	22 38	.0	7 35	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	316 32.5	146	14 19.1	-130	218 20.3	-21 10.5	319 17.8	14 37.4
2	345 39.6	147	13 53.0	-131	248 24.2	-21 10.7	349 23.0	14 37.5
4	14 47.1	149	13 26.8	-132	278 28.1	-21 10.8	19 28.2	14 37.6
6	43 54.8	150	13 .4	-133	308 31.9	-21 11.0	49 33.4	14 37.7
8	73 2.9	152	12 33.8	-134	338 35.8	-21 11.1	79 38.6	14 37.8
10	102 11.2	153	12 7.0	-134	8 39.7	-21 11.3	109 43.8	14 37.9
12	131 19.9	155	11 40.1	-135	38 43.6	-21 11.4	139 49.0	14 38.0
14	160 28.8	156	11 13.1	-136	68 47.4	-21 11.6	169 54.2	14 38.1
16	189 37.9	157	10 45.9	-136	98 51.3	-21 11.7	199 59.4	14 38.2
18	218 47.4	158	10 18.6	-137	128 55.2	-21 11.9	230 4.6	14 38.3
20	247 57.0	160	9 51.2	-138	158 59.1	-21 12.0	260 9.8	14 38.4
22	277 6.9	161	9 23.7	-138	189 2.9	-21 12.2	290 15.0	14 38.6
Δ					19	-1	26	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 5 56.8	-1.1	16.3	T _m	2 59	1.8	55.3 15.1		
12	- 6 9.7	T _{m☉}	12 h 6.2 min	Starost	17.4 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	54	♃	h min	'	°	112
♁	13 21	.1	54	-3.8	♄	9 25	.0	112	-1.6
♂	10 23	.1	98	1.5	♅	2 42	.0	213	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 24.3	-22 19.2	107 9.8	159 37.2	-20 29.0	204 15.4	-23 39.6	
2	208 23.8	-22 18.6	137 14.7	189 35.7	-20 27.6	234 16.3	-23 39.8	
4	238 23.2	-22 17.9	167 19.7	219 34.1	-20 26.1	264 17.3	-23 40.0	
6	268 22.7	-22 17.3	197 24.6	249 32.5	-20 24.7	294 18.3	-23 40.3	
8	298 22.2	-22 16.6	227 29.5	279 31.0	-20 23.2	324 19.2	-23 40.5	
10	328 21.6	-22 15.9	257 34.4	309 29.4	-20 21.8	354 20.2	-23 40.7	
12	358 21.1	-22 15.3	287 39.4	339 27.8	-20 20.3	24 21.1	-23 40.9	
14	28 20.6	-22 14.6	317 44.3	9 26.3	-20 18.8	54 22.1	-23 41.2	
16	58 20.1	-22 13.9	347 49.2	39 24.7	-20 17.4	84 23.0	-23 41.4	
18	88 19.5	-22 13.3	17 54.2	69 23.2	-20 15.9	114 24.0	-23 41.6	
20	118 19.0	-22 12.6	47 59.1	99 21.6	-20 14.4	144 25.0	-23 41.8	
22	148 18.5	-22 11.9	78 4.0	129 20.1	-20 12.9	174 25.9	-23 42.0	
Δ	-3	3		-8	7	5	-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 57	15 16	0 55	2 41	21 44	3.4	10 37	.0
55	8 22	15 51	0 44	2 15	21 49	3.1	10 29	.2
50	7 57	16 16	0 38	1 58	21 53	2.8	10 23	.5
45	7 38	16 36	0 33	1 46	21 56	2.6	10 18	.7
40	7 22	16 51	0 30	1 37	21 58	2.5	10 13	.8
35	7 9	17 5	0 28	1 30	22 0	2.3	10 10	1.0
30	6 57	17 16	0 26	1 25	22 2	2.2	10 6	1.1
20	6 37	17 36	0 24	1 18	22 6	2.0	10 1	1.3
10	6 19	17 54	0 23	1 15	22 9	1.8	9 55	1.5
0	6 3	18 10	0 22	1 14	22 11	1.6	9 51	1.6
10	5 46	18 27	0 23	1 17	22 14	1.4	9 46	1.8
20	5 28	18 45	0 24	1 23	22 17	1.3	9 41	2.0
30	5 7	19 6	0 27	1 35	22 20	1.1	9 35	2.2
35	4 55	19 18	0 29	1 45	22 22	.9	9 31	2.4
40	4 41	19 32	0 32	1 59	22 24	.8	9 27	2.5
45	4 24	19 49	0 36	2 25	22 26	.6	9 23	2.7
50	4 3	20 10	0 43	:::	22 29	.5	9 17	2.9
55	3 35	20 37	0 54	:::	22 33	.2	9 10	3.1
60	2 55	21 17	1 25	:::	22 37	.0	9 1	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	306 17.1	162	8 56.1	-139	219 6.8	-21 12.3	320 20.2	14 38.7
2	335 27.4	163	8 28.4	-139	249 10.7	-21 12.5	350 25.3	14 38.8
4	4 38.0	164	8 .6	-139	279 14.6	-21 12.6	20 30.5	14 38.9
6	33 48.7	165	7 32.7	-140	309 18.4	-21 12.8	50 35.7	14 39.0
8	62 59.7	166	7 4.8	-140	339 22.3	-21 12.9	80 40.9	14 39.1
10	92 10.8	166	6 36.8	-140	9 26.2	-21 13.1	110 46.1	14 39.2
12	121 22.1	167	6 8.7	-141	39 30.1	-21 13.2	140 51.3	14 39.3
14	150 33.6	168	5 40.6	-141	69 33.9	-21 13.4	170 56.5	14 39.4
16	179 45.2	169	5 12.4	-141	99 37.8	-21 13.5	201 1.7	14 39.5
18	208 56.9	169	4 44.1	-141	129 41.7	-21 13.7	231 6.9	14 39.6
20	238 8.8	170	4 15.9	-141	159 45.6	-21 13.8	261 12.2	14 39.8
22	267 20.8	171	3 47.6	-142	189 49.5	-21 13.9	291 17.4	14 39.9
Δ					19	-1	26	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 6 22.6	-1.1	16.3	T _m	3 41	1.7	54.8 14.9		
12	- 6 35.3	T _{m☉}	12 h 6.6 min	Starost	18.4 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	54	♃	h min	'	°	112
♁	13 22	.1	52	-3.8	♄	9 22	.0	112	-1.6
♂	10 23	.1	97	1.5	♅	2 38	.0	213	.2

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{\vee}		δ_{\vee}		S_{\mars}		δ_{\mars}	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	178	17.9	-22	11.2	108	8.9	159	18.5	-20	11.4	204	26.9	-23	42.2
2	208	17.4	-22	10.5	138	13.9	189	17.0	-20	9.9	234	27.8	-23	42.5
4	238	16.9	-22	9.8	168	18.8	219	15.4	-20	8.5	264	28.8	-23	42.7
6	268	16.4	-22	9.1	198	23.7	249	13.9	-20	7.0	294	29.7	-23	42.9
8	298	15.9	-22	8.4	228	28.7	279	12.4	-20	5.4	324	30.7	-23	43.1
10	328	15.3	-22	7.7	258	33.6	309	10.8	-20	3.9	354	31.6	-23	43.3
12	358	14.8	-22	7.0	288	38.5	339	9.3	-20	2.4	24	32.6	-23	43.5
14	28	14.3	-22	6.3	318	43.4	9	7.8	-20	.9	54	33.5	-23	43.7
16	58	13.8	-22	5.6	348	48.4	39	6.2	-19	59.4	84	34.5	-23	43.9
18	88	13.3	-22	4.9	18	53.3	69	4.7	-19	57.9	114	35.4	-23	44.1
20	118	12.8	-22	4.2	48	58.2	99	3.2	-19	56.3	144	36.4	-23	44.3
22	148	12.2	-22	3.5	79	3.2	129	1.6	-19	54.8	174	37.3	-23	44.5
Δ		-3		4				-8		8		5		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	8 56	15 18	0 55	2 41	23 5	3.4	10 36	.0
55	8 21	15 53	0 44	2 15	23 3	3.1	10 35	.2
50	7 57	16 18	0 38	1 58	23 1	2.8	10 34	.5
45	7 37	16 37	0 33	1 45	22 59	2.6	10 33	.6
40	7 22	16 52	0 30	1 36	22 58	2.5	10 33	.8
35	7 9	17 6	0 28	1 30	22 56	2.3	10 32	.9
30	6 57	17 17	0 26	1 25	22 55	2.2	10 32	1.1
20	6 37	17 37	0 24	1 18	22 53	2.0	10 31	1.3
10	6 20	17 54	0 23	1 15	22 52	1.8	10 31	1.4
0	6 3	18 11	0 22	1 14	22 50	1.6	10 30	1.6
10	5 47	18 27	0 23	1 17	22 49	1.5	10 29	1.8
20	5 29	18 45	0 24	1 23	22 47	1.3	10 29	2.0
30	5 8	19 6	0 27	1 35	22 45	1.1	10 28	2.2
35	4 56	19 18	0 29	1 44	22 44	.9	10 28	2.3
40	4 42	19 32	0 32	1 59	22 43	.8	10 27	2.5
45	4 25	19 48	0 36	2 24	22 42	.7	10 26	2.6
50	4 4	20 9	0 43	:::	22 40	.5	10 26	2.8
55	3 37	20 36	0 54	:::	22 38	.2	10 25	3.1
60	2 57	21 16	1 23	:::	22 36	.0	10 24	3.4

UT	MESEC				JUPITER				SATURN					
	S_{ζ}		Δ	δ_{ζ}	Δ	S_{\jup}		δ_{\jup}	S_{\sat}		δ_{\sat}			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	296	33.0	171	3	19.3	-142	219	53.3	-21	14.1	321	22.6	14	40.0
2	325	45.2	172	2	50.9	-142	249	57.2	-21	14.2	351	27.8	14	40.1
4	354	57.5	172	2	22.6	-142	280	1.1	-21	14.4	21	33.0	14	40.2
6	24	9.9	172	1	54.2	-142	310	5.0	-21	14.5	51	38.2	14	40.3
8	53	22.4	173	1	25.9	-142	340	8.9	-21	14.7	81	43.4	14	40.4
10	82	34.9	173	0	57.5	-142	10	12.8	-21	14.8	111	48.6	14	40.5
12	111	47.5	173	0	29.2	-142	40	16.6	-21	15.0	141	53.8	14	40.6
14	141	.2	173	0	.8	-142	70	20.5	-21	15.1	171	59.0	14	40.7
16	170	12.9	174	-0	27.5	-141	100	24.4	-21	15.3	202	4.2	14	40.9
18	199	25.6	174	-0	55.8	-141	130	28.3	-21	15.4	232	9.4	14	41.0
20	228	38.3	174	-1	24.0	-141	160	32.2	-21	15.5	262	14.6	14	41.1
22	257	51.1	174	-1	52.3	-141	190	36.1	-21	15.7	292	19.8	14	41.2
Δ								19		-1		26		1

SUNCE				MESEC					
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r		
h	min	s	s	h min	min	'	'		
00	-6	48.0	-1.0	16.3	T_m	4 21	1.6	54.5	14.8
12	-7	.5	$T_{m\odot}$	12 h 7.0 min	Starost	19.4 d	Faza	☉	

PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
	h min	'	°			h min	'	°	
ζ	13 23	.1	51	-3.8	\jup	9 19	.0	112	-1.6
σ	10 22	.1	96	1.5	\sat	2 34	.0	213	.2

10. JANUAR

SREDA

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{\vee}		δ_{\vee}		S_{\mars}		δ_{\mars}	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	178	11.7	-22	2.7	109	8.1	159	.1	-19	53.3	204	38.3	-23	44.7
2	208	11.2	-22	2.0	139	13.0	188	58.6	-19	51.7	234	39.2	-23	44.9
4	238	10.7	-22	1.3	169	17.9	218	57.1	-19	50.2	264	40.2	-23	45.1
6	268	10.2	-22	.5	199	22.9	248	55.6	-19	48.6	294	41.1	-23	45.3
8	298	9.7	-21	59.8	229	27.8	278	54.1	-19	47.1	324	42.0	-23	45.4
10	328	9.2	-21	59.1	259	32.7	308	52.6	-19	45.5	354	43.0	-23	45.6
12	358	8.7	-21	58.3	289	37.7	338	51.0	-19	44.0	24	43.9	-23	45.8
14	28	8.2	-21	57.6	319	42.6	8	49.5	-19	42.4	54	44.9	-23	46.0
16	58	7.7	-21	56.8	349	47.5	38	48.0	-19	40.8	84	45.8	-23	46.2
18	88	7.2	-21	56.1	19	52.4	68	46.5	-19	39.2	114	46.8	-23	46.4
20	118	6.7	-21	55.3	49	57.4	98	45.0	-19	37.7	144	47.7	-23	46.5
22	148	6.2	-21	54.6	80	2.3	128	43.5	-19	36.1	174	48.6	-23	46.7
Δ		-3		4				-8		8		5		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	8 55	15 20	0 54	2 40	...	.0	10 34	.0
55	8 21	15 55	0 44	2 14	...	.0	10 40	.3
50	7 56	16 19	0 37	1 57	...	.0	10 45	.5
45	7 37	16 38	0 33	1 45	...	.0	10 49	.7
40	7 22	16 53	0 30	1 36	23 57	2.5	10 52	.8
35	7 9	17 7	0 28	1 30	23 52	2.4	10 55	1.0
30	6 57	17 18	0 26	1 25	23 48	2.2	10 57	1.1
20	6 37	17 38	0 24	1 18	23 41	2.0	11 2	1.3
10	6 20	17 55	0 23	1 15	23 35	1.9	11 5	1.5
0	6 4	18 11	0 22	1 14	23 29	1.7	11 9	1.6
10	5 47	18 27	0 23	1 17	23 24	1.5	11 13	1.8
20	5 30	18 45	0 24	1 23	23 18	1.3	11 16	2.0
30	5 9	19 6	0 27	1 34	23 11	1.1	11 21	2.2
35	4 57	19 18	0 29	1 44	23 7	1.0	11 23	2.3
40	4 43	19 32	0 32	1 58	23 3	.9	11 26	2.5
45	4 26	19 48	0 36	2 23	22 58	.7	11 30	2.7
50	4 6	20 9	0 43	3 42	22 52	.5	11 34	2.9
55	3 38	20 36	0 54	:::	22 44	.3	11 39	3.1
60	2 59	21 15	1 22	:::	22 35	.0	11 45	3.4

UT	MESEC				JUPITER				SATURN					
	S_{ζ}		Δ	δ_{ζ}	Δ	S_{\jup}		δ_{\jup}	S_{\sat}		δ_{\sat}			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	287	3.8	174	-2	20.4	-141	220	40.0	-21	15.8	322	25.0	14	41.3
2	316	16.5	174	-2	48.6	-140	250	43.8	-21	16.0	352	30.3	14	41.4
4	345	29.2	173	-3	16.7	-140	280	47.7	-21	16.1	22	35.5	14	41.5
6	14	41.9	173	-3	44.7	-140	310	51.6	-21	16.3	52	40.7	14	41.6
8	43	54.5	173	-4	12.7	-140	340	55.5	-21	16.4	82	45.9	14	41.8
10	73	7.1	173	-4	40.6	-139	10	59.4	-21	16.5	112	51.1	14	41.9
12	102	19.7	172	-5	8.4	-139	41	3.3	-21	16.7	142	56.3	14	42.0
14	131	32.1	172	-5	36.2	-138	71	7.2	-21	16.8	173	1.5	14	42.1
16	160	44.5	172	-6	3.9	-138	101	11.1	-21	17.0	203	6.7	14	42.2
18	189	56.8	171	-6	31.5	-138	131	15.0	-21	17.1	233	12.0	14	42.3
20	219	9.0	171	-6	59.0	-137	161	18.8	-21	17.3	263	17.2	14	42.4
22	248	21.1	170	-7	26.4	-137	191	22.7	-21	17.4	293	22.4	14	42.5
Δ								19		-1		26		1

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min						

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	5.6	-21	53.8	110	7.2	158	42.0	-19	34.5	204	49.6	-23	46.9	
2	208	5.1	-21	53.1	140	12.2	188	40.6	-19	32.9	234	50.5	-23	47.1	
4	238	4.6	-21	52.3	170	17.1	218	39.1	-19	31.3	264	51.5	-23	47.2	
6	268	4.1	-21	51.5	200	22.0	248	37.6	-19	29.7	294	52.4	-23	47.4	
8	298	3.7	-21	50.8	230	26.9	278	36.1	-19	28.1	324	53.3	-23	47.6	
10	328	3.2	-21	50.0	260	31.9	308	34.6	-19	26.5	354	54.3	-23	47.7	
12	358	2.7	-21	49.2	290	36.8	338	33.1	-19	24.9	24	55.2	-23	47.9	
14	28	2.2	-21	48.4	320	41.7	8	31.6	-19	23.3	54	56.2	-23	48.1	
16	58	1.7	-21	47.7	350	46.7	38	30.2	-19	21.7	84	57.1	-23	48.2	
18	88	1.2	-21	46.9	20	51.6	68	28.7	-19	20.1	114	58.0	-23	48.4	
20	118	.7	-21	46.1	50	56.5	98	27.2	-19	18.4	144	59.0	-23	48.5	
22	148	.2	-21	45.3	81	1.4	128	25.8	-19	16.8	174	59.9	-23	48.7	
Δ		-2		4				-7		8			5		-1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	277	33.1	169	-7	53.7	-136	221	26.6	-21	17.5	323	27.6	14	42.7		
2	306	45.0	169	-8	20.9	-135	251	30.5	-21	17.7	353	32.8	14	42.8		
4	335	56.7	168	-8	48.0	-135	281	34.4	-21	17.8	23	38.0	14	42.9		
6	5	8.3	167	-9	15.0	-134	311	38.3	-21	18.0	53	43.3	14	43.0		
8	34	19.8	166	-9	41.8	-134	341	42.2	-21	18.1	83	48.5	14	43.1		
10	63	31.0	166	-10	8.5	-133	11	46.1	-21	18.2	113	53.7	14	43.2		
12	92	42.2	165	-10	35.1	-132	41	50.0	-21	18.4	143	58.9	14	43.3		
14	121	53.1	164	-11	1.5	-131	71	53.9	-21	18.5	174	4.1	14	43.5		
16	151	3.8	163	-11	27.8	-131	101	57.8	-21	18.7	204	9.4	14	43.6		
18	180	14.4	162	-11	54.0	-130	132	1.7	-21	18.8	234	14.6	14	43.7		
20	209	24.7	161	-12	19.9	-129	162	5.6	-21	18.9	264	19.8	14	43.8		
22	238	34.8	160	-12	45.8	-128	192	9.5	-21	19.1	294	25.0	14	43.9		
Δ								19		-1			26		1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 54	15 22	0 54	2 40	0 28	3.5	10 33	.0
55	8 20	15 56	0 44	2 14	0 17	3.2	10 46	.3
50	7 56	16 20	0 37	1 57	0 9	2.9	10 57	.6
45	7 37	16 39	0 33	1 45	0 2	2.7	11 5	.8
40	7 21	16 54	0 30	1 36	...	.0	11 12	.9
35	7 8	17 7	0 28	1 30	...	.0	11 18	1.1
30	6 57	17 19	0 26	1 24	...	.0	11 23	1.2
20	6 37	17 38	0 24	1 18	...	.0	11 33	1.4
10	6 20	17 55	0 23	1 15	...	.0	11 41	1.6
0	6 4	18 12	0 22	1 14	...	.0	11 49	1.7
10	5 48	18 28	0 23	1 17	23 60	1.6	11 56	1.9
20	5 30	18 45	0 24	1 23	23 50	1.4	12 5	2.1
30	5 10	19 6	0 27	1 34	23 38	1.2	12 14	2.3
35	4 58	19 17	0 29	1 44	23 31	1.1	12 20	2.4
40	4 44	19 31	0 32	1 58	23 23	1.0	12 26	2.5
45	4 27	19 48	0 36	2 22	23 15	.8	12 33	2.7
50	4 7	20 8	0 42	3 33	23 4	.6	12 42	2.9
55	3 40	20 35	0 53	...	22 51	.4	12 53	3.2
60	3 1	21 13	1 20	...	22 34	.0	13 8	3.6
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 7 37.2	-1.0	16.3	T _m	5 39	1.7	54.2	14.8	
12	- 7 49.1	T _{m☉}	12 h 7.8 min	Starost	21.4 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 26	.1	49	-3.8	♃	9 13	.0	111	-1.7
♂	10 20	.1	95	1.5	♄	2 26	.0	213	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	59.7	-21	44.5	111	6.4	158	24.3	-19	15.2	205	.8	-23	48.9	
2	207	59.2	-21	43.7	141	11.3	188	22.8	-19	13.6	235	1.8	-23	49.0	
4	237	58.7	-21	42.9	171	16.2	218	21.4	-19	11.9	265	2.7	-23	49.2	
6	267	58.2	-21	42.1	201	21.1	248	19.9	-19	10.3	295	3.6	-23	49.3	
8	297	57.8	-21	41.3	231	26.1	278	18.4	-19	8.6	325	4.6	-23	49.5	
10	327	57.3	-21	40.5	261	31.0	308	17.0	-19	7.0	355	5.5	-23	49.6	
12	357	56.8	-21	39.7	291	35.9	338	15.5	-19	5.3	25	6.4	-23	49.7	
14	27	56.3	-21	38.9	321	40.9	8	14.1	-19	3.7	55	7.4	-23	49.9	
16	57	55.8	-21	38.0	351	45.8	38	12.6	-19	2.0	85	8.3	-23	50.0	
18	87	55.3	-21	37.2	21	50.7	68	11.2	-19	.3	115	9.2	-23	50.2	
20	117	54.9	-21	36.4	51	55.6	98	9.7	-18	58.7	145	10.2	-23	50.3	
22	147	54.4	-21	35.6	82	.6	128	8.3	-18	57.0	175	11.1	-23	50.4	
Δ		-2		4				-7		8			5		-1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	267	44.7	158	-13	11.4	-127	222	13.4	-21	19.2	324	30.3	14	44.0		
2	296	54.4	157	-13	36.9	-126	252	17.3	-21	19.4	354	35.5	14	44.2		
4	326	3.8	156	-14	2.2	-125	282	21.2	-21	19.5	24	40.7	14	44.3		
6	355	13.0	155	-14	27.2	-124	312	25.1	-21	19.6	54	45.9	14	44.4		
8	24	21.9	153	-14	52.1	-123	342	29.0	-21	19.8	84	51.2	14	44.5		
10	53	30.5	152	-15	16.8	-122	12	32.9	-21	19.9	114	56.4	14	44.6		
12	82	38.9	150	-15	41.3	-121	42	36.8	-21	20.1	145	1.6	14	44.7		
14	111	47.0	149	-16	5.6	-120	72	40.7	-21	20.2	175	6.8	14	44.9		
16	140	54.8	147	-16	29.6	-119	102	44.6	-21	20.3	205	12.1	14	45.0		
18	170	2.3	146	-16	53.4	-118	132	48.5	-21	20.5	235	17.3	14	45.1		
20	199	9.5	144	-17	17.0	-117	162	52.4	-21	20.6	265	22.5	14	45.2		
22	228	16.3	143	-17	40.3	-115	192	56.3	-21	20.7	295	27.7	14	45.3		
Δ								20		-1			26		1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 53	15 24	0 54	2 39	1 52	3.7	10 32	.0
55	8 19	15 58	0 44	2 14	1 33	3.3	10 54	.4
50	7 55	16 22	0 37	1 57	1 18	3.0	11 10	.7
45	7 36	16 40	0 33	1 45	1 7	2.8	11 23	.9
40	7 21	16 56	0 30	1 36	0 57	2.6	11 34	1.1
35	7 8	17 8	0 28	1 29	0 49	2.5	11 43	1.2
30	6 57	17 20	0 26	1 24	0 42	2.3	11 51	1.3
20	6 38	17 39	0 24	1 18	0 30	2.1	12 6	1.5
10	6 21	17 56	0 23	1 15	0 19	1.9	12 18	1.7
0	6 5	18 12	0 22	1 14	0 10	1.8	12 30	1.8
10	5 48	18 28	0 23	1 16	...	.0	12 42	2.0
20	5 31	18 45	0 24	1 22	...	.0	12 54	2.2
30	5 11	19 5	0 27	1 34	...	.0	13 9	2.4
35	4 59	19 17	0 29	1 43	23 58	1.3	13 17	2.5
40	4 45	19 31	0 32	1 57	23 47	1.2	13 27	2.6
45	4 29	19 47	0 36	2 21	23 34	1.0	13 38	2.8
50	4 8	20 7	0 42	3 26	23 19	.8	13 52	3.0
55	3 42	20 34	0 53	...	22 59	.5	14 10	3.3
60	3 3	21 12	1 19	...	22 33	.1	14 34	3.8
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 53.9	-21 34.7	112 5.5	158 6.8	-18 55.3	205 12.0	-23 50.6
2	207 53.4	-21 33.9	142 10.4	188 5.4	-18 53.6	235 13.0	-23 50.7
4	237 52.9	-21 33.1	172 15.4	218 4.0	-18 52.0	265 13.9	-23 50.8
6	267 52.5	-21 32.2	202 20.3	248 2.5	-18 50.3	295 14.8	-23 51.0
8	297 52.0	-21 31.4	232 25.2	278 1.1	-18 48.6	325 15.7	-23 51.1
10	327 51.5	-21 30.5	262 30.1	307 59.7	-18 46.9	355 16.7	-23 51.2
12	357 51.1	-21 29.7	292 35.1	337 58.3	-18 45.2	25 17.6	-23 51.3
14	27 50.6	-21 28.9	322 40.0	7 56.8	-18 43.5	55 18.5	-23 51.5
16	57 50.1	-21 28.0	352 44.9	37 55.4	-18 41.8	85 19.4	-23 51.6
18	87 49.6	-21 27.1	22 49.9	67 54.0	-18 40.1	115 20.4	-23 51.7
20	117 49.2	-21 26.3	52 54.8	97 52.6	-18 38.4	145 21.3	-23 51.8
22	147 48.7	-21 25.4	82 59.7	127 51.2	-18 36.6	175 22.2	-23 51.9
Δ	-2	4		-7	9	5	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	257 22.9	141 -18	3.3 -114		223 .2	-21 20.9	325 33.0	14 45.4
2	286 29.1	139 -18	26.1 -113		253 4.1	-21 21.0	355 38.2	14 45.6
4	315 34.9	138 -18	48.7 -111		283 8.0	-21 21.2	25 43.4	14 45.7
6	344 40.4	136 -19	10.9 -110		313 11.9	-21 21.3	55 48.7	14 45.8
8	13 45.6	134 -19	32.8 -108		343 15.8	-21 21.4	85 53.9	14 45.9
10	42 50.4	132 -19	54.5 -107		13 19.7	-21 21.6	115 59.1	14 46.0
12	71 54.9	130 -20	15.8 -105		43 23.6	-21 21.7	146 4.4	14 46.2
14	100 58.9	128 -20	36.9 -104		73 27.5	-21 21.8	176 9.6	14 46.3
16	130 2.6	127 -20	57.6 -102		103 31.4	-21 22.0	206 14.8	14 46.4
18	159 5.9	125 -21	18.0 -100		133 35.3	-21 22.1	236 20.1	14 46.5
20	188 8.8	123 -21	38.0 -98		163 39.2	-21 22.2	266 25.3	14 46.6
22	217 11.4	121 -21	57.7 -97		193 43.2	-21 22.4	296 30.5	14 46.7
Δ					20	-1	26	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 51	15 26	0 54	2 38	3 21	4.0	10 32	.1
55	8 18	15 59	0 43	2 13	2 52	3.4	11 4	.6
50	7 54	16 23	0 37	1 57	2 30	3.1	11 27	.9
45	7 36	16 42	0 33	1 45	2 13	2.9	11 45	1.1
40	7 21	16 57	0 30	1 36	1 60	2.7	11 60	1.3
35	7 8	17 9	0 28	1 29	1 48	2.6	12 12	1.4
30	6 57	17 20	0 26	1 24	1 38	2.4	12 23	1.5
20	6 38	17 40	0 24	1 18	1 21	2.2	12 42	1.7
10	6 21	17 56	0 23	1 14	1 6	2.1	12 59	1.9
0	6 5	18 12	0 22	1 14	0 52	1.9	13 14	2.0
10	5 49	18 28	0 23	1 16	0 39	1.8	13 30	2.2
20	5 32	18 45	0 24	1 22	0 24	1.6	13 47	2.3
30	5 12	19 5	0 27	1 34	0 8	1.4	14 6	2.5
35	4 60	19 17	0 29	1 43	...	...	14 17	2.6
40	4 46	19 31	0 32	1 57	...	...	14 30	2.7
45	4 30	19 47	0 36	2 20	23 59	1.3	14 46	2.9
50	4 10	20 7	0 42	3 21	23 38	1.1	15 5	3.1
55	3 43	20 33	0 53	...	23 12	.8	15 30	3.4
60	3 6	21 10	1 18	...	22 35	.2	16 5	4.0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 8 24.2	-.9	16.3	T _m	7 3	2.0	54.7 14.9
12	- 8 35.5	T _{m☉}	12 h 8.6 min	Starost	23.4 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 28	.1	46	-3.8	♄	9 7	.0	111	-1.7
♂	10 19	.1	93	1.5	♂	2 17	.0	213	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 48.3	-21 24.6	113 4.6	157 49.7	-18 34.9	205 23.1	-23 52.1
2	207 47.8	-21 23.7	143 9.6	187 48.3	-18 33.2	235 24.1	-23 52.2
4	237 47.3	-21 22.8	173 14.5	217 46.9	-18 31.5	265 25.0	-23 52.3
6	267 46.9	-21 22.0	203 19.4	247 45.5	-18 29.7	295 25.9	-23 52.4
8	297 46.4	-21 21.1	233 24.4	277 44.1	-18 28.0	325 26.8	-23 52.5
10	327 45.9	-21 20.2	263 29.3	307 42.7	-18 26.3	355 27.8	-23 52.6
12	357 45.5	-21 19.3	293 34.2	337 41.3	-18 24.5	25 28.7	-23 52.7
14	27 45.0	-21 18.4	323 39.1	7 39.9	-18 22.8	55 29.6	-23 52.8
16	57 44.6	-21 17.5	353 44.1	37 38.5	-18 21.0	85 30.5	-23 52.9
18	87 44.1	-21 16.7	23 49.0	67 37.1	-18 19.3	115 31.4	-23 53.0
20	117 43.7	-21 15.8	53 53.9	97 35.7	-18 17.5	145 32.4	-23 53.1
22	147 43.2	-21 14.9	83 58.9	127 34.3	-18 15.7	175 33.3	-23 53.2
Δ	-2	4		-7	9	5	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	246 13.5	119 -22	17.0 -95		223 47.1	-21 22.5	326 35.8	14 46.9
2	275 15.2	117 -22	35.9 -93		253 51.0	-21 22.6	356 41.0	14 47.0
4	304 16.6	115 -22	54.5 -91		283 54.9	-21 22.8	26 46.2	14 47.1
6	333 17.5	113 -23	12.7 -89		313 58.8	-21 22.9	56 51.5	14 47.2
8	2 18.0	110 -23	30.5 -87		344 2.7	-21 23.0	86 56.7	14 47.3
10	31 18.1	108 -23	47.8 -85		14 6.6	-21 23.2	117 2.0	14 47.5
12	60 17.7	106 -24	4.8 -83		44 10.5	-21 23.3	147 7.2	14 47.6
14	89 17.0	104 -24	21.3 -80		74 14.4	-21 23.4	177 12.4	14 47.7
16	118 15.8	102 -24	37.3 -78		104 18.4	-21 23.6	207 17.7	14 47.8
18	147 14.2	100 -24	53.0 -76		134 22.3	-21 23.7	237 22.9	14 47.9
20	176 12.3	98 -25	8.1 -73		164 26.2	-21 23.8	267 28.2	14 48.1
22	205 9.8	96 -25	22.8 -71		194 30.1	-21 24.0	297 33.4	14 48.2
Δ					20	-1	26	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 50	15 29	0 53	2 38	4 56	4.1	10 34	.3
55	8 17	16 1	0 43	2 13	4 13	3.4	11 19	1.0
50	7 54	16 25	0 37	1 56	3 44	3.1	11 49	1.3
45	7 35	16 43	0 33	1 45	3 22	2.9	12 12	1.5
40	7 21	16 58	0 30	1 36	3 4	2.7	12 31	1.6
35	7 8	17 10	0 28	1 29	2 49	2.6	12 46	1.7
30	6 57	17 21	0 26	1 24	2 37	2.5	13 0	1.8
20	6 38	17 40	0 24	1 18	2 15	2.4	13 23	2.0
10	6 21	17 57	0 22	1 14	1 56	2.2	13 44	2.1
0	6 5	18 13	0 22	1 14	1 39	2.1	14 3	2.2
10	5 49	18 28	0 23	1 16	1 21	2.0	14 21	2.3
20	5 32	18 46	0 24	1 22	1 3	1.8	14 42	2.4
30	5 12	19 5	0 27	1 33	0 42	1.7	15 6	2.5
35	5 1	19 17	0 29	1 43	0 30	1.6	15 20	2.6
40	4 47	19 30	0 32	1 56	0 16	1.5	15 36	2.7
45	4 31	19 46	0 36	2 19	...	...	15 55	2.9
50	4 11	20 6	0 42	3 16	...	...	16 19	3.0
55	3 45	20 32	0 52	...	23 31	1.3	16 52	3.3
60	3 8	21 8	1 16	...	22 40	.6	17 42	4.1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 8 46.8	-.9	16.3	T _m	7 50	2.2	55.2 15.0
12	- 8 57.8	T _{m☉}	12 h 9.0 min	Starost	24.4 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 29	.1	45	-3.8	♄	9 4	.0	111	-1.7
♂	10 18	.1	92	1.5	♂	2 13	.0	214	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	42.8	-21	14.0	114	3.8	157	33.0	-18	14.0	205	34.2	-23	53.3	
2	207	42.3	-21	13.1	144	8.7	187	31.6	-18	12.2	235	35.1	-23	53.4	
4	237	41.9	-21	12.2	174	13.6	217	30.2	-18	10.4	265	36.0	-23	53.5	
6	267	41.4	-21	11.3	204	18.6	247	28.8	-18	8.7	295	37.0	-23	53.6	
8	297	41.0	-21	10.4	234	23.5	277	27.4	-18	6.9	325	37.9	-23	53.6	
10	327	40.5	-21	9.4	264	28.4	307	26.1	-18	5.1	355	38.8	-23	53.7	
12	357	40.1	-21	8.5	294	33.3	337	24.7	-18	3.3	25	39.7	-23	53.8	
14	27	39.6	-21	7.6	324	38.3	7	23.3	-18	1.5	55	40.6	-23	53.9	
16	57	39.2	-21	6.7	354	43.2	37	22.0	-17	59.7	85	41.5	-23	54.0	
18	87	38.7	-21	5.8	24	48.1	67	20.6	-17	57.9	115	42.5	-23	54.1	
20	117	38.3	-21	4.8	54	53.1	97	19.2	-17	56.1	145	43.4	-23	54.1	
22	147	37.9	-21	3.9	84	58.0	127	17.9	-17	54.3	175	44.3	-23	54.2	
Δ		-2		5				-7		9			5		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 48	15 31	0 53	2 37	6 36	3.9	10 41	.9
55	8 16	16 3	0 43	2 13	5 36	3.2	11 42	1.6
50	7 53	16 26	0 37	1 56	4 58	2.9	12 20	1.9
45	7 35	16 44	0 33	1 44	4 31	2.8	12 48	2.0
40	7 20	16 59	0 30	1 36	4 10	2.7	13 10	2.1
35	7 8	17 11	0 28	1 29	3 52	2.6	13 28	2.1
30	6 57	17 22	0 26	1 24	3 37	2.6	13 44	2.2
20	6 38	17 41	0 24	1 17	3 12	2.5	14 11	2.2
10	6 21	17 57	0 22	1 14	2 50	2.4	14 34	2.3
0	6 6	18 13	0 22	1 14	2 29	2.3	14 55	2.4
10	5 50	18 29	0 23	1 16	2 9	2.2	15 17	2.4
20	5 33	18 46	0 24	1 22	1 47	2.1	15 40	2.5
30	5 13	19 5	0 27	1 33	1 22	2.0	16 7	2.5
35	5 2	19 17	0 29	1 42	1 8	1.9	16 23	2.6
40	4 48	19 30	0 32	1 56	0 51	1.8	16 41	2.6
45	4 32	19 46	0 36	2 18	0 31	1.7	17 4	2.7
50	4 13	20 5	0 42	3 12	0 5	1.6	17 32	2.7
55	3 47	20 31	0 52	:::	:::	.0	18 12	2.9
60	3 10	21 7	1 15	:::	22 54	1.7	19 19	3.3
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	234	7.0	94	-25	37.0	-69	224	34.0	-21	24.1	327	38.6	14	48.3		
2	263	3.8	92	-25	50.7	-66	254	37.9	-21	24.2	357	43.9	14	48.4		
4	292	.1	90	-26	3.9	-63	284	41.9	-21	24.4	27	49.1	14	48.6		
6	320	56.1	88	-26	16.6	-61	314	45.8	-21	24.5	57	54.4	14	48.7		
8	349	51.6	86	-26	28.7	-58	344	49.7	-21	24.6	87	59.6	14	48.8		
10	18	46.8	84	-26	40.3	-55	14	53.6	-21	24.8	118	4.9	14	48.9		
12	47	41.6	82	-26	51.4	-53	44	57.5	-21	24.9	148	10.1	14	49.0		
14	76	35.9	80	-27	1.9	-50	75	1.5	-21	25.0	178	15.3	14	49.2		
16	105	29.9	78	-27	11.9	-47	105	5.4	-21	25.2	208	20.6	14	49.3		
18	134	23.6	76	-27	21.3	-44	135	9.3	-21	25.3	238	25.8	14	49.4		
20	163	16.8	75	-27	30.0	-41	165	13.2	-21	25.4	268	31.1	14	49.5		
22	192	9.7	73	-27	38.2	-38	195	17.1	-21	25.6	298	36.3	14	49.7		
Δ							20			-1	26				1	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 9 8.8	-.9	16.3	T _m	8 42	2.3	55.8	15.2
12	- 9 19.5	T _{m☉}	12 h 9.3 min	Starost	25.4 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	13 30	.1	43	-3.8	♃	9 1	.0	110	-1.7
♂	10 17	.1	92	1.4	♄	2 9	.0	214	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	37.4	-21	3.0	115	2.9	157	16.5	-17	52.5	205	45.2	-23	54.3	
2	207	37.0	-21	2.0	145	7.8	187	15.1	-17	50.7	235	46.1	-23	54.4	
4	237	36.5	-21	1.1	175	12.8	217	13.8	-17	48.9	265	47.0	-23	54.4	
6	267	36.1	-21	.2	205	17.7	247	12.4	-17	47.1	295	47.9	-23	54.5	
8	297	35.7	-20	59.2	235	22.6	277	11.1	-17	45.3	325	48.9	-23	54.6	
10	327	35.2	-20	58.3	265	27.6	307	9.7	-17	43.4	355	49.8	-23	54.6	
12	357	34.8	-20	57.3	295	32.5	337	8.4	-17	41.6	25	50.7	-23	54.7	
14	27	34.4	-20	56.4	325	37.4	7	7.1	-17	39.8	55	51.6	-23	54.8	
16	57	34.0	-20	55.4	355	42.3	37	5.7	-17	38.0	85	52.5	-23	54.8	
18	87	33.5	-20	54.5	25	47.3	67	4.4	-17	36.1	115	53.4	-23	54.9	
20	117	33.1	-20	53.5	55	52.2	97	3.0	-17	34.3	145	54.3	-23	54.9	
22	147	32.7	-20	52.5	85	57.1	127	1.7	-17	32.4	175	55.2	-23	55.0	
Δ		-2		5				-7		9			5		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 47	15 33	0 53	2 37	8 10	2.6	11 3	2.6
55	8 15	16 5	0 43	2 12	6 52	2.5	12 21	2.5
50	7 52	16 28	0 37	1 56	6 9	2.5	13 5	2.5
45	7 34	16 45	0 33	1 44	5 38	2.5	13 35	2.5
40	7 20	16 60	0 30	1 36	5 15	2.5	13 59	2.5
35	7 7	17 12	0 27	1 29	4 55	2.5	14 19	2.5
30	6 57	17 23	0 26	1 24	4 39	2.5	14 36	2.5
20	6 38	17 42	0 24	1 17	4 11	2.5	15 4	2.5
10	6 21	17 58	0 22	1 14	3 46	2.4	15 29	2.5
0	6 6	18 13	0 22	1 14	3 24	2.4	15 52	2.5
10	5 50	18 29	0 23	1 16	3 2	2.4	16 14	2.4
20	5 34	18 46	0 24	1 22	2 38	2.4	16 39	2.4
30	5 14	19 5	0 27	1 33	2 10	2.3	17 7	2.4
35	5 3	19 16	0 29	1 42	1 54	2.3	17 24	2.4
40	4 49	19 29	0 32	1 55	1 35	2.3	17 44	2.3
45	4 34	19 45	0 35	2 17	1 12	2.3	18 8	2.3
50	4 14	20 4	0 41	3 8	0 43	2.2	18 38	2.2
55	3 49	20 29	0 51	:::	0 2	2.1	19 22	2.1
60	3 13	21 5	1 13	:::	23 34	3.5	20 39	1.7
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	221	2.3	71	-27	45.8	-35	225	21.1	-21	25.7	328	41.6	14	49.8		
2	249	54.6	70	-27	52.8	-32	255	25.0	-21	25.8	358	46.8	14	49.9		
4	278	46.5	68	-27	59.1	-29	285	28.9	-21	25.9	28	52.1	14	50.0		
6	307	38.1	67	-28	4.8	-25	315	32.8	-21	26.1	58	57.3	14	50.1		
8	336	29.4	65	-28	9.9	-22	345	36.8	-21	26.2	89	2.6	14	50.3		
10	5	20.4	64	-28	14.3	-19	15	40.7	-21	26.3	119	7.8	14	50.4		
12	34	11.2	63	-28	18.1	-16	45	44.6	-21	26.5	149	13.1	14	50.5		
14	63	1.7	61	-28	21.2	-12	75	48.5	-21	26.6	179	18.3	14	50.6		
16	91	52.0	60	-28	23.6	-9	105	52.5	-21	26.7	209	23.6	14	50.8		
18	120	42.0	59	-28	25.4	-5	135	56.4	-21	26.9	239	28.8	14	50.9		
20	149	31.8	58	-28	26.5	-2	166	.3	-21	27.0	269	34.1	14	51.0		
22	178	21.4	57	-28	26.9	2	196	4.2	-21	27.1	299	39.3	14	51.1		
Δ							20			-1	26				1	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S _☉		δ _☉		S _♈		S _♀		δ _♀		S _♂		δ _♂	
0	177	32.2	-20	51.6	116	2.1	157	.4	-17	30.6	205	56.2	-23	55.0
2	207	31.8	-20	50.6	146	7.0	186	59.1	-17	28.7	235	57.1	-23	55.1
4	237	31.4	-20	49.6	176	11.9	216	57.7	-17	26.9	265	58.0	-23	55.1
6	267	31.0	-20	48.7	206	16.8	246	56.4	-17	25.0	295	58.9	-23	55.2
8	297	30.6	-20	47.7	236	21.8	276	55.1	-17	23.2	325	59.8	-23	55.2
10	327	30.1	-20	46.7	266	26.7	306	53.8	-17	21.3	356	.7	-23	55.3
12	357	29.7	-20	45.7	296	31.6	336	52.4	-17	19.4	26	1.6	-23	55.3
14	27	29.3	-20	44.7	326	36.6	6	51.1	-17	17.5	56	2.5	-23	55.4
16	57	28.9	-20	43.8	356	41.5	36	49.8	-17	15.7	86	3.4	-23	55.4
18	87	28.5	-20	42.8	26	46.4	66	48.5	-17	13.8	116	4.3	-23	55.4
20	117	28.1	-20	41.8	56	51.3	96	47.2	-17	11.9	146	5.2	-23	55.5
22	147	27.7	-20	40.8	86	56.3	126	45.9	-17	10.0	176	6.1	-23	55.5
Δ		-2		5				-7		9		5		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 45	15 35	0 52	2 36	9 11	1.0	12 5	4.2
55	8 14	16 7	0 43	2 12	7 53	1.7	13 23	3.4
50	7 51	16 29	0 37	1 56	7 9	1.9	14 6	3.2
45	7 34	16 47	0 33	1 44	6 39	2.1	14 36	3.0
40	7 19	17 1	0 30	1 35	6 15	2.2	14 60	2.9
35	7 7	17 13	0 27	1 29	5 55	2.2	15 19	2.8
30	6 56	17 24	0 26	1 24	5 38	2.3	15 36	2.8
20	6 38	17 42	0 24	1 17	5 9	2.4	16 4	2.6
10	6 22	17 58	0 22	1 14	4 45	2.4	16 28	2.6
0	6 6	18 14	0 22	1 14	4 22	2.5	16 51	2.5
10	5 51	18 29	0 23	1 16	3 59	2.5	17 13	2.4
20	5 34	18 46	0 24	1 22	3 35	2.6	17 37	2.3
30	5 15	19 5	0 27	1 33	3 7	2.6	18 5	2.1
35	5 4	19 16	0 29	1 42	2 50	2.7	18 21	2.1
40	4 51	19 29	0 31	1 55	2 30	2.7	18 40	2.0
45	4 35	19 44	0 35	2 16	2 6	2.8	19 3	1.8
50	4 16	20 3	0 41	3 5	1 35	2.9	19 32	1.7
55	3 51	20 28	0 51	:::	0 52	3.0	20 12	1.4
60	3 15	21 3	1 12	:::	.. . .	.0	21 20	.6

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	207	10.9	56	-28	26.6	5	226	8.2	-21	27.2	329	44.6	14	51.3
2	236	.2	56	-28	25.5	9	256	12.1	-21	27.4	359	49.8	14	51.4
4	264	49.3	55	-28	23.8	12	286	16.0	-21	27.5	29	55.1	14	51.5
6	293	38.4	55	-28	21.4	16	316	20.0	-21	27.6	60	.3	14	51.6
8	322	27.3	54	-28	18.3	19	346	23.9	-21	27.7	90	5.6	14	51.8
10	351	16.1	54	-28	14.5	23	16	27.8	-21	27.9	120	10.8	14	51.9
12	20	4.8	53	-28	9.9	26	46	31.8	-21	28.0	150	16.1	14	52.0
14	48	53.5	53	-28	4.7	30	76	35.7	-21	28.1	180	21.4	14	52.1
16	77	42.2	53	-27	58.7	33	106	39.6	-21	28.3	210	26.6	14	52.3
18	106	30.8	53	-27	52.0	37	136	43.6	-21	28.4	240	31.9	14	52.4
20	135	19.5	53	-27	44.6	41	166	47.5	-21	28.5	270	37.1	14	52.5
22	164	8.1	53	-27	36.4	44	196	51.4	-21	28.6	300	42.4	14	52.6
Δ							20			-1		26		1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	'	h min	min	'	
00	- 9 50.8	-.8	16.3	T _m	10 36	2.5	57.2	15.6
12	-10 .8	T _{m☉}	12 h 10.0 min	Starost	27.4 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 33	.1	41	-3.8	♄	8 54	.0	110	-1.7
♂	10 16	.1	90	1.4	♂	2 1	.0	214	.2

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S _☉		δ _☉		S _♈		S _♀		δ _♀		S _♂		δ _♂	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	177	27.2	-20	39.8	117	1.2	156	44.6	-17	8.1	206	7.0	-23	55.5
2	207	26.8	-20	38.8	147	6.1	186	43.3	-17	6.2	236	8.0	-23	55.6
4	237	26.4	-20	37.8	177	11.1	216	42.0	-17	4.4	266	8.9	-23	55.6
6	267	26.0	-20	36.8	207	16.0	246	40.7	-17	2.5	296	9.8	-23	55.6
8	297	25.6	-20	35.8	237	20.9	276	39.4	-17	.6	326	10.7	-23	55.7
10	327	25.2	-20	34.7	267	25.8	306	38.1	-16	58.6	356	11.6	-23	55.7
12	357	24.8	-20	33.7	297	30.8	336	36.8	-16	56.7	26	12.5	-23	55.7
14	27	24.4	-20	32.7	327	35.7	6	35.5	-16	54.8	56	13.4	-23	55.7
16	57	24.0	-20	31.7	357	40.6	36	34.2	-16	52.9	86	14.3	-23	55.7
18	87	23.6	-20	30.7	27	45.6	66	33.0	-16	51.0	116	15.2	-23	55.8
20	117	23.2	-20	29.6	57	50.5	96	31.7	-16	49.1	146	16.1	-23	55.8
22	147	22.8	-20	28.6	87	55.4	126	30.4	-16	47.2	176	17.0	-23	55.8
Δ		-2		5				-6		10		5		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 43	15 38	0 52	2 35	9 34	.3	13 46	4.7
55	8 13	16 8	0 43	2 11	8 34	1.1	14 45	3.9
50	7 51	16 31	0 37	1 55	7 56	1.4	15 22	3.5
45	7 33	16 48	0 33	1 44	7 28	1.6	15 48	3.3
40	7 19	17 2	0 30	1 35	7 6	1.8	16 10	3.1
35	7 7	17 14	0 27	1 29	6 48	1.9	16 27	3.0
30	6 56	17 25	0 26	1 24	6 33	2.0	16 42	2.9
20	6 38	17 43	0 24	1 17	6 6	2.2	17 8	2.7
10	6 22	17 59	0 22	1 14	5 43	2.3	17 29	2.5
0	6 7	18 14	0 22	1 14	5 22	2.4	17 50	2.4
10	5 51	18 29	0 23	1 16	5 0	2.6	18 10	2.2
20	5 35	18 46	0 24	1 21	4 37	2.7	18 31	2.1
30	5 16	19 5	0 27	1 32	4 10	2.8	18 56	1.9
35	5 5	19 16	0 29	1 41	3 54	2.9	19 11	1.8
40	4 52	19 28	0 31	1 54	3 36	3.0	19 27	1.6
45	4 36	19 44	0 35	2 15	3 13	3.2	19 47	1.4
50	4 17	20 2	0 41	3 1	2 45	3.4	20 12	1.2
55	3 53	20 27	0 50	:::	2 5	3.7	20 45	.9
60	3 18	21 1	1 11	:::	0 59	4.5	21 34	.2

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	192	56.8	54	-27	27.6	48	226	55.4	-21	28.8	330	47.6	14	52.8
2	221	45.5	54	-27	18.0	51	256	59.3	-21	28.9	0	52.9	14	52.9
4	250	34.3	54	-27	7.8	55	287	3.2	-21	29.0	30	58.2	14	53.0
6	279	23.2	55	-26	56.8	58	317	7.2	-21	29.1	61	3.4	14	53.1
8	308	12.2	55	-26	45.1	62	347	11.1	-21	29.3	91	8.7	14	53.3
10	337	1.3	56	-26	32.7	65	17	15.1	-21	29.4	121	13.9	14	53.4
12	5	50.5	57	-26	19.7	69	47	19.0	-21	29.5	151	19.2	14	53.5
14	34	39.9	58	-26	5.9	72	77	22.9	-21	29.6	181	24.5	14	53.6
16	63	29.4	59	-25	51.4	76	107	26.9	-21	29.8	211	29.7	14	53.8
18	92	19.1	59	-25	36.3	79	137	30.8	-21	29.9	241	35.0	14	53.9
20	121	9.0	60	-25	20.5	82	167	34.8	-21	30.0	271	40.3	14	54.0
22	149	59.1	61	-25	4.1	86	197	38.7	-21	30.1	301	45.5	14	54.2
Δ							20			-1		26		1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	'	h min	min	'	
00	-10 10.8	-.8	16.3	T _m	11 36	2.4	58.0	15.8
12	-10 20.5	T _{m☉}	12 h 10.3 min	Starost	28.4 d	Faza	●	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 22.4	-20 27.6	118 .3	156 29.1	-16 45.2	206 17.9	-23 55.8
2	207 22.0	-20 26.5	148 5.3	186 27.8	-16 43.3	236 18.8	-23 55.8
4	237 21.6	-20 25.5	178 10.2	216 26.6	-16 41.4	266 19.7	-23 55.8
6	267 21.2	-20 24.5	208 15.1	246 25.3	-16 39.4	296 20.6	-23 55.8
8	297 20.9	-20 23.4	238 20.0	276 24.0	-16 37.5	326 21.5	-23 55.8
10	327 20.5	-20 22.4	268 25.0	306 22.8	-16 35.5	356 22.4	-23 55.8
12	357 20.1	-20 21.3	298 29.9	336 21.5	-16 33.6	26 23.3	-23 55.8
14	27 19.7	-20 20.3	328 34.8	6 20.3	-16 31.6	56 24.2	-23 55.8
16	57 19.3	-20 19.2	358 39.8	36 19.0	-16 29.7	86 25.1	-23 55.8
18	87 18.9	-20 18.2	28 44.7	66 17.7	-16 27.7	116 26.0	-23 55.8
20	117 18.5	-20 17.1	58 49.6	96 16.5	-16 25.8	146 26.9	-23 55.8
22	147 18.2	-20 16.1	88 54.5	126 15.2	-16 23.8	176 27.8	-23 55.8
Δ	-2	5		-6	10	5	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 42	15 40	0 52	2 35	9 41	.1	15 39	4.6
55	8 12	16 10	0 42	2 11	8 59	.7	16 19	4.0
50	7 50	16 32	0 37	1 55	8 30	1.0	16 47	3.7
45	7 33	16 49	0 32	1 44	8 8	1.3	17 8	3.4
40	7 18	17 3	0 30	1 35	7 50	1.5	17 25	3.2
35	7 6	17 15	0 27	1 29	7 34	1.6	17 39	3.0
30	6 56	17 26	0 26	1 24	7 21	1.8	17 51	2.9
20	6 38	17 44	0 23	1 17	6 58	2.0	18 12	2.6
10	6 22	17 59	0 22	1 14	6 38	2.2	18 30	2.4
0	6 7	18 14	0 22	1 13	6 20	2.3	18 47	2.3
10	5 52	18 29	0 23	1 16	6 1	2.5	19 4	2.1
20	5 36	18 46	0 24	1 21	5 41	2.7	19 21	1.9
30	5 17	19 4	0 27	1 32	5 18	2.9	19 41	1.6
35	5 6	19 15	0 29	1 41	5 5	3.0	19 53	1.5
40	4 53	19 28	0 31	1 54	4 49	3.2	20 6	1.3
45	4 38	19 43	0 35	2 14	4 30	3.4	20 22	1.1
50	4 19	20 2	0 41	2 58	4 6	3.6	20 41	.9
55	3 55	20 26	0 50	:::	3 35	4.0	21 5	.6
60	3 20	20 59	1 10	:::	2 47	4.7	21 39	.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 49.4	63 -24	47.0	89	227 42.6	-21 30.3	331 50.8	14 54.3
2	207 39.9	64 -24	29.2	92	257 46.6	-21 30.4	1 56.0	14 54.4
4	236 30.7	65 -24	10.8	95	287 50.5	-21 30.5	32 1.3	14 54.5
6	265 21.6	66 -23	51.8	98	317 54.5	-21 30.6	62 6.6	14 54.7
8	294 12.9	67 -23	32.2	101	347 58.4	-21 30.8	92 11.8	14 54.8
10	323 4.4	69 -23	11.9	104	18 2.4	-21 30.9	122 17.1	14 54.9
12	351 56.1	70 -22	51.1	107	48 6.3	-21 31.0	152 22.4	14 55.0
14	20 48.1	71 -22	29.6	110	78 10.3	-21 31.1	182 27.6	14 55.2
16	49 40.4	73 -22	7.6	113	108 14.2	-21 31.2	212 32.9	14 55.3
18	78 33.0	74 -21	45.0	116	138 18.2	-21 31.4	242 38.2	14 55.4
20	107 25.9	76 -21	21.9	118	168 22.1	-21 31.5	272 43.4	14 55.6
22	136 19.0	77 -20	58.2	121	198 26.1	-21 31.6	302 48.7	14 55.7
Δ					20	-1	26	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-10 30.1	-.8	16.3	T _m	12 34	2.3	58.6	16.0	
12	-10 39.4	T _{m☉}	12 h 10.7 min	Starost	29.4 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 35	.1	38	-3.8	♃	8 48	.0	110	-1.7
♂	10 14	.1	88	1.4	♄	1 52	.0	214	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 17.8	-20 15.0	118 59.5	156 14.0	-16 21.8	206 28.7	-23 55.8
2	207 17.4	-20 13.9	149 4.4	186 12.7	-16 19.9	236 29.6	-23 55.8
4	237 17.0	-20 12.9	179 9.3	216 11.5	-16 17.9	266 30.5	-23 55.8
6	267 16.7	-20 11.8	209 14.3	246 10.3	-16 15.9	296 31.4	-23 55.8
8	297 16.3	-20 10.7	239 19.2	276 9.0	-16 14.0	326 32.3	-23 55.8
10	327 15.9	-20 9.6	269 24.1	306 7.8	-16 12.0	356 33.2	-23 55.7
12	357 15.5	-20 8.6	299 29.0	336 6.5	-16 10.0	26 34.1	-23 55.7
14	27 15.2	-20 7.5	329 34.0	6 5.3	-16 8.0	56 35.0	-23 55.7
16	57 14.8	-20 6.4	359 38.9	36 4.1	-16 6.0	86 35.9	-23 55.7
18	87 14.4	-20 5.3	29 43.8	66 2.8	-16 4.0	116 36.8	-23 55.7
20	117 14.1	-20 4.2	59 48.8	96 1.6	-16 2.0	146 37.7	-23 55.6
22	147 13.7	-20 3.1	89 53.7	126 .4	-16 .0	176 38.6	-23 55.6
Δ	-2	5		-6	10	4	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 40	15 43	0 51	2 34	9 44	.0	17 30	4.4
55	8 10	16 12	0 42	2 11	9 16	.5	17 56	4.0
50	7 49	16 34	0 36	1 55	8 55	.8	18 15	3.6
45	7 32	16 51	0 32	1 43	8 38	1.0	18 29	3.4
40	7 18	17 4	0 29	1 35	8 25	1.2	18 42	3.2
35	7 6	17 16	0 27	1 28	8 13	1.4	18 52	3.0
30	6 56	17 26	0 26	1 23	8 3	1.5	19 1	2.8
20	6 38	17 44	0 23	1 17	7 46	1.8	19 16	2.6
10	6 22	17 60	0 22	1 14	7 30	2.0	19 29	2.3
0	6 7	18 15	0 22	1 13	7 16	2.2	19 41	2.1
10	5 52	18 29	0 22	1 16	7 1	2.4	19 53	1.9
20	5 36	18 45	0 24	1 21	6 46	2.6	20 6	1.7
30	5 18	19 4	0 26	1 32	6 28	2.9	20 21	1.5
35	5 7	19 15	0 28	1 41	6 17	3.0	20 29	1.3
40	4 54	19 27	0 31	1 53	6 5	3.2	20 38	1.1
45	4 39	19 42	0 35	2 13	5 51	3.4	20 49	1.0
50	4 21	20 0	0 40	2 55	5 33	3.7	21 2	.7
55	3 57	20 24	0 50	:::	5 11	4.0	21 19	.4
60	3 23	20 57	1 9	:::	4 39	4.5	21 40	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	165 12.5	79 -20	34.0	124	228 30.0	-21 31.7	332 54.0	14 55.8
2	194 6.2	80 -20	9.3	126	258 34.0	-21 31.9	2 59.2	14 55.9
4	223 .3	82 -19	44.1	129	288 37.9	-21 32.0	33 4.5	14 56.1
6	251 54.6	83 -19	18.3	131	318 41.9	-21 32.1	63 9.8	14 56.2
8	280 49.2	85 -18	52.1	133	348 45.8	-21 32.2	93 15.1	14 56.3
10	309 44.1	86 -18	25.5	136	18 49.8	-21 32.3	123 20.3	14 56.5
12	338 39.4	88 -17	58.3	138	48 53.7	-21 32.5	153 25.6	14 56.6
14	7 34.9	89 -17	30.8	140	78 57.7	-21 32.6	183 30.9	14 56.7
16	36 30.7	90 -17	2.8	142	109 1.6	-21 32.7	213 36.1	14 56.9
18	65 26.8	92 -16	34.4	144	139 5.6	-21 32.8	243 41.4	14 57.0
20	94 23.2	93 -16	5.6	146	169 9.5	-21 32.9	273 46.7	14 57.1
22	123 19.8	95 -15	36.4	148	199 13.5	-21 33.1	303 52.0	14 57.2
Δ					20	-1	26	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-10 48.7	-.7	16.3	T _m	13 29	2.2	59.2	16.1	
12	-10 57.6	T _{m☉}	12 h 11.0 min	Starost	.8 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 36	.1	37	-3.8	♃	8 45	.0	110	-1.7
♂	10 14	.1	87	1.4	♄	1 48	.0	214	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	13.3	-20	2.0	119	58.6	155	59.2	-15	58.0	206	39.5	-23	55.6	
2	207	13.0	-20	.9	150	3.5	185	58.0	-15	56.0	236	40.4	-23	55.5	
4	237	12.6	-19	59.8	180	8.5	215	56.7	-15	54.0	266	41.3	-23	55.5	
6	267	12.2	-19	58.7	210	13.4	245	55.5	-15	52.0	296	42.2	-23	55.5	
8	297	11.9	-19	57.6	240	18.3	275	54.3	-15	50.0	326	43.1	-23	55.4	
10	327	11.5	-19	56.5	270	23.3	305	53.1	-15	48.0	356	43.9	-23	55.4	
12	357	11.2	-19	55.4	300	28.2	335	51.9	-15	45.9	26	44.8	-23	55.4	
14	27	10.8	-19	54.3	330	33.1	5	50.7	-15	43.9	56	45.7	-23	55.3	
16	57	10.5	-19	53.2	0	38.0	35	49.5	-15	41.9	86	46.6	-23	55.3	
18	87	10.1	-19	52.1	30	43.0	65	48.3	-15	39.9	116	47.5	-23	55.2	
20	117	9.8	-19	51.0	60	47.9	95	47.1	-15	37.8	146	48.4	-23	55.2	
22	147	9.4	-19	49.8	90	52.8	125	45.9	-15	35.8	176	49.3	-23	55.1	
Δ		-2		6				-6		10			4		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 38	15 45	0 51	2 33	9 44	.0	19 17	4.3
55	8 9	16 14	0 42	2 10	9 27	.4	19 31	3.9
50	7 48	16 35	0 36	1 55	9 14	.7	19 42	3.5
45	7 31	16 52	0 32	1 43	9 3	.9	19 50	3.3
40	7 17	17 6	0 29	1 35	8 54	1.1	19 57	3.1
35	7 6	17 17	0 27	1 28	8 47	1.2	20 3	2.9
30	6 55	17 27	0 26	1 23	8 40	1.4	20 8	2.8
20	6 38	17 45	0 23	1 17	8 28	1.7	20 17	2.5
10	6 22	18 0	0 22	1 14	8 18	1.9	20 25	2.3
0	6 8	18 15	0 22	1 13	8 8	2.1	20 32	2.0
10	5 53	18 30	0 22	1 15	7 59	2.3	20 40	1.8
20	5 37	18 45	0 24	1 21	7 48	2.5	20 47	1.6
30	5 18	19 4	0 26	1 32	7 36	2.8	20 56	1.4
35	5 8	19 14	0 28	1 40	7 29	2.9	21 0	1.2
40	4 55	19 27	0 31	1 53	7 22	3.1	21 6	1.0
45	4 40	19 41	0 35	2 12	7 12	3.3	21 12	.8
50	4 22	19 59	0 40	2 53	7 1	3.6	21 20	.6
55	3 59	20 23	0 49	:::	6 47	3.9	21 29	.3
60	3 26	20 55	1 8	:::	6 28	4.3	21 40	.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	152	16.8	96	-15	6.8	150	229	17.5	-21	33.2	333	57.2	14	57.4		
2	181	14.0	97	-14	36.9	151	259	21.4	-21	33.3	4	2.5	14	57.5		
4	210	11.5	99	-14	6.7	153	289	25.4	-21	33.4	34	7.8	14	57.6		
6	239	9.2	100	-13	36.1	155	319	29.3	-21	33.5	64	13.0	14	57.8		
8	268	7.2	101	-13	5.2	156	349	33.3	-21	33.7	94	18.3	14	57.9		
10	297	5.5	102	-12	34.0	157	19	37.3	-21	33.8	124	23.6	14	58.0		
12	326	4.0	104	-12	2.5	159	49	41.2	-21	33.9	154	28.9	14	58.2		
14	355	2.7	105	-11	30.7	160	79	45.2	-21	34.0	184	34.2	14	58.3		
16	24	1.7	106	-10	58.7	161	109	49.1	-21	34.1	214	39.4	14	58.4		
18	53	.9	107	-10	26.4	163	139	53.1	-21	34.2	244	44.7	14	58.5		
20	82	.3	108	-9	53.9	164	169	57.1	-21	34.3	274	50.0	14	58.7		
22	110	59.9	109	-9	21.1	165	200	1.0	-21	34.5	304	55.3	14	58.8		
Δ								20		-1			26		1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	-11	6.5	-.7	16.3	T _m	14 21	2.0	59.5	16.2
12	-11	15.0	T _{m☉}	12 h 11.3 min	Starost	1.8 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 37	.1	36	-3.8	♃	8 42	.0	109	-1.7
♂	10 13	.1	87	1.4	♄	1 44	.0	214	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	9.1	-19	48.7	120	57.8	155	44.7	-15	33.8	206	50.2	-23	55.1	
2	207	8.7	-19	47.6	151	2.7	185	43.5	-15	31.7	236	51.1	-23	55.0	
4	237	8.4	-19	46.4	181	7.6	215	42.3	-15	29.7	266	52.0	-23	55.0	
6	267	8.0	-19	45.3	211	12.5	245	41.1	-15	27.6	296	52.9	-23	54.9	
8	297	7.7	-19	44.2	241	17.5	275	39.9	-15	25.6	326	53.8	-23	54.9	
10	327	7.4	-19	43.0	271	22.4	305	38.7	-15	23.5	356	54.7	-23	54.8	
12	357	7.0	-19	41.9	301	27.3	335	37.6	-15	21.5	26	55.6	-23	54.8	
14	27	6.7	-19	40.8	331	32.3	5	36.4	-15	19.4	56	56.4	-23	54.7	
16	57	6.3	-19	39.6	1	37.2	35	35.2	-15	17.3	86	57.3	-23	54.6	
18	87	6.0	-19	38.5	31	42.1	65	34.0	-15	15.3	116	58.2	-23	54.6	
20	117	5.7	-19	37.3	61	47.0	95	32.9	-15	13.2	146	59.1	-23	54.5	
22	147	5.3	-19	36.2	91	52.0	125	31.7	-15	11.1	177	.0	-23	54.4	
Δ		-2		6				-6		10			4		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 36	15 48	0 51	2 33	9 43	.0	20 60	4.2
55	8 8	16 16	0 42	2 10	9 36	.3	21 4	3.8
50	7 47	16 37	0 36	1 54	9 30	.6	21 7	3.5
45	7 30	16 53	0 32	1 43	9 25	.8	21 9	3.3
40	7 17	17 7	0 29	1 35	9 20	1.0	21 11	3.1
35	7 5	17 18	0 27	1 28	9 17	1.2	21 13	2.9
30	6 55	17 28	0 26	1 23	9 14	1.3	21 15	2.7
20	6 38	17 46	0 23	1 17	9 8	1.6	21 17	2.5
10	6 22	18 1	0 22	1 14	9 3	1.8	21 20	2.2
0	6 8	18 15	0 22	1 13	8 59	2.0	21 22	2.0
10	5 53	18 30	0 22	1 15	8 54	2.2	21 24	1.8
20	5 38	18 45	0 24	1 21	8 49	2.5	21 26	1.6
30	5 19	19 3	0 26	1 31	8 43	2.7	21 28	1.3
35	5 9	19 14	0 28	1 40	8 40	2.9	21 29	1.2
40	4 56	19 26	0 31	1 52	8 36	3.1	21 31	1.0
45	4 42	19 41	0 35	2 11	8 32	3.3	21 32	.8
50	4 24	19 58	0 40	2 50	8 27	3.5	21 34	.6
55	4 1	20 21	0 49	:::	8 21	3.8	21 37	.3
60	3 28	20 53	1 6	:::	8 12	4.2	21 40	.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	139	59.7	110	-8	48.2	166	230	5.0	-21	34.6	335	.5	14	58.9		
2	168	59.7	111	-8	15.1	166	260	9.0	-21	34.7	5	5.8	14	59.1		
4	197	59.8	112	-7	41.8	167	290	12.9	-21	34.8	35	11.1	14	59.2		
6	227	.2	112	-7	8.3	168	320	16.9	-21	34.9	65	16.4	14	59.3		
8	256	.6	113	-6	34.7	169	350	20.9	-21	35.1	95	21.7	14	59.5		
10	285	1.3	114	-6	1.0	169	20	24.8	-21	35.2	125	26.9	14	59.6		
12	314	2.1	115	-5	27.1	170	50	28.8	-21	35.3	155	32.2	14	59.7		
14	343	3.0	115	-4	53.1	170	80	32.8	-21	35.4	185	37.5	14	59.9		
16	12	4.0	116	-4	19.1	171	110	36.7	-21	35.5	215	42.8	14	60.0		
18	41	5.2	116	-3	44.9	171	140	40.7	-21	35.6	245	48.1	15	.1		
20	70	6.4	117	-3	10.7	171	170	44.7	-21	35.8	275	53.3	15	.3		
22	99	7.7	117	-2	36.4	172	200	48.6	-21	35.9	305	58.6	15	.4		
Δ								20		-1			26		1	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾ </	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	5.0	-19	35.0	121	56.9	155	30.5	-15	9.1	207	.9	-23	54.4	
2	207	4.7	-19	33.8	152	1.8	185	29.4	-15	7.0	237	1.8	-23	54.3	
4	237	4.3	-19	32.7	182	6.7	215	28.2	-15	4.9	267	2.7	-23	54.2	
6	267	4.0	-19	31.5	212	11.7	245	27.0	-15	2.8	297	3.6	-23	54.1	
8	297	3.7	-19	30.4	242	16.6	275	25.9	-15	.8	327	4.5	-23	54.1	
10	327	3.4	-19	29.2	272	21.5	305	24.7	-14	58.7	357	5.4	-23	54.0	
12	357	3.0	-19	28.0	302	26.5	335	23.6	-14	56.6	27	6.2	-23	53.9	
14	27	2.7	-19	26.8	332	31.4	5	22.4	-14	54.5	57	7.1	-23	53.8	
16	57	2.4	-19	25.7	2	36.3	35	21.3	-14	52.4	87	8.0	-23	53.7	
18	87	2.1	-19	24.5	32	41.2	65	20.1	-14	50.3	117	8.9	-23	53.6	
20	117	1.8	-19	23.3	62	46.2	95	19.0	-14	48.2	147	9.8	-23	53.6	
22	147	1.5	-19	22.1	92	51.1	125	17.8	-14	46.1	177	10.7	-23	53.5	
Δ		-2		6				-6		10			4		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 34	15 50	0 50	2 32	9 43	.0	22 40	4.2
55	8 6	16 18	0 42	2 10	9 43	.3	22 35	3.8
50	7 46	16 38	0 36	1 54	9 44	.6	22 31	3.5
45	7 29	16 55	0 32	1 43	9 44	.8	22 28	3.3
40	7 16	17 8	0 29	1 34	9 45	1.0	22 25	3.1
35	7 5	17 19	0 27	1 28	9 45	1.2	22 22	2.9
30	6 55	17 29	0 25	1 23	9 45	1.3	22 20	2.7
20	6 38	17 46	0 23	1 17	9 46	1.6	22 16	2.5
10	6 22	18 1	0 22	1 13	9 47	1.8	22 13	2.2
0	6 8	18 15	0 22	1 13	9 47	2.0	22 10	2.0
10	5 54	18 30	0 22	1 15	9 48	2.2	22 7	1.8
20	5 38	18 45	0 24	1 21	9 48	2.5	22 3	1.6
30	5 20	19 3	0 26	1 31	9 49	2.7	21 60	1.3
35	5 10	19 13	0 28	1 39	9 49	2.9	21 57	1.2
40	4 58	19 25	0 31	1 52	9 50	3.1	21 55	1.0
45	4 43	19 40	0 34	2 10	9 51	3.3	21 52	.8
50	4 26	19 57	0 40	2 47	9 51	3.5	21 48	.6
55	4 3	20 20	0 48	:::	9 52	3.8	21 44	.3
60	3 31	20 51	1 5	:::	9 54	4.2	21 39	.0

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	128	9.2	117	-2	2.1	172	230	52.6	-21	36.0	336	3.9	15	.5		
2	157	10.6	118	-1	27.7	172	260	56.6	-21	36.1	6	9.2	15	.7		
4	186	12.2	118	-0	53.4	172	291	.6	-21	36.2	36	14.5	15	.8		
6	215	13.8	118	-0	19.0	172	321	4.5	-21	36.3	66	19.7	15	.9		
8	244	15.4	118	0	15.4	172	351	8.5	-21	36.4	96	25.0	15	1.1		
10	273	17.0	118	0	49.7	172	21	12.5	-21	36.6	126	30.3	15	1.2		
12	302	18.7	118	1	24.0	171	51	16.5	-21	36.7	156	35.6	15	1.3		
14	331	20.4	118	1	58.3	171	81	20.4	-21	36.8	186	40.9	15	1.5		
16	0	22.0	118	2	32.5	171	111	24.4	-21	36.9	216	46.2	15	1.6		
18	29	23.7	118	3	6.6	170	141	28.4	-21	37.0	246	51.5	15	1.7		
20	58	25.3	118	3	40.7	170	171	32.4	-21	37.1	276	56.7	15	1.9		
22	87	26.9	118	4	14.6	169	201	36.4	-21	37.2	307	2.0	15	2.0		
Δ							20		-1		26			1		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	-11 39.8	-.6	16.3	T _m	15 58	2.0	59.7 16.3
12	-11 47.5	T _{m☉}	12 h 11.8 min	Starost	3.8 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	13 38	.1	34	-3.8	♃	8 35	.0	109	-1.7
♂	10 12	.1	85	1.4	♄	1 35	.0	214	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	1.1	-19	20.9	122	56.0	155	16.7	-14	44.0	207	11.6	-23	53.4	
2	207	.8	-19	19.7	153	1.0	185	15.5	-14	41.9	237	12.5	-23	53.3	
4	237	.5	-19	18.6	183	5.9	215	14.4	-14	39.8	267	13.3	-23	53.2	
6	267	.2	-19	17.4	213	10.8	245	13.3	-14	37.6	297	14.2	-23	53.1	
8	296	59.9	-19	16.2	243	15.7	275	12.1	-14	35.5	327	15.1	-23	53.0	
10	326	59.6	-19	15.0	273	20.7	305	11.0	-14	33.4	357	16.0	-23	52.9	
12	356	59.3	-19	13.8	303	25.6	335	9.9	-14	31.3	27	16.9	-23	52.8	
14	26	59.0	-19	12.6	333	30.5	5	8.7	-14	29.2	57	17.8	-23	52.7	
16	56	58.7	-19	11.4	3	35.5	35	7.6	-14	27.0	87	18.7	-23	52.6	
18	86	58.4	-19	10.2	33	40.4	65	6.5	-14	24.9	117	19.6	-23	52.5	
20	116	58.1	-19	8.9	63	45.3	95	5.4	-14	22.8	147	20.4	-23	52.4	
22	146	57.8	-19	7.7	93	50.2	125	4.3	-14	20.6	177	21.3	-23	52.3	
Δ		-2		6				-6		11			4		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 32	15 53	0 50	2 32	9 42	.0	.. .	.0
55	8 5	16 20	0 41	2 9	9 51	.4	.. .	.0
50	7 44	16 40	0 36	1 54	9 58	.7	23 55	3.6
45	7 29	16 56	0 32	1 43	10 4	.9	23 46	3.3
40	7 15	17 9	0 29	1 34	10 9	1.1	23 38	3.1
35	7 4	17 20	0 27	1 28	10 13	1.2	23 32	2.9
30	6 54	17 30	0 25	1 23	10 17	1.4	23 26	2.8
20	6 37	17 47	0 23	1 17	10 24	1.6	23 16	2.5
10	6 23	18 2	0 22	1 13	10 30	1.9	23 7	2.3
0	6 8	18 16	0 22	1 13	10 35	2.1	22 59	2.1
10	5 54	18 30	0 22	1 15	10 41	2.3	22 51	1.9
20	5 39	18 45	0 24	1 20	10 47	2.5	22 42	1.7
30	5 21	19 3	0 26	1 31	10 54	2.8	22 32	1.5
35	5 11	19 13	0 28	1 39	10 59	2.9	22 26	1.3
40	4 59	19 25	0 31	1 51	11 3	3.1	22 20	1.1
45	4 45	19 39	0 34	2 10	11 9	3.3	22 12	1.0
50	4 27	19 56	0 40	2 45	11 15	3.5	22 3	.7
55	4 5	20 18	0 48	:::	11 24	3.9	21 52	.4
60	3 33	20 49	1 4	:::	11 35	4.3	21 38	.0

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	116	28.4	117	4	48.5	169	231	40.3	-21	37.4	337	7.3	15	2.1		
2	145	29.9	117	5	22.2	168	261	44.3	-21	37.5	7	12.6	15	2.3		
4	174	31.3	117	5	55.8	167	291	48.3	-21	37.6	37	17.9	15	2.4		
6	203	32.6	116	6	29.2	166	321	52.3	-21	37.7	67	23.2	15	2.5		
8	232	33.8	116	7	2.5	166	351	56.3	-21	37.8	97	28.5	15	2.7		
10	261	34.9	115	7	35.6	165	22	.2	-21	37.9	127	33.7	15	2.8		
12	290	36.0	114	8	8.6	164	52	4.2	-21	38.0	157	39.0	15	2.9		
14	319	36.9	114	8	41.3	163	82	8.2	-21	38.1	187	44.3	15	3.1		
16	348	37.6	113	9	13.8	162	112	12.2	-21	38.2	217	49.6	15	3.2		
18	17	38.3	112	9	46.1	160	142	16.2	-21	38.4	247	54.9	15	3.3		
20	46	38.7	112	10	18.2	159	172	20.2	-21	38.5	278	.2	15	3.5		
22	75	39.0	111	10	50.1	158	202	24.2	-21	38.6	308	5.5	15	3.6		
Δ							20		-1		26			1		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	-11 55.3	-.6	16.3	T _m	16 47	2.1	59.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	57.5	-19	6.5	123	55.2	155	3.1	-14	18.5	207	22.2	-23	52.1
2	206	57.2	-19	5.3	154	.1	185	2.0	-14	16.3	237	23.1	-23	52.0
4	236	56.9	-19	4.1	184	5.0	215	.9	-14	14.2	267	24.0	-23	51.9
6	266	56.6	-19	2.9	214	10.0	244	59.8	-14	12.1	297	24.9	-23	51.8
8	296	56.3	-19	1.6	244	14.9	274	58.7	-14	9.9	327	25.8	-23	51.7
10	326	56.0	-19	.4	274	19.8	304	57.6	-14	7.7	357	26.7	-23	51.6
12	356	55.7	-18	59.2	304	24.7	334	56.5	-14	5.6	27	27.5	-23	51.4
14	26	55.4	-18	57.9	334	29.7	4	55.4	-14	3.4	57	28.4	-23	51.3
16	56	55.1	-18	56.7	4	34.6	34	54.3	-14	1.3	87	29.3	-23	51.2
18	86	54.9	-18	55.5	34	39.5	64	53.2	-13	59.1	117	30.2	-23	51.1
20	116	54.6	-18	54.2	64	44.5	94	52.1	-13	56.9	147	31.1	-23	50.9
22	146	54.3	-18	53.0	94	49.4	124	51.0	-13	54.8	177	32.0	-23	50.8
Δ		-1		6				-6		11		4		1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	104	39.2	110	11	21.7	157	232	28.2	-21	38.7	338	10.8	15	3.7		
2	133	39.2	109	11	53.0	155	262	32.1	-21	38.8	8	16.1	15	3.9		
4	162	38.9	108	12	24.0	154	292	36.1	-21	38.9	38	21.4	15	4.0		
6	191	38.5	107	12	54.8	152	322	40.1	-21	39.0	68	26.6	15	4.1		
8	220	37.9	106	13	25.2	151	352	44.1	-21	39.1	98	31.9	15	4.3		
10	249	37.1	105	13	55.4	149	22	48.1	-21	39.2	128	37.2	15	4.4		
12	278	36.0	104	14	25.2	147	52	52.1	-21	39.3	158	42.5	15	4.5		
14	307	34.8	102	14	54.7	146	82	56.1	-21	39.5	188	47.8	15	4.7		
16	336	33.2	101	15	23.8	144	113	.1	-21	39.6	218	53.1	15	4.8		
18	5	31.5	100	15	52.6	142	143	4.1	-21	39.7	248	58.4	15	4.9		
20	34	29.5	99	16	21.0	140	173	8.1	-21	39.8	279	3.7	15	5.1		
22	63	27.3	97	16	49.0	138	203	12.1	-21	39.9	309	9.0	15	5.2		
Δ								20		-1		26		1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 30	15 55	0 50	2 31	9 41	.0	0 24	4.4
55	8 3	16 22	0 41	2 9	9 60	.5	0 8	3.9
50	7 43	16 42	0 36	1 53	10 14	.8	...	.0
45	7 28	16 57	0 32	1 42	10 25	1.0	...	.0
40	7 15	17 10	0 29	1 34	10 35	1.2	...	.0
35	7 4	17 21	0 27	1 28	10 43	1.4	...	.0
30	6 54	17 31	0 25	1 23	10 51	1.5	...	.0
20	6 37	17 47	0 23	1 16	11 3	1.8	...	.0
10	6 23	18 2	0 22	1 13	11 14	2.0	...	.0
0	6 9	18 16	0 22	1 13	11 25	2.2	23 49	2.2
10	5 55	18 30	0 22	1 15	11 36	2.4	23 36	2.0
20	5 40	18 45	0 24	1 20	11 47	2.6	23 23	1.9
30	5 22	19 2	0 26	1 31	12 1	2.8	23 7	1.6
35	5 12	19 12	0 28	1 39	12 8	2.9	22 58	1.5
40	4 60	19 24	0 31	1 50	12 17	3.1	22 47	1.3
45	4 46	19 38	0 34	2 9	12 28	3.3	22 35	1.2
50	4 29	19 55	0 39	2 43	12 40	3.6	22 21	.9
55	4 7	20 17	0 48	:::	12 56	3.9	22 2	.6
60	3 36	20 47	1 3	:::	13 18	4.5	21 38	.0
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-12 9.9	-.6	16.3	T _m	17 37	2.2	59.3 16.2		
12	-12 16.9	T _{m☉}	12 h 12.3 min	Starost	5.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 40	.1	31	-3.8	♃	8 29	.0	109	-1.7
♂	10 10	.1	83	1.4	♄	1 27	.0	214	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	54.0	-18	51.7	124	54.3	154	49.9	-13	52.6	207	32.8	-23	50.7
2	206	53.7	-18	50.5	154	59.2	184	48.8	-13	50.4	237	33.7	-23	50.5
4	236	53.5	-18	49.2	185	4.2	214	47.7	-13	48.3	267	34.6	-23	50.4
6	266	53.2	-18	48.0	215	9.1	244	46.7	-13	46.1	297	35.5	-23	50.3
8	296	52.9	-18	46.7	245	14.0	274	45.6	-13	43.9	327	36.4	-23	50.1
10	326	52.6	-18	45.5	275	18.9	304	44.5	-13	41.7	357	37.3	-23	50.0
12	356	52.4	-18	44.2	305	23.9	334	43.4	-13	39.5	27	38.2	-23	49.8
14	26	52.1	-18	43.0	335	28.8	4	42.3	-13	37.3	57	39.0	-23	49.7
16	56	51.8	-18	41.7	5	33.7	34	41.3	-13	35.2	87	39.9	-23	49.5
18	86	51.5	-18	40.4	35	38.7	64	40.2	-13	33.0	117	40.8	-23	49.4
20	116	51.3	-18	39.2	65	43.6	94	39.1	-13	30.8	147	41.7	-23	49.2
22	146	51.0	-18	37.9	95	48.5	124	38.1	-13	28.6	177	42.6	-23	49.1
Δ		-1		6				-5		11		4		1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	92	24.7	96	17	16.7	136	233	16.1	-21	40.0	339	14.3	15	5.3		
2	121	22.0	95	17	43.9	134	263	20.1	-21	40.1	9	19.6	15	5.5		
4	150	18.9	93	18	10.7	132	293	24.1	-21	40.2	39	24.9	15	5.6		
6	179	15.6	92	18	37.1	130	323	28.1	-21	40.3	69	30.2	15	5.8		
8	208	12.0	91	19	3.0	127	353	32.1	-21	40.4	99	35.5	15	5.9		
10	237	8.1	89	19	28.5	125	23	36.1	-21	40.5	129	40.8	15	6.0		
12	266	4.0	88	19	53.5	123	53	40.1	-21	40.6	159	46.1	15	6.2		
14	294	59.5	86	20	18.1	120	83	44.1	-21	40.8	189	51.4	15	6.3		
16	323	54.8	85	20	42.1	118	113	48.1	-21	40.9	219	56.6	15	6.4		
18	352	49.8	83	21	5.7	115	143	52.1	-21	41.0	250	1.9	15	6.6		
20	21	44.5	82	21	28.8	113	173	56.1	-21	41.1	280	7.2	15	6.7		
22	50	38.9	81	21	51.3	110	204	.1	-21	41.2	310	12.5	15	6.8		
Δ								20		-1		26		1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 28	15 58	0 49	2 30	9 42	.1	2 9	4.5
55	8 2	16 24	0 41	2 8	10 12	.7	1 41	3.9
50	7 42	16 43	0 36	1 53	10 33	1.1	1 21	3.6
45	7 27	16 59	0 32	1 42	10 51	1.3	1 6	3.3
40	7 14	17 11	0 29	1 34	11 5	1.5	0 53	3.1
35	7 3	17 22	0 27	1 28	11 17	1.6	0 42	3.0
30	6 54	17 32	0 25	1 23	11 27	1.7	0 33	2.8
20	6 37	17 48	0 23	1 16	11 46	2.0	0 16	2.6
10	6 23	18 2	0 22	1 13	12 2	2.1	0 2	2.4
0	6 9	18 16	0 22	1 13	12 17	2.3	...	.0
10	5 55	18 30	0 22	1 15	12 32	2.4	...	.0
20	5 40	18 45	0 24	1 20	12 49	2.6	...	.0
30	5 23	19 2	0 26	1 30	13 8	2.8	23 46	1.9
35	5 13	19 12	0 28	1 38	13 19	3.0	23 34	1.8
40	5 1	19 23	0 31	1 50	13 32	3.1	23 20	1.6
45	4 47	19 37	0 34	2 8	13 47	3.3	23 3	1.5
50	4 31	19 53	0 39	2 41	14 6	3.5	22 43	1.2
55	4 9	20 15	0 47	:::	14 31	3.9	22 16	.9
60	3 39	20 44	1 2	:::	15 5	4.6	21 39	.2
S								

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 50.7	-18 36.6	125 53.4	154 37.0	-13 26.4	207 43.5	-23 48.9
2	206 50.5	-18 35.4	155 58.4	184 35.9	-13 24.2	237 44.3	-23 48.8
4	236 50.2	-18 34.1	186 3.3	214 34.9	-13 22.0	267 45.2	-23 48.6
6	266 50.0	-18 32.8	216 8.2	244 33.8	-13 19.7	297 46.1	-23 48.5
8	296 49.7	-18 31.5	246 13.2	274 32.8	-13 17.5	327 47.0	-23 48.3
10	326 49.5	-18 30.2	276 18.1	304 31.7	-13 15.3	357 47.9	-23 48.1
12	356 49.2	-18 28.9	306 23.0	334 30.6	-13 13.1	27 48.7	-23 48.0
14	26 48.9	-18 27.7	336 27.9	4 29.6	-13 10.9	57 49.6	-23 47.8
16	56 48.7	-18 26.4	6 32.9	34 28.6	-13 8.7	87 50.5	-23 47.6
18	86 48.4	-18 25.1	36 37.8	64 27.5	-13 6.4	117 51.4	-23 47.5
20	116 48.2	-18 23.8	66 42.7	94 26.5	-13 4.2	147 52.3	-23 47.3
22	146 47.9	-18 22.5	96 47.7	124 25.4	-13 2.0	177 53.2	-23 47.1
Δ	-1	6		-5	11	4	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 26	16 0	0 49	2 30	9 45	.4	3 58	4.5
55	8 0	16 26	0 41	2 8	10 29	1.1	3 16	3.8
50	7 41	16 45	0 36	1 53	10 59	1.5	2 47	3.4
45	7 26	17 0	0 32	1 42	11 22	1.7	2 25	3.2
40	7 13	17 13	0 29	1 34	11 40	1.8	2 7	3.1
35	7 3	17 23	0 27	1 27	11 56	1.9	1 53	2.9
30	6 53	17 33	0 25	1 23	12 9	2.0	1 40	2.8
20	6 37	17 49	0 23	1 16	12 33	2.2	1 19	2.6
10	6 23	18 3	0 22	1 13	12 53	2.3	1 0	2.5
0	6 9	18 16	0 22	1 13	13 12	2.4	0 43	2.4
10	5 56	18 30	0 22	1 15	13 31	2.5	0 26	2.2
20	5 41	18 44	0 24	1 20	13 52	2.6	0 7	2.1
30	5 24	19 1	0 26	1 30	14 16	2.8	...	.0
35	5 14	19 11	0 28	1 38	14 30	2.9	...	.0
40	5 2	19 22	0 30	1 49	14 46	3.0	23 59	2.0
45	4 49	19 36	0 34	2 7	15 6	3.1	23 38	1.9
50	4 32	19 52	0 39	2 38	15 31	3.3	23 12	1.7
55	4 11	20 13	0 47	:::	16 5	3.6	22 37	1.4
60	3 42	20 42	1 2	:::	16 56	4.5	21 43	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	79 33.0	79	22 13.4	107	234 4.1	-21 41.3	340 17.8	15 7.0
2	108 26.8	78	22 34.8	105	264 8.1	-21 41.4	10 23.1	15 7.1
4	137 20.3	76	22 55.8	102	294 12.1	-21 41.5	40 28.4	15 7.2
6	166 13.6	75	23 16.2	99	324 16.1	-21 41.6	70 33.7	15 7.4
8	195 6.5	73	23 36.0	96	354 20.1	-21 41.7	100 39.0	15 7.5
10	223 59.2	72	23 55.2	93	24 24.1	-21 41.8	130 44.3	15 7.7
12	252 51.6	71	24 13.9	90	54 28.1	-21 41.9	160 49.6	15 7.8
14	281 43.8	69	24 31.9	87	84 32.1	-21 42.0	190 54.9	15 7.9
16	310 35.7	68	24 49.4	84	114 36.1	-21 42.1	221 .2	15 8.1
18	339 27.3	67	25 6.2	81	144 40.1	-21 42.2	251 5.5	15 8.2
20	8 18.7	66	25 22.4	78	174 44.1	-21 42.3	281 10.8	15 8.3
22	37 9.8	65	25 38.0	75	204 48.2	-21 42.4	311 16.1	15 8.5
Δ					20	-1	26	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	-12 36.8	-.5	16.3	T _m	19 25	2.5	58.6	16.0	
12	-12 42.9	T _{m☉}	12 h 12.9 min	Starost	7.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 42	.1	29	-3.8	♃	8 23	.0	108	-1.7
♂	10 9	.1	82	1.4	♄	1 19	.0	214	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 47.7	-18 21.2	126 52.6	154 24.4	-12 59.8	207 54.0	-23 47.0
2	206 47.4	-18 19.9	156 57.5	184 23.3	-12 57.5	237 54.9	-23 46.8
4	236 47.2	-18 18.6	187 2.4	214 22.3	-12 55.3	267 55.8	-23 46.6
6	266 47.0	-18 17.3	217 7.4	244 21.3	-12 53.1	297 56.7	-23 46.4
8	296 46.7	-18 16.0	247 12.3	274 20.2	-12 50.8	327 57.6	-23 46.2
10	326 46.5	-18 14.6	277 17.2	304 19.2	-12 48.6	357 58.5	-23 46.1
12	356 46.2	-18 13.3	307 22.2	334 18.2	-12 46.3	27 59.3	-23 45.9
14	26 46.0	-18 12.0	337 27.1	4 17.2	-12 44.1	58 .2	-23 45.7
16	56 45.8	-18 10.7	7 32.0	34 16.1	-12 41.8	88 1.1	-23 45.5
18	86 45.5	-18 9.4	37 36.9	64 15.1	-12 39.6	118 2.0	-23 45.3
20	116 45.3	-18 8.1	67 41.9	94 14.1	-12 37.3	148 2.9	-23 45.1
22	146 45.1	-18 6.7	97 46.8	124 13.1	-12 35.1	178 3.7	-23 44.9
Δ	-1	7		-5	11	4	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 24	16 3	0 49	2 29	9 55	1.1	5 47	4.0
55	7 58	16 28	0 41	2 8	10 56	1.8	4 47	3.3
50	7 40	16 47	0 35	1 53	11 34	2.0	4 9	3.1
45	7 25	17 2	0 32	1 42	12 2	2.1	3 42	2.9
40	7 12	17 14	0 29	1 34	12 24	2.2	3 21	2.8
35	7 2	17 24	0 27	1 27	12 42	2.3	3 3	2.8
30	6 53	17 33	0 25	1 23	12 58	2.3	2 48	2.7
20	6 37	17 49	0 23	1 16	13 25	2.4	2 22	2.6
10	6 23	18 3	0 22	1 13	13 48	2.4	1 60	2.5
0	6 9	18 16	0 22	1 12	14 10	2.5	1 39	2.4
10	5 56	18 30	0 22	1 14	14 31	2.5	1 19	2.4
20	5 41	18 44	0 24	1 20	14 55	2.6	0 57	2.3
30	5 25	19 1	0 26	1 30	15 22	2.6	0 31	2.2
35	5 15	19 10	0 28	1 38	15 39	2.6	0 16	2.1
40	5 4	19 22	0 30	1 49	15 58	2.7	...	.0
45	4 50	19 35	0 34	2 6	16 21	2.7	...	.0
50	4 34	19 51	0 39	2 36	16 50	2.8	23 53	2.3
55	4 13	20 12	0 46	:::	17 32	2.9	23 11	2.2
60	3 44	20 40	1 1	:::	18 44	3.3	21 58	1.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	66 .7	63	25 53.0	72	234 52.2	-21 42.6	341 21.4	15 8.6
2	94 51.4	62	26 7.3	68	264 56.2	-21 42.7	11 26.7	15 8.8
4	123 41.9	61	26 20.9	65	295 .2	-21 42.8	41 32.0	15 8.9
6	152 32.1	60	26 33.9	62	325 4.2	-21 42.9	71 37.3	15 9.0
8	181 22.2	59	26 46.3	58	355 8.2	-21 43.0	101 42.6	15 9.2
10	210 12.1	59	26 57.9	55	25 12.2	-21 43.1	131 47.9	15 9.3
12	239 1.8	58	27 8.9	52	55 16.3	-21 43.2	161 53.2	15 9.4
14	267 51.4	57	27 19.2	48	85 20.3	-21 43.3	191 58.5	15 9.6
16	296 40.9	57	27 28.8	45	115 24.3	-21 43.4	222 3.8	15 9.7
18	325 30.2	56	27 37.7	41	145 28.3	-21 43.5	252 9.1	15 9.8
20	354 19.4	56	27 46.0	38	175 32.3	-21 43.6	282 14.5	15 10.0
22	23 8.5	55	27 53.5	34	205 36.4	-21 43.7	312 19.8	15 10.1
Δ					20	-1	27	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	-12 49.0	-.5	16.3	T _m	20 24	2.5	58.2	15.8	
12	-12 54.7	T _{m☉}	12 h 12.9 min	Starost	8.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 43	.1	28	-3.8	♃	8 19	.0	108	-1.7
♂	10 8	.1	81	1.4	♄	1 14	.0	214	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
0	176	44.8	-18	5.4	127	51.7	154	12.1	-12	32.8	208	4.6	-23	44.7	
2	206	44.6	-18	4.1	157	56.7	184	11.0	-12	30.6	238	5.5	-23	44.5	
4	236	44.4	-18	2.7	188	1.6	214	10.0	-12	28.3	268	6.4	-23	44.3	
6	266	44.2	-18	1.4	218	6.5	244	9.0	-12	26.0	298	7.3	-23	44.1	
8	296	43.9	-18	.1	248	11.4	274	8.0	-12	23.8	328	8.1	-23	43.9	
10	326	43.7	-17	58.7	278	16.4	304	7.0	-12	21.5	358	9.0	-23	43.7	
12	356	43.5	-17	57.4	308	21.3	334	6.0	-12	19.2	28	9.9	-23	43.5	
14	26	43.3	-17	56.0	338	26.2	4	5.0	-12	16.9	58	10.8	-23	43.3	
16	56	43.1	-17	54.7	8	31.2	34	4.0	-12	14.7	88	11.7	-23	43.1	
18	86	42.8	-17	53.4	38	36.1	64	3.0	-12	12.4	118	12.5	-23	42.9	
20	116	42.6	-17	52.0	68	41.0	94	2.0	-12	10.1	148	13.4	-23	42.7	
22	146	42.4	-17	50.6	98	45.9	124	1.0	-12	7.8	178	14.3	-23	42.5	
Δ		-1		7				-5		11			4		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 22	16 5	0 48	2 29	10 22	2.8	7 22	2.4
55	7 57	16 30	0 41	2 7	11 39	2.6	6 6	2.5
50	7 38	16 48	0 35	1 52	12 22	2.6	5 23	2.5
45	7 24	17 3	0 32	1 42	12 52	2.6	4 53	2.5
40	7 12	17 15	0 29	1 33	13 16	2.6	4 29	2.5
35	7 1	17 25	0 27	1 27	13 36	2.5	4 9	2.5
30	6 52	17 34	0 25	1 22	13 53	2.5	3 53	2.5
20	6 37	17 50	0 23	1 16	14 21	2.5	3 25	2.5
10	6 23	18 4	0 22	1 13	14 46	2.5	3 0	2.5
0	6 10	18 17	0 22	1 12	15 9	2.4	2 38	2.5
10	5 56	18 30	0 22	1 14	15 32	2.4	2 15	2.5
20	5 42	18 44	0 23	1 20	15 56	2.4	1 51	2.4
30	5 26	19 0	0 26	1 29	16 25	2.3	1 23	2.4
35	5 16	19 10	0 28	1 37	16 42	2.3	1 6	2.4
40	5 5	19 21	0 30	1 48	17 2	2.3	0 47	2.4
45	4 52	19 34	0 34	2 5	17 26	2.2	0 23	2.4
50	4 36	19 49	0 38	2 34	17 57	2.1	...	...
55	4 15	20 10	0 46	:::	18 41	2.0	...	...
60	3 47	20 37	0 60	:::	20 4	1.4	22 43	3.6

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄
0	51	57.5	55	28	.3	31	235	40.4	-21	43.8	342	25.1	15	10.3	
2	80	46.5	55	28	6.5	27	265	44.4	-21	43.9	12	30.4	15	10.4	
4	109	35.4	54	28	11.9	24	295	48.4	-21	44.0	42	35.7	15	10.5	
6	138	24.3	54	28	16.6	20	325	52.5	-21	44.1	72	41.0	15	10.7	
8	167	13.1	54	28	20.6	17	355	56.5	-21	44.2	102	46.3	15	10.8	
10	196	2.0	54	28	23.9	13	26	.5	-21	44.3	132	51.6	15	10.9	
12	224	50.9	55	28	26.5	9	56	4.5	-21	44.4	162	56.9	15	11.1	
14	253	39.8	55	28	28.4	6	86	8.6	-21	44.5	193	2.2	15	11.2	
16	282	28.8	55	28	29.5	2	116	12.6	-21	44.6	223	7.5	15	11.4	
18	311	17.8	56	28	30.0	-1	146	16.6	-21	44.7	253	12.8	15	11.5	
20	340	7.0	56	28	29.8	-5	176	20.6	-21	44.8	283	18.1	15	11.6	
22	8	56.2	57	28	28.8	-8	206	24.7	-21	44.9	313	23.4	15	11.8	
Δ								20		-1			27		1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	/	/		
00	-13	.4	.4	16.3	T _m	21 23	2.4	57.7	15.7
12	-13	5.7	T _{m☉}	12 h 13.3 min	Starost	9.8 d	Faza ☉		

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	/	°		♃	h min	/	°	
♀	13 44	.1	26	-3.8	♃	8 16	.0	108	-1.7
♂	10 7	.1	80	1.4	♄	1 10	.0	215	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
0	176	42.2	-17	49.3	128	50.9	154	.0	-12	5.5	208	15.2	-23	42.2	
2	206	42.0	-17	47.9	158	55.8	183	59.0	-12	3.3	238	16.1	-23	42.0	
4	236	41.8	-17	46.6	189	.7	213	58.0	-12	1.0	268	17.0	-23	41.8	
6	266	41.6	-17	45.2	219	5.6	243	57.1	-11	58.7	298	17.8	-23	41.6	
8	296	41.4	-17	43.9	249	10.6	273	56.1	-11	56.4	328	18.7	-23	41.4	
10	326	41.2	-17	42.5	279	15.5	303	55.1	-11	54.1	358	19.6	-23	41.1	
12	356	41.0	-17	41.1	309	20.4	333	54.1	-11	51.8	28	20.5	-23	40.9	
14	26	40.8	-17	39.8	339	25.4	3	53.1	-11	49.5	58	21.4	-23	40.7	
16	56	40.6	-17	38.4	9	30.3	33	52.1	-11	47.2	88	22.2	-23	40.5	
18	86	40.4	-17	37.0	39	35.2	63	51.2	-11	44.9	118	23.1	-23	40.2	
20	116	40.2	-17	35.6	69	40.1	93	50.2	-11	42.6	148	24.0	-23	40.0	
22	146	40.0	-17	34.3	99	45.1	123	49.2	-11	40.3	178	24.9	-23	39.8	
Δ		-1		7				-5		11			4		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 19	16 8	0 48	2 28	11 29	4.0	8 19	.9
55	7 55	16 32	0 40	2 7	12 42	3.3	7 5	1.6
50	7 37	16 50	0 35	1 52	13 24	3.0	6 22	1.8
45	7 23	17 4	0 32	1 41	13 54	2.9	5 52	2.0
40	7 11	17 16	0 29	1 33	14 17	2.8	5 28	2.0
35	7 1	17 26	0 27	1 27	14 37	2.7	5 9	2.1
30	6 52	17 35	0 25	1 22	14 53	2.6	4 52	2.2
20	6 36	17 51	0 23	1 16	15 21	2.5	4 24	2.3
10	6 23	18 4	0 22	1 13	15 45	2.4	3 60	2.3
0	6 10	18 17	0 22	1 12	16 7	2.3	3 37	2.4
10	5 57	18 30	0 22	1 14	16 29	2.2	3 14	2.4
20	5 43	18 44	0 23	1 19	16 53	2.1	2 50	2.5
30	5 26	18 60	0 26	1 29	17 21	2.0	2 21	2.6
35	5 17	19 9	0 28	1 37	17 37	1.9	2 4	2.6
40	5 6	19 20	0 30	1 48	17 56	1.8	1 44	2.7
45	4 53	19 33	0 33	2 4	18 19	1.7	1 20	2.8
50	4 37	19 48	0 38	2 33	18 48	1.5	0 49	2.9
55	4 17	20 8	0 46	:::	19 29	1.2	0 5	3.0
60	3 50	20 35	0 59	:::	20 37	.4	...	...

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄
0	37	45.6	57	28	27.2	-12	236	28.7	-21	45.0	343	28.7	15	11.9	
2	66	35.0	58	28	24.9	-15	266	32.7	-21	45.1	13	34.0	15	12.0	
4	95	24.7	59	28	21.9	-18	296	36.8	-21	45.2	43	39.3	15	12.2	
6	124	14.5	60	28	18.2	-22	326	40.8	-21	45.3	73	44.7	15	12.3	
8	153	4.5	61	28	13.8	-25	356	44.8	-21	45.4	103	50.0	15	12.5	
10	181	54.7	62	28	8.7	-29	26	48.9	-21	45.5	133	55.3	15	12.6	
12	210	45.2	63	28	3.0	-32	56	52.9	-21	45.6	164	.6	15	12.7	
14	239	35.8	65	27	56.6	-35	86	56.9	-21	45.7	194	5.9	15	12.9	
16	268	26.7	66	27	49.6	-38	117	1.0	-21	45.8	224	11.2	15	13.0	
18	297	17.9	67	27	41.9	-42	147	5.0	-21	45.9	254	16.5	15	13.2	
20	326	9.3	69	27	33.6	-45	177	9.0	-21	46.0	284	21.8	15	13.3	
22	355	1.1	70	27	24.7	-48	207	13.1	-21	46.1	314	27.1	15	13.4	
Δ								20		0			27		1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	/	/		
00	-13	11.0	.4	16.3	T _m	22 21	2.2	57.3	15.6
12	-13	15.9	T _{m☉}	12 h 13.3 min	Starost	10.8 d	Faza ☉		

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	/	°		♃	h min	/	°	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 39.8	-17 32.9	129 50.0	153 48.3	-11 38.0	208 25.8	-23 39.5
2	206 39.6	-17 31.5	159 54.9	183 47.3	-11 35.6	238 26.6	-23 39.3
4	236 39.4	-17 30.1	189 59.9	213 46.3	-11 33.3	268 27.5	-23 39.0
6	266 39.2	-17 28.7	220 4.8	243 45.4	-11 31.0	298 28.4	-23 38.8
8	296 39.0	-17 27.3	250 9.7	273 44.4	-11 28.7	328 29.3	-23 38.6
10	326 38.8	-17 25.9	280 14.6	303 43.4	-11 26.4	358 30.2	-23 38.3
12	356 38.6	-17 24.5	310 19.6	333 42.5	-11 24.0	28 31.0	-23 38.1
14	26 38.4	-17 23.2	340 24.5	3 41.5	-11 21.7	58 31.9	-23 37.8
16	56 38.3	-17 21.8	10 29.4	33 40.6	-11 19.4	88 32.8	-23 37.6
18	86 38.1	-17 20.4	40 34.4	63 39.6	-11 17.1	118 33.7	-23 37.3
20	116 37.9	-17 19.0	70 39.3	93 38.7	-11 14.7	148 34.6	-23 37.1
22	146 37.7	-17 17.6	100 44.2	123 37.7	-11 12.4	178 35.4	-23 36.8
Δ	-1	7		-5	12	4	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 17	16 11	0 48	2 27	13 6	4.2	8 40	.3
55	7 53	16 34	0 40	2 7	14 2	3.6	7 42	1.0
50	7 36	16 52	0 35	1 52	14 37	3.2	7 6	1.3
45	7 22	17 6	0 31	1 41	15 3	3.0	6 39	1.5
40	7 10	17 17	0 29	1 33	15 24	2.8	6 18	1.6
35	6 60	17 27	0 27	1 27	15 41	2.7	5 60	1.8
30	6 51	17 36	0 25	1 22	15 56	2.6	5 44	1.8
20	6 36	17 51	0 23	1 16	16 21	2.4	5 18	2.0
10	6 23	18 4	0 22	1 13	16 43	2.3	4 55	2.1
0	6 10	18 17	0 22	1 12	17 3	2.2	4 34	2.2
10	5 57	18 30	0 22	1 14	17 23	2.0	4 13	2.4
20	5 43	18 43	0 23	1 19	17 44	1.9	3 50	2.5
30	5 27	18 59	0 26	1 29	18 9	1.7	3 23	2.6
35	5 18	19 8	0 28	1 36	18 23	1.6	3 7	2.7
40	5 7	19 19	0 30	1 47	18 40	1.5	2 49	2.8
45	4 55	19 31	0 33	2 3	18 60	1.3	2 26	3.0
50	4 39	19 47	0 38	2 31	19 25	1.1	1 58	3.2
55	4 19	20 6	0 45	:::	19 58	.7	1 18	3.5
60	3 53	20 33	0 58	:::	20 47	.1	0 11	4.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	23 53.1	72 27 15.1	-51	237 17.1	-21 46.2	344 32.4	15 13.6	
2	52 45.4	73 27 4.9	-54	267 21.1	-21 46.3	14 37.7	15 13.7	
4	81 38.0	75 26 54.1	-57	297 25.2	-21 46.4	44 43.0	15 13.8	
6	110 31.0	77 26 42.7	-60	327 29.2	-21 46.5	74 48.4	15 14.0	
8	139 24.3	78 26 30.7	-63	357 33.3	-21 46.6	104 53.7	15 14.1	
10	168 18.0	80 26 18.1	-66	27 37.3	-21 46.7	134 59.0	15 14.3	
12	197 12.0	82 26 5.0	-68	57 41.4	-21 46.8	165 4.3	15 14.4	
14	226 6.4	84 25 51.3	-71	87 45.4	-21 46.9	195 9.6	15 14.5	
16	255 1.2	86 25 37.1	-74	117 49.4	-21 47.0	225 14.9	15 14.7	
18	283 56.3	88 25 22.3	-76	147 53.5	-21 47.1	255 20.2	15 14.8	
20	312 51.8	89 25 7.0	-79	177 57.5	-21 47.2	285 25.5	15 15.0	
22	341 47.7	91 24 51.2	-82	208 1.6	-21 47.3	315 30.8	15 15.1	
Δ				20	0	27	1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	-13 20.7	-.4	16.3	T _m	23 15	2.1	56.8	15.5	
12	-13 25.2	T _{m☉}	12 h 13.4 min	Starost	11.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♂	13 45 .1	24	-3.8	7	8 10 .0	107	-1.7		
♂	10 6 .1	79	1.4	7	1 2 .0	215	.2		

1. FEBRUAR

ČETVRTAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 37.5	-17 16.1	130 49.1	153 36.8	-11 10.1	208 36.3	-23 36.5
2	206 37.4	-17 14.7	160 54.1	183 35.8	-11 7.7	238 37.2	-23 36.3
4	236 37.2	-17 13.3	190 59.0	213 34.9	-11 5.4	268 38.1	-23 36.0
6	266 37.0	-17 11.9	221 3.9	243 33.9	-11 3.0	298 39.0	-23 35.8
8	296 36.8	-17 10.5	251 8.9	273 33.0	-11 .7	328 39.8	-23 35.5
10	326 36.7	-17 9.1	281 13.8	303 32.1	-10 58.4	358 40.7	-23 35.2
12	356 36.5	-17 7.7	311 18.7	333 31.1	-10 56.0	28 41.6	-23 35.0
14	26 36.3	-17 6.2	341 23.6	3 30.2	-10 53.7	58 42.5	-23 34.7
16	56 36.2	-17 4.8	11 28.6	33 29.3	-10 51.3	88 43.3	-23 34.4
18	86 36.0	-17 3.4	41 33.5	63 28.3	-10 49.0	118 44.2	-23 34.2
20	116 35.8	-17 2.0	71 38.4	93 27.4	-10 46.6	148 45.1	-23 33.9
22	146 35.7	-17 .5	101 43.4	123 26.5	-10 44.2	178 46.0	-23 33.6
Δ	-1	7		-5	12	4	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 15	16 13	0 47	2 27	14 48	4.1	8 47	.1
55	7 52	16 36	0 40	2 6	15 27	3.5	8 6	.6
50	7 34	16 54	0 35	1 52	15 55	3.2	7 37	.9
45	7 20	17 7	0 31	1 41	16 16	3.0	7 15	1.1
40	7 9	17 19	0 29	1 33	16 32	2.8	6 57	1.3
35	6 59	17 28	0 27	1 27	16 47	2.6	6 42	1.4
30	6 51	17 37	0 25	1 22	16 59	2.5	6 29	1.6
20	6 36	17 52	0 23	1 16	17 20	2.3	6 6	1.8
10	6 22	18 5	0 22	1 13	17 38	2.1	5 46	1.9
0	6 10	18 17	0 22	1 12	17 54	2.0	5 28	2.1
10	5 57	18 30	0 22	1 14	18 11	1.8	5 10	2.2
20	5 44	18 43	0 23	1 19	18 29	1.6	4 50	2.4
30	5 28	18 58	0 26	1 29	18 49	1.4	4 26	2.6
35	5 19	19 8	0 28	1 36	19 1	1.3	4 13	2.7
40	5 9	19 18	0 30	1 47	19 15	1.2	3 57	2.8
45	4 56	19 30	0 33	2 2	19 31	1.0	3 38	3.0
50	4 41	19 45	0 38	2 29	19 50	.8	3 14	3.2
55	4 22	20 4	0 45	:::	20 15	.5	2 42	3.6
60	3 55	20 30	0 57	:::	20 50	.0	1 54	4.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	10 44.0	93 24 34.9	-84	238 5.6	-21 47.4	345 36.2	15 15.2	
2	39 40.7	95 24 18.1	-86	268 9.7	-21 47.4	15 41.5	15 15.4	
4	68 37.7	97 24 .8	-89	298 13.7	-21 47.5	45 46.8	15 15.5	
6	97 35.2	99 23 43.0	-91	328 17.8	-21 47.6	75 52.1	15 15.7	
8	126 33.1	101 23 24.8	-93	358 21.8	-21 47.7	105 57.4	15 15.8	
10	155 31.4	103 23 6.1	-96	28 25.9	-21 47.8	136 2.7	15 15.9	
12	184 30.1	105 22 47.0	-98	58 29.9	-21 47.9	166 8.0	15 16.1	
14	213 29.2	107 22 27.4	-100	88 34.0	-21 48.0	196 13.4	15 16.2	
16	242 28.6	109 22 7.5	-102	118 38.0	-21 48.1	226 18.7	15 16.4	
18	271 28.5	111 21 47.1	-104	148 42.1	-21 48.2	256 24.0	15 16.5	
20	300 28.8	113 21 26.3	-106	178 46.1	-21 48.3	286 29.3	15 16.6	
22	329 29.5	115 21 5.2	-108	208 50.2	-21 48.4	316 34.6	15 16.8	
Δ				20	0	27	1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	-13 29.7	-.3	16.3	T _m	...	1.0	56.3	15.3	
12	-13 33.7	T _{m☉}	12 h 13.6 min	Starost	12.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♂	13 46 .1	23	-3.8	7	8 7 .0	107	-1.7		
♂	10 5 .1	78	1.4	7	0 57 .0	215	.2		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 35.5 -16 59.1		131 48.3	153 25.6 -10 41.9	208 46.9 -23 33.3		
2	206 35.4 -16 57.7		161 53.2	183 24.6 -10 39.5	238 47.7 -23 33.0		
4	236 35.2 -16 56.2		191 58.1	213 23.7 -10 37.2	268 48.6 -23 32.8		
6	266 35.0 -16 54.8		222 3.1	243 22.8 -10 34.8	298 49.5 -23 32.5		
8	296 34.9 -16 53.4		252 8.0	273 21.9 -10 32.4	328 50.4 -23 32.2		
10	326 34.7 -16 51.9		282 12.9	303 21.0 -10 30.1	358 51.3 -23 31.9		
12	356 34.6 -16 50.5		312 17.8	333 20.0 -10 27.7	38 52.1 -23 31.6		
14	26 34.4 -16 49.0		342 22.8	3 19.1 -10 25.3	58 53.0 -23 31.3		
16	56 34.3 -16 47.6		12 27.7	33 18.2 -10 22.9	88 53.9 -23 31.0		
18	86 34.1 -16 46.1		42 32.6	63 17.3 -10 20.6	118 54.8 -23 30.7		
20	116 34.0 -16 44.7		72 37.6	93 16.4 -10 18.2	148 55.7 -23 30.5		
22	146 33.8 -16 43.2		102 42.5	123 15.5 -10 15.8	178 56.5 -23 30.2		
Δ	-1 7			-5 12	4 1		

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	358 30.6 117 20	43.7 -109	238 54.3 -21 48.5	346 39.9 15 16.9				
2	27 32.1 119 20	21.8 -111	268 58.3 -21 48.6	16 45.2 15 17.0				
4	56 34.0 121 19	59.6 -113	299 2.4 -21 48.7	46 50.6 15 17.2				
6	85 36.2 123 19	37.0 -114	329 6.4 -21 48.8	76 55.9 15 17.3				
8	114 38.9 125 19	14.1 -116	359 10.5 -21 48.9	107 1.2 15 17.5				
10	143 41.9 127 18	50.9 -118	29 14.6 -21 49.0	137 6.5 15 17.6				
12	172 45.3 129 18	27.4 -119	59 18.6 -21 49.0	167 11.8 15 17.7				
14	201 49.1 131 18	3.6 -120	89 22.7 -21 49.1	197 17.1 15 17.9				
16	230 53.2 132 17	39.5 -122	119 26.7 -21 49.2	227 22.4 15 18.0				
18	259 57.7 134 17	15.1 -123	149 30.8 -21 49.3	257 27.8 15 18.2				
20	289 2.5 136 16	50.4 -124	179 34.9 -21 49.4	287 33.1 15 18.3				
22	318 7.7 138 16	25.5 -126	209 38.9 -21 49.5	317 38.4 15 18.4				
Δ			20 0	27 1				

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 12	16 16	0 47	2 26	16 25	3.8	8 49	.0
55	7 50	16 38	0 40	2 6	16 52	3.4	8 20	.4
50	7 33	16 55	0 35	1 51	17 12	3.1	7 59	.7
45	7 19	17 9	0 31	1 41	17 27	2.9	7 42	.9
40	7 8	17 20	0 29	1 33	17 39	2.7	7 28	1.1
35	6 58	17 29	0 27	1 27	17 50	2.5	7 16	1.2
30	6 50	17 38	0 25	1 22	17 59	2.4	7 6	1.3
20	6 35	17 52	0 23	1 16	18 15	2.2	6 48	1.6
10	6 22	18 5	0 22	1 12	18 29	2.0	6 32	1.7
0	6 10	18 17	0 22	1 12	18 42	1.8	6 18	1.9
10	5 58	18 29	0 22	1 14	18 55	1.7	6 3	2.1
20	5 45	18 43	0 23	1 19	19 8	1.5	5 47	2.3
30	5 29	18 58	0 26	1 28	19 24	1.3	5 28	2.5
35	5 20	19 7	0 27	1 36	19 33	1.1	5 17	2.6
40	5 10	19 17	0 30	1 46	19 43	1.0	5 5	2.7
45	4 58	19 29	0 33	2 2	19 55	.8	4 50	2.9
50	4 43	19 44	0 38	2 27	20 9	.6	4 32	3.2
55	4 24	20 2	0 45	3 41	20 27	.3	4 8	3.5
60	3 58	20 28	0 57	:::	20 51	.0	3 35	3.9
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s /		h min	min	/	/		
00	-13 37.8	-.3	16.3	T _m	0 6	2.0	55.8 15.2		
12	-13 41.4	T _{m☉}	12 h 13.7 min	Starost	13.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min /	°		h min /	°				
♂	13 47 .1	22	-3.8	♀	8 0 .0	107	-1.7		
♂	10 5 .1	77	1.4	♂	0 53 .0	215	.2		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 33.7 -16 41.8		132 47.4	153 14.6 -10 13.4	208 57.4 -23 29.9		
2	206 33.6 -16 40.3		162 52.3	183 13.7 -10 11.0	238 58.3 -23 29.6		
4	236 33.4 -16 38.9		192 57.3	213 12.8 -10 8.6	268 59.2 -23 29.3		
6	266 33.3 -16 37.4		223 2.2	243 11.9 -10 6.3	299 .1 -23 28.9		
8	296 33.1 -16 35.9		253 7.1	273 11.0 -10 3.9	329 .9 -23 28.6		
10	326 33.0 -16 34.5		283 12.1	303 10.1 -10 1.5	359 1.8 -23 28.3		
12	356 32.9 -16 33.0		313 17.0	333 9.2 -9 59.1	29 2.7 -23 28.0		
14	26 32.7 -16 31.5		343 21.9	3 8.3 -9 56.7	59 3.6 -23 27.7		
16	56 32.6 -16 30.1		13 26.8	33 7.4 -9 54.3	89 4.5 -23 27.4		
18	86 32.5 -16 28.6		43 31.8	63 6.5 -9 51.9	119 5.3 -23 27.1		
20	116 32.3 -16 27.1		73 36.7	93 5.6 -9 49.5	149 6.2 -23 26.8		
22	146 32.2 -16 25.6		103 41.6	123 4.8 -9 47.1	179 7.1 -23 26.5		
Δ	-1 7			-4 12	4 2		

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	347 13.2 139 16	.4 -127	239 43.0 -21 49.6	347 43.7 15 18.6				
2	16 19.1 141 15	35.0 -128	269 47.1 -21 49.7	17 49.0 15 18.7				
4	45 25.3 143 15	9.4 -129	299 51.1 -21 49.8	47 54.3 15 18.9				
6	74 31.8 144 14	43.6 -130	329 55.2 -21 49.9	77 59.7 15 19.0				
8	103 38.6 146 14	17.6 -131	359 59.3 -21 50.0	108 5.0 15 19.1				
10	132 45.7 147 13	51.3 -132	30 3.3 -21 50.1	138 10.3 15 19.3				
12	161 53.1 149 13	24.9 -133	60 7.4 -21 50.2	168 15.6 15 19.4				
14	191 .8 150 12	58.3 -134	90 11.5 -21 50.2	198 20.9 15 19.6				
16	220 8.8 151 12	31.5 -135	120 15.6 -21 50.3	228 26.2 15 19.7				
18	249 17.1 153 12	4.6 -135	150 19.6 -21 50.4	258 31.6 15 19.8				
20	278 25.6 154 11	37.5 -136	180 23.7 -21 50.5	288 36.9 15 20.0				
22	307 34.4 155 11	10.3 -137	210 27.8 -21 50.6	318 42.2 15 20.1				
Δ			20 0	27 1				

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 10	16 18	0 47	2 26	17 56	3.6	8 49	.0
55	7 48	16 40	0 40	2 6	18 13	3.2	8 30	.3
50	7 31	16 57	0 35	1 51	18 26	3.0	8 16	.6
45	7 18	17 10	0 31	1 41	18 36	2.8	8 4	.8
40	7 7	17 21	0 29	1 33	18 44	2.6	7 54	.9
35	6 58	17 30	0 27	1 26	18 51	2.4	7 46	1.1
30	6 49	17 39	0 25	1 22	18 57	2.3	7 38	1.2
20	6 35	17 53	0 23	1 15	19 8	2.1	7 25	1.4
10	6 22	18 5	0 22	1 12	19 17	1.9	7 14	1.6
0	6 10	18 17	0 22	1 12	19 26	1.7	7 3	1.8
10	5 58	18 29	0 22	1 14	19 34	1.5	6 53	1.9
20	5 45	18 42	0 23	1 19	19 44	1.3	6 41	2.1
30	5 30	18 57	0 26	1 28	19 54	1.1	6 28	2.4
35	5 21	19 6	0 27	1 35	19 60	1.0	6 20	2.5
40	5 11	19 16	0 30	1 46	20 7	.9	6 11	2.6
45	4 59	19 28	0 33	2 1	20 14	.7	6 0	2.8
50	4 45	19 42	0 37	2 26	20 24	.5	5 48	3.0
55	4 26	20 0	0 44	3 30	20 35	.3	5 32	3.3
60	4 1	20 25	0 56	:::	20 50	.0	5 10	3.7
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s /		h min	min	/	/		
00	-13 45.0	-.3	16.3	T _m	0 53	1.8	55.3 15.1		
12	-13 48.3	T _{m☉}	12 h 13.8 min	Starost	14.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min /	°		h min /	°				
♂	13 47 .1	20	-3.8	♀	8 0 .0	107	-1.7		
♂	10 4 .1	76	1.4	♂	0 49 .0	215	.2		

4. FEBRUAR

2007.

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 32.1 -16 24.2		133 46.6	153 3.9 -9 44.7	209 8.0 -23 26.1		
2	206 32.0 -16 22.7		163 51.5	183 3.0 -9 42.3	239 8.9 -23 25.8		
4	236 31.8 -16 21.2		193 56.4	213 2.1 -9 39.9	269 9.8 -23 25.5		
6	266 31.7 -16 19.7		224 1.3	243 1.2 -9 37.5	299 10.6 -23 25.2		
8	296 31.6 -16 18.2		254 6.3	273 .4 -9 35.1	329 11.5 -23 24.8		
10	326 31.5 -16 16.7		284 11.2	302 59.5 -9 32.6	359 12.4 -23 24.5		
12	356 31.4 -16 15.2		314 16.1	332 58.6 -9 30.2	29 13.3 -23 24.2		
14	26 31.2 -16 13.7		344 21.1	2 57.7 -9 27.8	59 14.2 -23 23.9		
16	56 31.1 -16 12.3		14 26.0	32 56.9 -9 25.4	89 15.0 -23 23.5		
18	86 31.0 -16 10.8		44 30.9	62 56.0 -9 23.0	119 15.9 -23 23.2		
20	116 30.9 -16 9.3		74 35.8	92 55.1 -9 20.6	149 16.8 -23 22.8		
22	146 30.8 -16 7.8		104 40.8	122 54.3 -9 18.1	179 17.7 -23 22.5		
Δ	-1	7		-4	12	4	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 8	16 21	0 47	2 25	19 22	3.5	8 49	.0
55	7 46	16 43	0 39	2 5	19 30	3.1	8 38	.2
50	7 30	16 59	0 35	1 51	19 37	2.9	8 29	.5
45	7 17	17 12	0 31	1 40	19 42	2.7	8 22	.7
40	7 6	17 22	0 28	1 32	19 46	2.5	8 16	.8
35	6 57	17 31	0 26	1 26	19 49	2.4	8 11	1.0
30	6 49	17 39	0 25	1 22	19 52	2.2	8 7	1.1
20	6 35	17 53	0 23	1 15	19 58	2.0	7 59	1.3
10	6 22	18 6	0 22	1 12	20 2	1.8	7 52	1.5
0	6 10	18 17	0 22	1 12	20 7	1.6	7 46	1.7
10	5 59	18 29	0 22	1 14	20 11	1.5	7 39	1.9
20	5 46	18 42	0 23	1 18	20 16	1.3	7 32	2.0
30	5 31	18 57	0 26	1 28	20 21	1.1	7 24	2.3
35	5 22	19 5	0 27	1 35	20 24	.9	7 19	2.4
40	5 12	19 15	0 30	1 45	20 28	.8	7 14	2.5
45	5 1	19 26	0 33	1 60	20 31	.7	7 8	2.7
50	4 46	19 41	0 37	2 24	20 36	.5	7 0	2.9
55	4 28	19 58	0 44	3 23	20 42	.2	6 51	3.2
60	4 4	20 22	0 55	:::	20 49	.0	6 39	3.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	336 43.5 156	10 42.9 -138			240 31.9 -21 50.7	348 47.5 15 20.3		
2	5 52.7 158	10 15.4 -138			270 35.9 -21 50.8	18 52.8 15 20.4		
4	35 2.2 159	9 47.8 -139			300 40.0 -21 50.9	48 58.2 15 20.5		
6	64 12.0 160	9 20.0 -139			330 44.1 -21 51.0	79 3.5 15 20.7		
8	93 21.9 161	8 52.2 -140			0 48.2 -21 51.1	109 8.8 15 20.8		
10	122 32.1 162	8 24.2 -140			30 52.2 -21 51.1	139 14.1 15 21.0		
12	151 42.5 163	7 56.2 -141			60 56.3 -21 51.2	169 19.4 15 21.1		
14	180 53.0 164	7 28.1 -141			91 .4 -21 51.3	199 24.8 15 21.2		
16	210 3.8 165	6 59.9 -141			121 4.5 -21 51.4	229 30.1 15 21.4		
18	239 14.7 165	6 31.6 -142			151 8.6 -21 51.5	259 35.4 15 21.5		
20	268 25.8 166	6 3.3 -142			181 12.6 -21 51.6	289 40.7 15 21.7		
22	297 37.0 167	5 34.9 -142			211 16.7 -21 51.7	319 46.0 15 21.8		
Δ					20	0	27	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-13 51.5	-.2	16.3	T _m	1 36	1.7	54.9 15.0		
12	-13 54.3	T _{m☉}	12 h 13.9 min	Starost	15.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 48	.1	19	-3.8	♃	7 57	.0	107	-1.8
	10 3	.1	75	1.4	♄	0 45	.0	215	.2

5. FEBRUAR

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 30.7 -16 6.3		134 45.7	152 53.4 -9 15.7	209 18.6 -23 22.2		
2	206 30.6 -16 4.7		164 50.6	182 52.5 -9 13.3	239 19.4 -23 21.8		
4	236 30.5 -16 3.2		194 55.6	212 51.7 -9 10.9	269 20.3 -23 21.5		
6	266 30.4 -16 1.7		225 .5	242 50.8 -9 8.4	299 21.2 -23 21.1		
8	296 30.2 -16 .2		255 5.4	272 50.0 -9 6.0	329 22.1 -23 20.8		
10	326 30.1 -15 58.7		285 10.3	302 49.1 -9 3.6	359 23.0 -23 20.4		
12	356 30.0 -15 57.2		315 15.3	332 48.3 -9 1.1	29 23.8 -23 20.1		
14	26 29.9 -15 55.7		345 20.2	2 47.4 -8 58.7	59 24.7 -23 19.7		
16	56 29.8 -15 54.2		15 25.1	32 46.6 -8 56.3	89 25.6 -23 19.4		
18	86 29.7 -15 52.6		45 30.1	62 45.7 -8 53.8	119 26.5 -23 19.0		
20	116 29.6 -15 51.1		75 35.0	92 44.9 -8 51.4	149 27.4 -23 18.7		
22	146 29.6 -15 49.6		105 39.9	122 44.0 -8 48.9	179 28.3 -23 18.3		
Δ	-1	8		-4	12	4	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 5	16 24	0 46	2 25	20 45	3.4	8 47	.0
55	7 44	16 45	0 39	2 5	20 45	3.1	8 44	.2
50	7 28	17 0	0 34	1 51	20 46	2.8	8 41	.5
45	7 16	17 13	0 31	1 40	20 46	2.6	8 38	.6
40	7 5	17 23	0 28	1 32	20 46	2.5	8 36	.8
35	6 56	17 32	0 26	1 26	20 46	2.3	8 35	.9
30	6 48	17 40	0 25	1 22	20 46	2.2	8 33	1.1
20	6 34	17 54	0 23	1 15	20 46	2.0	8 31	1.3
10	6 22	18 6	0 22	1 12	20 46	1.8	8 28	1.5
0	6 11	18 17	0 21	1 11	20 46	1.6	8 26	1.6
10	5 59	18 29	0 22	1 13	20 46	1.4	8 24	1.8
20	5 46	18 41	0 23	1 18	20 47	1.3	8 21	2.0
30	5 32	18 56	0 25	1 27	20 47	1.1	8 18	2.2
35	5 23	19 4	0 27	1 35	20 47	.9	8 17	2.3
40	5 13	19 14	0 30	1 45	20 47	.8	8 15	2.5
45	5 2	19 25	0 33	1 59	20 47	.6	8 13	2.7
50	4 48	19 39	0 37	2 23	20 47	.5	8 10	2.9
55	4 30	19 56	0 44	3 16	20 47	.2	8 7	3.1
60	4 6	20 20	0 55	:::	20 47	.0	8 3	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	326 48.4 168	5 6.4 -142			241 20.8 -21 51.8	349 51.4 15 21.9		
2	355 59.9 168	4 38.0 -143			271 24.9 -21 51.8	19 56.7 15 22.1		
4	25 11.6 169	4 9.4 -143			301 29.0 -21 51.9	50 2.0 15 22.2		
6	54 23.4 169	3 40.9 -143			331 33.1 -21 52.0	80 7.3 15 22.4		
8	83 35.3 170	3 12.3 -143			1 37.2 -21 52.1	110 12.6 15 22.5		
10	112 47.3 170	2 43.7 -143			31 41.3 -21 52.2	140 18.0 15 22.6		
12	141 59.3 171	2 15.2 -143			61 45.3 -21 52.3	170 23.3 15 22.8		
14	171 11.5 171	1 46.6 -143			91 49.4 -21 52.4	200 28.6 15 22.9		
16	200 23.8 172	1 18.0 -143			121 53.5 -21 52.5	230 33.9 15 23.1		
18	229 36.1 172	0 49.4 -143			151 57.6 -21 52.5	260 39.2 15 23.2		
20	258 48.5 172	0 20.8 -143			182 1.7 -21 52.6	290 44.6 15 23.3		
22	288 1.0 172	-0 7.8 -143			212 5.8 -21 52.7	320 49.9 15 23.5		
Δ					20	0	27	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-13 57.1	-.2	16.3	T _m	2 16	1.7	54.6 14.9		
12	-13 59.6	T _{m☉}	12 h 14.0 min	Starost	16.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 49	.1	18	-3.8	♃	7 54	.0	107	-1.8
	10 2	.1	75	1.4	♄	0 40	.0	215	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 29.5 -15 48.1		135 44.8	152 43.2 - 8 46.5	209 29.1 -23 18.0		
2	206 29.4 -15 46.5		165 49.8	182 42.3 - 8 44.1	239 30.0 -23 17.6		
4	236 29.3 -15 45.0		195 54.7	212 41.5 - 8 41.6	269 30.9 -23 17.2		
6	266 29.2 -15 43.5		225 59.6	242 40.6 - 8 39.2	299 31.8 -23 16.9		
8	296 29.1 -15 41.9		256 4.5	272 39.8 - 8 36.7	329 32.7 -23 16.5		
10	326 29.0 -15 40.4		286 9.5	302 39.0 - 8 34.3	359 33.6 -23 16.1		
12	356 28.9 -15 38.9		316 14.4	332 38.1 - 8 31.8	29 34.4 -23 15.8		
14	26 28.8 -15 37.3		346 19.3	2 37.3 - 8 29.3	59 35.3 -23 15.4		
16	56 28.8 -15 35.8		16 24.3	32 36.5 - 8 26.9	89 36.2 -23 15.0		
18	86 28.7 -15 34.2		46 29.2	62 35.6 - 8 24.4	119 37.1 -23 14.6		
20	116 28.6 -15 32.7		76 34.1	92 34.8 - 8 22.0	149 38.0 -23 14.3		
22	146 28.5 -15 31.2		106 39.0	122 34.0 - 8 19.5	179 38.9 -23 13.9		
Δ	0	8		-4	12	4	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 3	16 26	0 46	2 24	22 7	3.5	8 46	.0
55	7 42	16 47	0 39	2 5	21 59	3.1	8 49	.2
50	7 27	17 2	0 34	1 50	21 54	2.9	8 52	.5
45	7 14	17 14	0 31	1 40	21 49	2.7	8 54	.7
40	7 4	17 25	0 28	1 32	21 45	2.5	8 56	.8
35	6 55	17 33	0 26	1 26	21 42	2.3	8 57	.9
30	6 47	17 41	0 25	1 21	21 39	2.2	8 59	1.1
20	6 34	17 54	0 23	1 15	21 34	2.0	9 1	1.3
10	6 22	18 6	0 22	1 12	21 29	1.8	9 3	1.5
0	6 11	18 18	0 21	1 11	21 25	1.7	9 5	1.6
10	5 59	18 29	0 22	1 13	21 21	1.5	9 7	1.8
20	5 47	18 41	0 23	1 18	21 17	1.3	9 9	2.0
30	5 33	18 55	0 25	1 27	21 12	1.1	9 12	2.2
35	5 24	19 3	0 27	1 34	21 9	1.0	9 13	2.3
40	5 15	19 13	0 29	1 44	21 6	.8	9 15	2.5
45	5 3	19 24	0 33	1 58	21 2	.7	9 17	2.6
50	4 50	19 37	0 37	2 21	20 58	.5	9 19	2.8
55	4 32	19 54	0 43	3 11	20 53	.3	9 21	3.1
60	4 9	20 17	0 54	:::	20 46	.0	9 25	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	317 13.4 173 - 0 36.3 -143				242 9.9 -21 52.8	350 55.2 15 23.6		
2	346 26.0 173 - 1 4.8 -142				272 14.0 -21 52.9	21 .5 15 23.8		
4	15 38.5 173 - 1 33.3 -142				302 18.1 -21 53.0	51 5.8 15 23.9		
6	44 51.1 173 - 2 1.7 -142				332 22.2 -21 53.1	81 11.2 15 24.0		
8	74 3.6 173 - 2 30.1 -142				2 26.3 -21 53.1	111 16.5 15 24.2		
10	103 16.2 173 - 2 58.4 -141				32 30.4 -21 53.2	141 21.8 15 24.3		
12	132 28.8 173 - 3 26.6 -141				62 34.5 -21 53.3	171 27.1 15 24.5		
14	161 41.3 173 - 3 54.8 -141				92 38.6 -21 53.4	201 32.5 15 24.6		
16	190 53.8 172 - 4 22.9 -140				122 42.7 -21 53.5	231 37.8 15 24.7		
18	220 6.3 172 - 4 51.0 -140				152 46.8 -21 53.6	261 43.1 15 24.9		
20	249 18.7 172 - 5 19.0 -139				182 50.9 -21 53.6	291 48.4 15 25.0		
22	278 31.1 172 - 5 46.8 -139				212 55.0 -21 53.7	321 53.7 15 25.2		
Δ					20	0	27	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-14 2.0	-.2	16.2	T _m	2 56	1.6	54.3 14.8		
12	-14 4.0	T _{m☉}	12 h 14.1 min	Starost	17.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♀	h min	'	°	'
♂	13 50	.1	17	-3.8	♃	7 50	.0	106	-1.8
	10 2	.1	74	1.4	♄	0 36	.0	215	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 28.4 -15 29.6		136 44.0	152 33.1 - 8 17.1	209 39.7 -23 13.5		
2	206 28.4 -15 28.1		166 48.9	182 32.3 - 8 14.6	239 40.6 -23 13.1		
4	236 28.3 -15 26.5		196 53.8	212 31.5 - 8 12.1	269 41.5 -23 12.7		
6	266 28.2 -15 25.0		226 58.8	242 30.7 - 8 9.7	299 42.4 -23 12.3		
8	296 28.2 -15 23.4		257 3.7	272 29.9 - 8 7.2	329 43.3 -23 12.0		
10	326 28.1 -15 21.8		287 8.6	302 29.0 - 8 4.7	359 44.2 -23 11.6		
12	356 28.0 -15 20.3		317 13.5	332 28.2 - 8 2.3	29 45.0 -23 11.2		
14	26 27.9 -15 18.7		347 18.5	2 27.4 - 7 59.8	59 45.9 -23 10.8		
16	56 27.9 -15 17.2		17 23.4	32 26.6 - 7 57.3	89 46.8 -23 10.4		
18	86 27.8 -15 15.6		47 28.3	62 25.8 - 7 54.8	119 47.7 -23 10.0		
20	116 27.8 -15 14.0		77 33.3	92 25.0 - 7 52.4	149 48.6 -23 9.6		
22	146 27.7 -15 12.5		107 38.2	122 24.1 - 7 49.9	179 49.5 -23 9.2		
Δ	0	8		-4	12	4	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 0	16 29	0 46	2 24	23 30	3.6	8 44	.0
55	7 40	16 49	0 39	2 4	23 14	3.2	8 55	.3
50	7 25	17 4	0 34	1 50	23 2	2.9	9 3	.5
45	7 13	17 16	0 31	1 40	22 53	2.7	9 10	.7
40	7 3	17 26	0 28	1 32	22 45	2.5	9 15	.9
35	6 54	17 34	0 26	1 26	22 38	2.4	9 20	1.0
30	6 47	17 42	0 25	1 21	22 32	2.3	9 24	1.1
20	6 33	17 55	0 23	1 15	22 22	2.1	9 32	1.3
10	6 22	18 7	0 22	1 12	22 13	1.9	9 38	1.5
0	6 11	18 18	0 21	1 11	22 5	1.7	9 44	1.7
10	5 59	18 29	0 22	1 13	21 57	1.6	9 50	1.9
20	5 47	18 41	0 23	1 18	21 48	1.4	9 57	2.0
30	5 33	18 54	0 25	1 27	21 38	1.2	10 5	2.2
35	5 25	19 2	0 27	1 34	21 33	1.1	10 9	2.4
40	5 16	19 12	0 29	1 44	21 26	.9	10 14	2.5
45	5 5	19 22	0 32	1 57	21 19	.8	10 20	2.7
50	4 52	19 36	0 37	2 20	21 10	.6	10 27	2.9
55	4 35	19 52	0 43	3 6	20 59	.3	10 36	3.2
60	4 12	20 15	0 53	:::	20 45	.0	10 47	3.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	307 43.4 171 - 6 14.6 -138				242 59.1 -21 53.8	351 59.1 15 25.3		
2	336 55.7 171 - 6 42.3 -138				273 3.2 -21 53.9	22 4.4 15 25.4		
4	6 7.9 170 - 7 9.9 -137				303 7.3 -21 54.0	52 9.7 15 25.6		
6	35 19.9 170 - 7 37.4 -137				333 11.4 -21 54.1	82 15.0 15 25.7		
8	64 31.9 169 - 8 4.7 -136				3 15.5 -21 54.1	112 20.4 15 25.9		
10	93 43.8 169 - 8 32.0 -136				33 19.6 -21 54.2	142 25.7 15 26.0		
12	122 55.6 168 - 8 59.1 -135				63 23.7 -21 54.3	172 31.0 15 26.1		
14	152 7.2 168 - 9 26.0 -134				93 27.8 -21 54.4	202 36.3 15 26.3		
16	181 18.7 167 - 9 52.9 -134				123 32.0 -21 54.5	232 41.7 15 26.4		
18	210 30.1 166 -10 19.6 -133				153 36.1 -21 54.6	262 47.0 15 26.6		
20	239 41.3 165 -10 46.1 -132				183 40.2 -21 54.6	292 52.3 15 26.7		
22	268 52.4 165 -11 12.5 -131				213 44.3 -21 54.7	322 57.6 15 26.8		
Δ					21	0	27	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-14 6.0	-.1	16.2	T _m	3 35	1.7	54.2 14.8		
12	-14 7.7	T _{m☉}	12 h 14.1 min	Starost	18.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♀	h min	'	°	'
♂	13 50	.1	16	-3.8	♃	7 47	.0	106	-1.8
	10 1	.1	73	1.4	♄	0 32	.0	215	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	27.6	-15	10.9	137	43.1	152	23.3	-7	47.4	209	50.3	-23	8.8
2	206	27.6	-15	9.3	167	48.0	182	22.5	-7	44.9	239	51.2	-23	8.4
4	236	27.5	-15	7.7	197	53.0	212	21.7	-7	42.4	269	52.1	-23	8.0
6	266	27.5	-15	6.2	227	57.9	242	20.9	-7	39.9	299	53.0	-23	7.6
8	296	27.4	-15	4.6	258	2.8	272	20.1	-7	37.5	329	53.9	-23	7.2
10	326	27.3	-15	3.0	288	7.8	302	19.3	-7	35.0	359	54.8	-23	6.8
12	356	27.3	-15	1.4	318	12.7	332	18.5	-7	32.5	29	55.7	-23	6.3
14	26	27.2	-14	59.8	348	17.6	2	17.7	-7	30.0	59	56.5	-23	5.9
16	56	27.2	-14	58.3	18	22.5	32	16.9	-7	27.5	89	57.4	-23	5.5
18	86	27.1	-14	56.7	48	27.5	62	16.1	-7	25.0	119	58.3	-23	5.1
20	116	27.1	-14	55.1	78	32.4	92	15.3	-7	22.5	149	59.2	-23	4.7
22	146	27.1	-14	53.5	108	37.3	122	14.5	-7	20.0	180	.1	-23	4.3
Δ	0	8					-4	12			4	2		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 58	16 32	0 46	2 24	...	.0	8 43	.0
55	7 38	16 51	0 39	2 4	...	.0	9 1	.4
50	7 23	17 6	0 34	1 50	...	.0	9 15	.6
45	7 12	17 17	0 31	1 40	23 58	2.8	9 27	.8
40	7 2	17 27	0 28	1 32	23 46	2.6	9 36	1.0
35	6 53	17 35	0 26	1 26	23 36	2.5	9 44	1.1
30	6 46	17 43	0 25	1 21	23 27	2.4	9 51	1.2
20	6 33	17 56	0 23	1 15	23 12	2.2	10 4	1.4
10	6 22	18 7	0 22	1 12	22 59	2.0	10 14	1.6
0	6 11	18 18	0 21	1 11	22 46	1.8	10 25	1.8
10	5 60	18 28	0 22	1 13	22 34	1.7	10 35	1.9
20	5 48	18 40	0 23	1 18	22 21	1.5	10 46	2.1
30	5 34	18 54	0 25	1 27	22 6	1.3	10 59	2.3
35	5 26	19 2	0 27	1 34	21 58	1.2	11 6	2.4
40	5 17	19 11	0 29	1 43	21 48	1.1	11 14	2.6
45	5 6	19 21	0 32	1 57	21 37	.9	11 24	2.7
50	4 53	19 34	0 36	2 18	21 23	.7	11 36	3.0
55	4 37	19 50	0 43	3 2	21 6	.4	11 51	3.3
60	4 15	20 12	0 53	:::	20 44	.0	12 12	3.7
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	298	3.3	164	-11	38.8	-130	243	48.4	-21	54.8	353	2.9	15	27.0
2	327	14.0	163	-12	4.9	-130	273	52.5	-21	54.9	23	8.3	15	27.1
4	356	24.5	162	-12	30.8	-129	303	56.6	-21	55.0	53	13.6	15	27.3
6	25	34.9	161	-12	56.5	-128	334	.8	-21	55.1	83	18.9	15	27.4
8	54	45.1	160	-13	22.0	-127	4	4.9	-21	55.1	113	24.2	15	27.5
10	83	55.0	159	-13	47.4	-126	34	9.0	-21	55.2	143	29.6	15	27.7
12	113	4.7	158	-14	12.5	-125	64	13.1	-21	55.3	173	34.9	15	27.8
14	142	14.2	156	-14	37.5	-124	94	17.2	-21	55.4	203	40.2	15	28.0
16	171	23.5	155	-15	2.2	-123	124	21.4	-21	55.5	233	45.5	15	28.1
18	200	32.6	154	-15	26.7	-122	154	25.5	-21	55.5	263	50.9	15	28.2
20	229	41.4	153	-15	51.0	-120	184	29.6	-21	55.6	293	56.2	15	28.4
22	258	49.9	151	-16	15.1	-119	214	33.7	-21	55.7	324	1.5	15	28.5
Δ							21	0			27	1		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	-14	9.3	.1	16.2	T _m	4 15	1.7	54.2	14.8
12	-14	10.5	T _{m☉}	12 h 14.2 min	Starost	19.8 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 51	.1	15	-3.8	♃	7 44	.0	106	-1.8
♂	10 0	.1	72	1.4	♄	0 28	.0	215	.2

9. FEBRUAR

PETAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	27.0	-14	51.9	138	42.3	152	13.7	-7	17.5	210	1.0	-23	3.8
2	206	27.0	-14	50.3	168	47.2	182	12.9	-7	15.0	240	1.9	-23	3.4
4	236	26.9	-14	48.7	198	52.1	212	12.2	-7	12.5	270	2.7	-23	3.0
6	266	26.9	-14	47.1	228	57.0	242	11.4	-7	10.0	300	3.6	-23	2.6
8	296	26.8	-14	45.5	259	2.0	272	10.6	-7	7.5	330	4.5	-23	2.1
10	326	26.8	-14	43.9	289	6.9	302	9.8	-7	5.0	0	5.4	-23	1.7
12	356	26.8	-14	42.3	319	11.8	332	9.0	-7	2.5	30	6.3	-23	1.3
14	26	26.7	-14	40.7	349	16.7	2	8.2	-7	.0	60	7.2	-23	.8
16	56	26.7	-14	39.1	19	21.7	32	7.4	-6	57.5	90	8.1	-23	.4
18	86	26.7	-14	37.5	49	26.6	62	6.7	-6	55.0	120	9.0	-22	60.0
20	116	26.6	-14	35.9	79	31.5	92	5.9	-6	52.5	150	9.8	-22	59.5
22	146	26.6	-14	34.3	109	36.5	122	5.1	-6	50.0	180	10.7	-22	59.1
Δ	0	8					-4	13			4	2		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 55	16 34	0 45	2 23	0 58	3.8	8 43	.0
55	7 36	16 53	0 39	2 4	0 32	3.3	9 10	.5
50	7 22	17 7	0 34	1 50	0 13	3.0	9 30	.8
45	7 10	17 19	0 31	1 40	...	.0	9 46	1.0
40	7 1	17 28	0 28	1 32	...	.0	9 60	1.2
35	6 52	17 36	0 26	1 26	...	.0	10 11	1.3
30	6 45	17 44	0 25	1 21	...	.0	10 21	1.4
20	6 33	17 56	0 23	1 15	...	.0	10 38	1.6
10	6 21	18 7	0 22	1 12	23 47	2.1	10 53	1.8
0	6 11	18 18	0 21	1 11	23 31	2.0	11 7	1.9
10	6 0	18 28	0 22	1 13	23 15	1.9	11 21	2.1
20	5 48	18 40	0 23	1 18	22 58	1.7	11 37	2.2
30	5 35	18 53	0 25	1 26	22 38	1.5	11 54	2.4
35	5 27	19 1	0 27	1 33	22 27	1.4	12 5	2.5
40	5 18	19 9	0 29	1 43	22 14	1.3	12 16	2.7
45	5 8	19 20	0 32	1 56	21 59	1.1	12 30	2.8
50	4 55	19 32	0 36	2 17	21 40	.9	12 47	3.0
55	4 39	19 48	0 42	2 58	21 17	.6	13 9	3.4
60	4 17	20 9	0 52	:::	20 44	.1	13 40	3.9
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	287	58.2	150	-16	38.9	-118	244	37.9	-21	55.8	354	6.8	15	28.7
2	317	6.2	149	-17	2.5	-117	274	42.0	-21	55.9	24	12.2	15	28.8
4	346	13.9	147	-17	25.9	-115	304	46.1	-21	55.9	54	17.5	15	28.9
6	15	21.3	146	-17	49.0	-114	334	50.2	-21	56.0	84	22.8	15	29.1
8	44	28.5	144	-18	11.8	-113	4	54.4	-21	56.1	114	28.1	15	29.2
10	73	35.3	143	-18	34.4	-111	34	58.5	-21	56.2	144	33.5	15	29.4
12	102	41.8	141	-18	56.6	-110	65	2.6	-21	56.3	174	38.8	15	29.5
14	131	48.1	140	-19	18.6	-109	95	6.7	-21	56.3	204	44.1	15	29.6
16	160	54.0	138	-19	40.3	-107	125	10.9	-21	56.4	234	49.4	15	29.8
18	189	59.6	136	-20	1.7	-105	155	15.0	-21	56.5	264	54.8	15	29.9
20	219	4.8	135	-20	22.8	-104	185	19.1	-21	56.6	295	.1	15	30.1
22	248	9.7	133	-20	43.6	-102	215	23.3	-21	56.6	325	5.4	15	30.2
Δ							21	0			27	1		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	-14	11.8	.1	16.2	T _m	4 57	1.9	54.3	1

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	26.6	-14	32.7	139	41.4	152	4.3	-6	47.5	210	11.6	-22	58.6
2	206	26.6	-14	31.1	169	46.3	182	3.5	-6	45.0	240	12.5	-22	58.2
4	236	26.5	-14	29.4	199	51.2	212	2.8	-6	42.5	270	13.4	-22	57.7
6	266	26.5	-14	27.8	229	56.2	242	2.0	-6	39.9	300	14.3	-22	57.3
8	296	26.5	-14	26.2	260	1.1	272	1.2	-6	37.4	330	15.2	-22	56.8
10	326	26.5	-14	24.6	290	6.0	302	.5	-6	34.9	0	16.1	-22	56.4
12	356	26.4	-14	23.0	320	11.0	331	59.7	-6	32.4	30	17.0	-22	55.9
14	26	26.4	-14	21.3	350	15.9	1	58.9	-6	29.9	60	17.9	-22	55.5
16	56	26.4	-14	19.7	20	20.8	31	58.2	-6	27.4	90	18.7	-22	55.0
18	86	26.4	-14	18.1	50	25.7	61	57.4	-6	24.8	120	19.6	-22	54.6
20	116	26.4	-14	16.5	80	30.7	91	56.6	-6	22.3	150	20.5	-22	54.1
22	146	26.4	-14	14.8	110	35.6	121	55.9	-6	19.8	180	21.4	-22	53.7
Δ		0		8				-4		13		4		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 53	16 37	0 45	2 23	2 29	4.0	8 43	.2
55	7 34	16 55	0 39	2 3	1 52	3.4	9 22	.8
50	7 20	17 9	0 34	1 50	1 25	3.1	9 49	1.1
45	7 9	17 20	0 31	1 39	1 5	2.8	10 11	1.3
40	6 60	17 29	0 28	1 32	0 49	2.7	10 28	1.4
35	6 52	17 37	0 26	1 26	0 36	2.6	10 42	1.6
30	6 44	17 44	0 25	1 21	0 24	2.5	10 55	1.7
20	6 32	17 57	0 23	1 15	0 4	2.3	11 17	1.8
10	6 21	18 7	0 22	1 12	...	.0	11 35	2.0
0	6 11	18 18	0 21	1 11	...	.0	11 53	2.1
10	6 0	18 28	0 22	1 13	23 59	2.1	12 11	2.2
20	5 49	18 39	0 23	1 17	23 39	1.9	12 30	2.3
30	5 36	18 52	0 25	1 26	23 15	1.8	12 52	2.5
35	5 28	18 60	0 27	1 33	23 1	1.7	13 5	2.6
40	5 20	19 8	0 29	1 42	22 45	1.6	13 20	2.7
45	5 9	19 18	0 32	1 55	22 26	1.5	13 38	2.8
50	4 57	19 31	0 36	2 16	22 3	1.3	14 0	3.0
55	4 41	19 46	0 42	2 55	21 32	1.0	14 30	3.4
60	4 20	20 7	0 52	:::	20 47	.3	15 14	4.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	277	14.3	131	-21	4.1	-101	245	27.4	-21	56.7	355	10.7	15	30.3		
2	306	18.5	129	-21	24.2	-99	275	31.5	-21	56.8	25	16.1	15	30.5		
4	335	22.3	128	-21	44.0	-97	305	35.7	-21	56.9	55	21.4	15	30.6		
6	4	25.8	126	-22	3.4	-95	335	39.8	-21	57.0	85	26.7	15	30.8		
8	33	29.0	124	-22	22.5	-94	5	44.0	-21	57.0	115	32.0	15	30.9		
10	62	31.8	122	-22	41.2	-92	35	48.1	-21	57.1	145	37.4	15	31.0		
12	91	34.1	120	-22	59.5	-90	65	52.2	-21	57.2	175	42.7	15	31.2		
14	120	36.2	118	-23	17.4	-88	95	56.4	-21	57.3	205	48.0	15	31.3		
16	149	37.8	116	-23	35.0	-86	126	.5	-21	57.3	235	53.3	15	31.4		
18	178	39.1	114	-23	52.1	-84	156	4.7	-21	57.4	265	58.7	15	31.6		
20	207	39.9	112	-24	8.9	-82	186	8.8	-21	57.5	296	4.0	15	31.7		
22	236	40.4	111	-24	25.2	-79	216	13.0	-21	57.6	326	9.3	15	31.9		
Δ							21			0		27		1		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	-14	13.5	.0	16.2	T _m	5 42	2.0	54.6	14.9
12	-14	14.0	T _{m☉}	12 h 14.2 min	Starost	21.8 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 52	.1	12	-3.8	♃	7 37	.0	106	-1.8
♂	9 59	.1	70	1.4	♄	0 19	.0	215	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	26.3	-14	13.2	140	40.5	151	55.1	-6	17.3	210	22.3	-22	53.2
2	206	26.3	-14	11.6	170	45.5	181	54.3	-6	14.7	240	23.2	-22	52.7
4	236	26.3	-14	9.9	200	50.4	211	53.6	-6	12.2	270	24.1	-22	52.3
6	266	26.3	-14	8.3	230	55.3	241	52.8	-6	9.7	300	25.0	-22	51.8
8	296	26.3	-14	6.6	261	.2	271	52.1	-6	7.1	330	25.9	-22	51.3
10	326	26.3	-14	5.0	291	5.2	301	51.3	-6	4.6	0	26.8	-22	50.9
12	356	26.3	-14	3.4	321	10.1	331	50.5	-6	2.1	30	27.7	-22	50.4
14	26	26.3	-14	1.7	351	15.0	1	49.8	-5	59.5	60	28.5	-22	49.9
16	56	26.3	-14	.1	21	20.0	31	49.0	-5	57.0	90	29.4	-22	49.4
18	86	26.3	-13	58.4	51	24.9	61	48.3	-5	54.5	120	30.3	-22	49.0
20	116	26.3	-13	56.8	81	29.8	91	47.5	-5	51.9	150	31.2	-22	48.5
22	146	26.3	-13	55.1	111	34.7	121	46.8	-5	49.4	180	32.1	-22	48.0
Δ		0		8				-4		13		4		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 50	16 40	0 45	2 22	4 6	4.1	8 47	.5
55	7 32	16 57	0 38	2 3	3 13	3.3	9 41	1.3
50	7 18	17 11	0 34	1 49	2 39	3.0	10 16	1.5
45	7 8	17 22	0 31	1 39	2 14	2.8	10 42	1.7
40	6 58	17 31	0 28	1 31	1 54	2.7	11 2	1.8
35	6 51	17 38	0 26	1 25	1 37	2.6	11 20	1.9
30	6 44	17 45	0 25	1 21	1 23	2.5	11 35	2.0
20	6 32	17 57	0 23	1 15	0 58	2.4	12 0	2.1
10	6 21	18 8	0 22	1 11	0 38	2.3	12 22	2.2
0	6 11	18 18	0 21	1 11	0 18	2.2	12 43	2.2
10	6 1	18 28	0 22	1 13	...	.0	13 3	2.3
20	5 50	18 39	0 23	1 17	...	.0	13 26	2.4
30	5 37	18 51	0 25	1 26	23 59	2.1	13 51	2.5
35	5 29	18 59	0 27	1 33	23 43	2.1	14 7	2.6
40	5 21	19 7	0 29	1 42	23 24	2.0	14 24	2.6
45	5 11	19 17	0 32	1 55	23 2	2.0	14 46	2.7
50	4 59	19 29	0 36	2 14	22 34	1.9	15 13	2.9
55	4 43	19 44	0 42	2 52	21 56	1.6	15 50	3.1
60	4 23	20 4	0 51	:::	20 55	1.0	16 51	3.8
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	265	40.5	109	-24	41.1	-77	246	17.1	-21	57.6	356	14.6	15	32.0		
2	294	40.2	107	-24	56.5	-75	276	21.2	-21	57.7	26	20.0	15	32.1		
4	323	39.6	105	-25	11.6	-73	306	25.4	-21	57.8	56	25.3	15	32.3		
6	352	38.5	103	-25	26.1	-70	336	29.5	-21	57.9	86	30.6	15	32.4		
8	21	37.1	101	-25	40.2	-68	6	33.7	-21	57.9	116	35.9	15	32.6		
10	50	35.2	99	-25	53.8	-66	36	37.8	-21	58.0	146	41.3	15	32.7		
12	79	33.0	97	-26	6.9	-63	66	42.0	-21	58.1	176	46.6	15	32.8		
14	108	30.4	95	-26	19.5	-61	96	46.1	-21	58.2	206	51.9	15	33.0		
16	137	27.4	93	-26	31.6	-58	126	50.3	-21	58.2	236	57.2	15	33.1		
18	166	24.0	91	-26	43.2	-55	156	54.4	-21	58.3	267	2.6	15	33.3		
20	195	20.2	89	-26	54.3	-53	186	58.6	-21	58.4	297	7.9	15	33.4		
22	224	16.1	88	-27	4.9	-50	217	2.8	-21	58.5	327	13.2	15	33.5		
Δ							21			0		27		1		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	°	'	°	'							
0	176	26.3	-13	53.5	141	39.7	151	46.0	-5	46.9	210	33.0	-22	47.5
2	206	26.3	-13	51.8	171	44.6	181	45.3	-5	44.3	240	33.9	-22	47.0
4	236	26.3	-13	50.2	201	49.5	211	44.6	-5	41.8	270	34.8	-22	46.5
6	266	26.3	-13	48.5	231	54.5	241	43.8	-5	39.2	300	35.7	-22	46.1
8	296	26.3	-13	46.9	261	59.4	271	43.1	-5	36.7	330	36.6	-22	45.6
10	326	26.3	-13	45.2	292	4.3	301	42.3	-5	34.2	0	37.5	-22	45.1
12	356	26.3	-13	43.5	322	9.2	331	41.6	-5	31.6	30	38.4	-22	44.6
14	26	26.3	-13	41.9	352	14.2	1	40.8	-5	29.1	60	39.3	-22	44.1
16	56	26.4	-13	40.2	22	19.1	31	40.1	-5	26.5	90	40.2	-22	43.6
18	86	26.4	-13	38.5	52	24.0	61	39.4	-5	24.0	120	41.1	-22	43.1
20	116	26.4	-13	36.9	82	29.0	91	38.6	-5	21.4	150	42.0	-22	42.6
22	146	26.4	-13	35.2	112	33.9	121	37.9	-5	18.9	180	42.8	-22	42.1
Δ		0		8				-4		13		4		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 47	16 42	0 45	2 22	5 43	3.3	8 59	1.6
55	7 30	16 59	0 38	2 3	4 31	2.8	10 11	2.1
50	7 17	17 12	0 34	1 49	3 50	2.7	10 53	2.2
45	7 6	17 23	0 30	1 39	3 21	2.6	11 23	2.2
40	6 57	17 32	0 28	1 31	2 58	2.6	11 46	2.3
35	6 50	17 39	0 26	1 25	2 39	2.5	12 5	2.3
30	6 43	17 46	0 25	1 21	2 23	2.5	12 22	2.3
20	6 31	17 58	0 23	1 15	1 55	2.4	12 50	2.3
10	6 21	18 8	0 22	1 11	1 32	2.4	13 14	2.4
0	6 11	18 18	0 21	1 11	1 10	2.3	13 37	2.4
10	6 1	18 28	0 22	1 12	0 49	2.3	13 59	2.4
20	5 50	18 38	0 23	1 17	0 25	2.2	14 23	2.4
30	5 38	18 50	0 25	1 26	...	...	14 51	2.4
35	5 30	18 58	0 27	1 32	...	...	15 8	2.4
40	5 22	19 6	0 29	1 41	...	...	15 28	2.4
45	5 12	19 15	0 32	1 54	23 50	2.5	15 51	2.4
50	5 0	19 27	0 36	2 13	23 19	2.5	16 22	2.4
55	4 46	19 42	0 42	2 49	22 36	2.5	17 4	2.5
60	4 26	20 1	0 51	...	21 19	2.6	18 21	2.4
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	253	11.6	86	-27	14.9	-47	247	6.9	-21	58.5	357	18.5	15	33.7
2	282	6.8	84	-27	24.3	-44	277	11.1	-21	58.6	27	23.9	15	33.8
4	311	1.6	82	-27	33.2	-42	307	15.2	-21	58.7	57	29.2	15	33.9
6	339	56.0	81	-27	41.5	-39	337	19.4	-21	58.8	87	34.5	15	34.1
8	8	50.1	79	-27	49.3	-36	7	23.5	-21	58.8	117	39.8	15	34.2
10	37	43.9	77	-27	56.4	-33	37	27.7	-21	58.9	147	45.2	15	34.4
12	66	37.4	76	-28	3.0	-30	67	31.9	-21	59.0	177	50.5	15	34.5
14	95	30.5	74	-28	8.9	-27	97	36.0	-21	59.1	207	55.8	15	34.6
16	124	23.3	73	-28	14.3	-24	127	40.2	-21	59.1	238	1.1	15	34.8
18	153	15.9	71	-28	19.0	-20	157	44.4	-21	59.2	268	6.5	15	34.9
20	182	8.1	70	-28	23.1	-17	187	48.5	-21	59.3	298	11.8	15	35.1
22	211	.1	69	-28	26.5	-14	217	52.7	-21	59.4	328	17.1	15	35.2
Δ								21		0		27		1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	-14	14.7	.0	16.2	T _m	7 23	2.4	55.8	15.2
12	-14	14.4	T _{m☉}	12 h 14.2 min	Starost	23.8 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 53	.1	10	-3.8	♄	7 30	.0	105	-1.8
♂	9 58	.1	69	1.3	♂	0 11	.0	216	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	°	'	°	'							
0	176	26.4	-13	33.5	142	38.8	151	37.2	-5	16.3	210	43.7	-22	41.6
2	206	26.4	-13	31.9	172	43.7	181	36.4	-5	13.8	240	44.6	-22	41.1
4	236	26.5	-13	30.2	202	48.7	211	35.7	-5	11.2	270	45.5	-22	40.6
6	266	26.5	-13	28.5	232	53.6	241	35.0	-5	8.7	300	46.4	-22	40.1
8	296	26.5	-13	26.8	262	58.5	271	34.2	-5	6.1	330	47.3	-22	39.6
10	326	26.5	-13	25.1	293	3.4	301	33.5	-5	3.6	0	48.2	-22	39.0
12	356	26.6	-13	23.5	323	8.4	331	32.8	-5	1.0	30	49.1	-22	38.5
14	26	26.6	-13	21.8	353	13.3	1	32.0	-4	58.4	60	50.0	-22	38.0
16	56	26.6	-13	20.1	23	18.2	31	31.3	-4	55.9	90	50.9	-22	37.5
18	86	26.6	-13	18.4	53	23.2	61	30.6	-4	53.3	120	51.8	-22	37.0
20	116	26.7	-13	16.7	83	28.1	91	29.9	-4	50.8	150	52.7	-22	36.5
22	146	26.7	-13	15.0	113	33.0	121	29.1	-4	48.2	180	53.6	-22	35.9
Δ		0		8				-4		13		4		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 45	16 45	0 44	2 22	7 2	1.6	9 37	3.6
55	7 28	17 1	0 38	2 3	5 39	2.1	11 0	3.0
50	7 15	17 14	0 34	1 49	4 55	2.2	11 45	2.9
45	7 5	17 24	0 30	1 39	4 23	2.3	12 16	2.8
40	6 56	17 33	0 28	1 31	3 59	2.3	12 40	2.7
35	6 49	17 40	0 26	1 25	3 39	2.3	13 0	2.7
30	6 42	17 47	0 25	1 21	3 22	2.3	13 17	2.6
20	6 31	17 58	0 23	1 14	2 53	2.4	13 46	2.6
10	6 20	18 8	0 22	1 11	2 29	2.4	14 11	2.5
0	6 11	18 18	0 21	1 11	2 6	2.4	14 34	2.4
10	6 1	18 27	0 22	1 12	1 43	2.4	14 56	2.4
20	5 51	18 38	0 23	1 17	1 19	2.5	15 21	2.3
30	5 38	18 50	0 25	1 25	0 50	2.5	15 49	2.2
35	5 31	18 57	0 27	1 32	0 33	2.5	16 6	2.2
40	5 23	19 5	0 29	1 41	0 13	2.5	16 26	2.1
45	5 14	19 14	0 32	1 53	...	...	16 50	2.0
50	5 2	19 25	0 36	2 12	...	...	17 20	1.9
55	4 48	19 39	0 41	2 46	23 37	3.4	18 3	1.7
60	4 28	19 58	0 50	...	22 21	4.1	19 19	.9
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	239	51.8	67	-28	29.3	-11	247	56.9	-21	59.4	358	22.4	15	35.3
2	268	43.3	66	-28	31.5	-8	278	1.0	-21	59.5	28	27.8	15	35.5
4	297	34.5	65	-28	33.0	-4	308	5.2	-21	59.6	58	33.1	15	35.6
6	326	25.5	64	-28	33.9	-1	338	9.4	-21	59.6	88	38.4	15	35.7
8	355	16.3	63	-28	34.0	2	8	13.5	-21	59.7	118	43.7	15	35.9
10	24	6.9	62	-28	33.5	6	38	17.7	-21	59.8	148	49.1	15	36.0
12	52	57.3	61	-28	32.4	9	68	21.9	-21	59.9	178	54.4	15	36.2
14	81	47.6	61	-28	30.5	13	98	26.1	-21	59.9	208	59.7	15	36.3
16	110	37.7	60	-28	28.0	16	128	30.2	-21	60.0	239	5.0	15	36.4
18	139	27.6	59	-28	24.7	20	158	34.4	-22	.1	269	10.4	15	36.6
20	168	17.5	59	-28	20.8	23	188	38.6	-22	.1	299	15.7	15	36.7
22	197	7.2	58	-28	16.1	27	218	42.8	-22	.2	329	21.0	15	36.9
Δ								21		0		27		1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	-14	14.1	.1	16.2	T _m	8 20	2.4	56.6	15.4
12	-14	13.5	T _{m☉}	12 h 14.2 min	Starost	24.8 d	Faza	☉	
PLANETE									

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	26.7	-13	13.4	143	37.9	151	28.4	-4	45.6	210	54.5	-22	35.4
2	206	26.8	-13	11.7	173	42.9	181	27.7	-4	43.1	240	55.4	-22	34.9
4	236	26.8	-13	10.0	203	47.8	211	27.0	-4	40.5	270	56.3	-22	34.4
6	266	26.8	-13	8.3	233	52.7	241	26.3	-4	38.0	300	57.2	-22	33.8
8	296	26.9	-13	6.6	263	57.7	271	25.5	-4	35.4	330	58.1	-22	33.3
10	326	26.9	-13	4.9	294	2.6	301	24.8	-4	32.8	0	59.0	-22	32.8
12	356	27.0	-13	3.2	324	7.5	331	24.1	-4	30.3	30	59.9	-22	32.2
14	26	27.0	-13	1.5	354	12.4	1	23.4	-4	27.7	61	.8	-22	31.7
16	56	27.1	-12	59.8	24	17.4	31	22.7	-4	25.1	91	1.7	-22	31.2
18	86	27.1	-12	58.1	54	22.3	61	22.0	-4	22.5	121	2.6	-22	30.6
20	116	27.1	-12	56.4	84	27.2	91	21.3	-4	20.0	151	3.5	-22	30.1
22	146	27.2	-12	54.7	114	32.2	121	20.5	-4	17.4	181	4.4	-22	29.6
Δ		0		8				-4		13		5		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 42	16 47	0 44	2 21	7 40	.5	11 2	4.6
55	7 26	17 4	0 38	2 2	6 29	1.3	12 13	3.7
50	7 13	17 16	0 34	1 49	5 47	1.6	12 53	3.4
45	7 3	17 26	0 30	1 39	5 17	1.8	13 22	3.2
40	6 55	17 34	0 28	1 31	4 54	2.0	13 45	3.0
35	6 48	17 41	0 26	1 25	4 35	2.1	14 4	2.9
30	6 41	17 48	0 25	1 21	4 18	2.1	14 20	2.8
20	6 30	17 59	0 23	1 14	3 50	2.3	14 47	2.7
10	6 20	18 8	0 22	1 11	3 26	2.4	15 11	2.5
0	6 11	18 18	0 21	1 11	3 4	2.4	15 32	2.4
10	6 1	18 27	0 22	1 12	2 42	2.5	15 54	2.3
20	5 51	18 37	0 23	1 17	2 17	2.6	16 17	2.2
30	5 39	18 49	0 25	1 25	1 49	2.7	16 43	2.0
35	5 32	18 56	0 27	1 32	1 33	2.8	16 59	1.9
40	5 24	19 3	0 29	1 40	1 13	2.9	17 17	1.8
45	5 15	19 12	0 32	1 53	0 50	3.0	17 39	1.6
50	5 4	19 23	0 35	2 11	0 20	3.2	18 6	1.4
55	4 50	19 37	0 41	2 44	...	.0	18 43	1.1
60	4 31	19 56	0 50	:::	...	.0	19 42	.3
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	225	56.9	58	-28	10.8	30	248	46.9	-22	.3	359	26.3	15	37.0		
2	254	46.5	58	-28	4.8	34	278	51.1	-22	.3	29	31.7	15	37.1		
4	283	36.0	57	-27	58.0	37	308	55.3	-22	.4	59	37.0	15	37.3		
6	312	25.4	57	-27	50.6	41	338	59.5	-22	.5	89	42.3	15	37.4		
8	341	14.9	57	-27	42.4	44	9	3.7	-22	.6	119	47.6	15	37.5		
10	10	4.3	57	-27	33.6	48	39	7.8	-22	.6	149	53.0	15	37.7		
12	38	53.8	57	-27	24.0	51	69	12.0	-22	.7	179	58.3	15	37.8		
14	67	43.2	57	-27	13.7	55	99	16.2	-22	.8	210	3.6	15	38.0		
16	96	32.7	58	-27	2.7	58	129	20.4	-22	.8	240	8.9	15	38.1		
18	125	22.2	58	-26	51.1	62	159	24.6	-22	.9	270	14.3	15	38.2		
20	154	11.8	58	-26	38.7	65	189	28.8	-22	1.0	300	19.6	15	38.4		
22	183	1.5	59	-26	25.6	69	219	33.0	-22	1.0	330	24.9	15	38.5		
Δ								21		0			27		1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	-14	12.9	.1	16.2	T _m	9 18	2.5	57.4	15.7
12	-14	11.9	T _{m☉}	12 h 14.2 min	Starost	25.8 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min	'	°	'	h min	'	°	'	h min	'
♀	13 54	.1	8	-3.8	♃	7 24	.0	105	-1.8
♂	9 56	.1	67	1.3	♄	0 2	.0	216	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	27.2	-12	53.0	144	37.1	151	19.8	-4	14.8	211	5.3	-22	29.0
2	206	27.3	-12	51.3	174	42.0	181	19.1	-4	12.3	241	6.2	-22	28.5
4	236	27.3	-12	49.5	204	46.9	211	18.4	-4	9.7	271	7.1	-22	27.9
6	266	27.4	-12	47.8	234	51.9	241	17.7	-4	7.1	301	8.0	-22	27.4
8	296	27.4	-12	46.1	264	56.8	271	17.0	-4	4.5	331	8.9	-22	26.8
10	326	27.5	-12	44.4	295	1.7	301	16.3	-4	2.0	1	9.8	-22	26.3
12	356	27.6	-12	42.7	325	6.7	331	15.6	-3	59.4	31	10.8	-22	25.7
14	26	27.6	-12	41.0	355	11.6	1	14.9	-3	56.8	61	11.7	-22	25.2
16	56	27.7	-12	39.3	25	16.5	31	14.2	-3	54.2	91	12.6	-22	24.6
18	86	27.7	-12	37.5	55	21.4	61	13.5	-3	51.7	121	13.5	-22	24.1
20	116	27.8	-12	35.8	85	26.4	91	12.8	-3	49.1	151	14.4	-22	23.5
22	146	27.9	-12	34.1	115	31.3	121	12.1	-3	46.5	181	15.3	-22	22.9
Δ		0		9				-4		13		5		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 39	16 50	0 44	2 21	7 52	.2	12 53	4.8
55	7 23	17 6	0 38	2 2	7 0	.8	13 42	4.1
50	7 11	17 18	0 33	1 49	6 27	1.2	14 15	3.7
45	7 2	17 27	0 30	1 39	6 1	1.4	14 39	3.4
40	6 54	17 35	0 28	1 31	5 41	1.6	14 58	3.2
35	6 47	17 42	0 26	1 25	5 24	1.8	15 14	3.1
30	6 40	17 48	0 24	1 20	5 9	1.9	15 28	2.9
20	6 29	17 59	0 23	1 14	4 45	2.1	15 51	2.7
10	6 20	18 9	0 23	1 11	4 23	2.2	16 12	2.5
0	6 11	18 18	0 21	1 10	4 3	2.4	16 30	2.3
10	6 2	18 27	0 22	1 12	3 42	2.5	16 49	2.2
20	5 52	18 36	0 23	1 17	3 21	2.7	17 9	2.0
30	5 40	18 48	0 25	1 25	2 55	2.9	17 31	1.8
35	5 33	18 54	0 27	1 31	2 40	3.0	17 44	1.6
40	5 26	19 2	0 29	1 40	2 23	3.1	17 60	1.5
45	5 17	19 11	0 31	1 52	2 2	3.3	18 17	1.3
50	5 6	19 22	0 35	2 10	1 35	3.6	18 40	1.0
55	4 52	19 35	0 41	2 41	0 59	3.9	19 8	.7
60	4 34	19 53	0 49	:::	0 2	4.7	19 49	.1
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	211	51.3	59	-26	11.8	72	249	37.1	-22	1.1	0	30.2	15	38.6		
2	240	41.1	60	-25	57.4	76	279	41.3	-22	1.2	30	35.6	15	38.8		
4	269	31.1	61	-25	42.3	79	309	45.5	-22	1.2	60	40.9	15	38.9		
6	298	21.2	61	-25	26.4	82	339	49.7	-22	1.3	90	46.2	15	39.0		
8	327	11.5	62	-25	9.9	86	9	53.9	-22	1.4	120	51.5	15	39.2		
10	356	1.8	63	-24	52.8	89	39	58.1	-22	1.5	150	56.9	15	39.3		
12	24	52.4	64	-24	35.0	92	70	2.3	-22	1.5	181	2.2	15	39.5		
14	53	43.1	65	-24	16.5	96	100	6.5	-22	1.6	211	7.5	15	39.6		
16	82	34.0	65	-23	57.4	99	130	10.7	-22	1.7	241	12.8	15	39.7		
18	111	25.1	66	-23	37.6	102	160	14.9	-22	1.7	271	18.2	15	39.9		
20	140	16.4	67	-23	17.2	105	190	19.1	-22	1.8	301	23.5	15	40.0		
22	169	7.9	69	-22	56.2	108	220	23.3	-22	1.9	331	28.8	15	40.1		
Δ								21		0			27		1	

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UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 27.9	-12 32.4	145 36.2	151 11.4	-3 43.9	211 16.2	-22 22.4
2	206 28.0	-12 30.6	175 41.2	181 10.7	-3 41.3	241 17.1	-22 21.8
4	236 28.0	-12 28.9	205 46.1	211 10.0	-3 38.7	271 18.0	-22 21.2
6	266 28.1	-12 27.2	235 51.0	241 9.3	-3 36.2	301 18.9	-22 20.7
8	296 28.2	-12 25.5	265 55.9	271 8.6	-3 33.6	331 19.8	-22 20.1
10	326 28.3	-12 23.7	296 .9	301 7.9	-3 31.0	1 20.7	-22 19.5
12	356 28.3	-12 22.0	326 5.8	331 7.2	-3 28.4	31 21.6	-22 19.0
14	26 28.4	-12 20.3	356 10.7	1 6.5	-3 25.8	61 22.5	-22 18.4
16	56 28.5	-12 18.5	26 15.6	31 5.8	-3 23.2	91 23.4	-22 17.8
18	86 28.5	-12 16.8	56 20.6	61 5.1	-3 20.7	121 24.4	-22 17.2
20	116 28.6	-12 15.0	86 25.5	91 4.4	-3 18.1	151 25.3	-22 16.7
22	146 28.7	-12 13.3	116 30.4	121 3.7	-3 15.5	181 26.2	-22 16.1
Δ	0	9		-3	13	5	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 37	16 53	0 44	2 21	7 55	.0	14 47	4.6
55	7 21	17 8	0 38	2 2	7 20	.6	15 19	4.1
50	7 10	17 19	0 33	1 49	6 55	.9	15 43	3.7
45	7 0	17 29	0 30	1 39	6 36	1.2	16 1	3.5
40	6 52	17 37	0 28	1 31	6 20	1.4	16 15	3.2
35	6 45	17 43	0 26	1 25	6 6	1.5	16 27	3.1
30	6 39	17 49	0 24	1 20	5 55	1.7	16 38	2.9
20	6 29	17 60	0 22	1 14	5 34	1.9	16 56	2.7
10	6 20	18 9	0 21	1 11	5 17	2.1	17 12	2.4
0	6 11	18 18	0 21	1 10	4 60	2.3	17 26	2.2
10	6 2	18 26	0 22	1 12	4 43	2.5	17 41	2.0
20	5 52	18 36	0 23	1 16	4 25	2.7	17 56	1.8
30	5 41	18 47	0 25	1 25	4 5	2.9	18 13	1.6
35	5 34	18 53	0 26	1 31	3 52	3.1	18 24	1.4
40	5 27	19 1	0 29	1 39	3 38	3.2	18 35	1.2
45	5 18	19 9	0 31	1 51	3 22	3.4	18 48	1.0
50	5 8	19 20	0 35	2 9	3 1	3.7	19 4	.8
55	4 54	19 33	0 40	2 39	2 34	4.1	19 25	.5
60	4 37	19 50	0 49	:::	1 55	4.7	19 52	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	197 59.6	70 -22	34.6	111	250 27.5	-22 1.9	1 34.1	15 40.3
2	226 51.5	71 -22	12.4	114	280 31.7	-22 2.0	31 39.4	15 40.4
4	255 43.7	72 -21	49.6	117	310 35.9	-22 2.1	61 44.8	15 40.6
6	284 36.1	73 -21	26.2	120	340 40.1	-22 2.1	91 50.1	15 40.7
8	313 28.7	74 -21	2.2	123	10 44.3	-22 2.2	121 55.4	15 40.8
10	342 21.5	75 -20	37.6	125	40 48.5	-22 2.3	152 .7	15 41.0
12	11 14.6	77 -20	12.6	128	70 52.7	-22 2.3	182 6.1	15 41.1
14	40 7.9	78 -19	46.9	131	100 56.9	-22 2.4	212 11.4	15 41.2
16	69 1.5	79 -19	20.8	133	131 1.1	-22 2.5	242 16.7	15 41.4
18	97 55.3	80 -18	54.1	136	161 5.3	-22 2.5	272 22.0	15 41.5
20	126 49.3	81 -18	27.0	138	191 9.6	-22 2.6	302 27.4	15 41.6
22	155 43.6	83 -17	59.3	141	221 13.8	-22 2.6	332 32.7	15 41.8
Δ					21	0	27	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	-14 8.2	.1	16.2	T _m	11 13	2.3	59.2 16.1		
12	-14 6.4	T _{m☉}	12 h 14.1 min	Starost	27.8 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 56	.1	6	-3.8	♄	7 17	.0	105	-1.8
	9 55	.1	66	1.3	♅	23 49	.0	216	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 28.8	-12 11.6	146 35.4	151 3.1	-3 12.9	211 27.1	-22 15.5
2	206 28.9	-12 9.8	176 40.3	181 2.4	-3 10.3	241 28.0	-22 14.9
4	236 28.9	-12 8.1	206 45.2	211 1.7	-3 7.7	271 28.9	-22 14.3
6	266 29.0	-12 6.3	236 50.1	241 1.0	-3 5.1	301 29.8	-22 13.7
8	296 29.1	-12 4.6	266 55.1	271 .3	-3 2.5	331 30.7	-22 13.1
10	326 29.2	-12 2.8	297 .0	300 59.6	-2 59.9	1 31.6	-22 12.6
12	356 29.3	-12 1.1	327 4.9	330 58.9	-2 57.3	31 32.5	-22 12.0
14	26 29.4	-11 59.3	357 9.9	0 58.3	-2 54.8	61 33.5	-22 11.4
16	56 29.4	-11 57.6	27 14.8	30 57.6	-2 52.2	91 34.4	-22 10.8
18	86 29.5	-11 55.8	57 19.7	60 56.9	-2 49.6	121 35.3	-22 10.2
20	116 29.6	-11 54.1	87 24.6	90 56.2	-2 47.0	151 36.2	-22 9.6
22	146 29.7	-11 52.3	117 29.6	120 55.5	-2 44.4	181 37.1	-22 9.0
Δ	0	9		-3	13	5	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 34	16 55	0 44	2 20	7 56	.0	16 38	4.5
55	7 19	17 10	0 38	2 2	7 34	.4	16 58	4.0
50	7 8	17 21	0 33	1 48	7 17	.7	17 12	3.7
45	6 59	17 30	0 30	1 38	7 4	1.0	17 24	3.4
40	6 51	17 38	0 28	1 31	6 52	1.2	17 33	3.2
35	6 44	17 44	0 26	1 25	6 43	1.3	17 41	3.0
30	6 39	17 50	0 24	1 20	6 34	1.5	17 48	2.9
20	6 28	18 0	0 22	1 14	6 20	1.7	18 0	2.6
10	6 19	18 9	0 21	1 11	6 7	2.0	18 10	2.4
0	6 11	18 17	0 21	1 10	5 55	2.2	18 20	2.1
10	6 2	18 26	0 22	1 12	5 43	2.4	18 30	1.9
20	5 53	18 35	0 23	1 16	5 30	2.6	18 40	1.7
30	5 42	18 46	0 25	1 24	5 15	2.9	18 51	1.4
35	5 35	18 52	0 26	1 31	5 6	3.1	18 58	1.3
40	5 28	18 59	0 28	1 39	4 56	3.2	19 5	1.1
45	5 20	19 8	0 31	1 51	4 45	3.4	19 13	.9
50	5 9	19 18	0 35	2 8	4 30	3.7	19 23	.7
55	4 56	19 30	0 40	2 37	4 12	4.1	19 36	.4
60	4 39	19 47	0 48	4 3	3 47	4.5	19 52	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	184 38.2	84 -17	31.2	143	251 18.0	-22 2.7	2 38.0	15 41.9
2	213 32.9	85 -17	2.6	145	281 22.2	-22 2.8	32 43.3	15 42.0
4	242 28.0	86 -16	33.5	147	311 26.4	-22 2.8	62 48.6	15 42.2
6	271 23.2	87 -16	4.1	149	341 30.6	-22 2.9	92 54.0	15 42.3
8	300 18.7	89 -15	34.2	152	11 34.8	-22 3.0	122 59.3	15 42.5
10	329 14.4	90 -15	3.8	154	41 39.1	-22 3.0	153 4.6	15 42.6
12	358 10.4	91 -14	33.1	155	71 43.3	-22 3.1	183 9.9	15 42.7
14	27 6.6	92 -14	2.1	157	101 47.5	-22 3.2	213 15.3	15 42.9
16	56 3.0	93 -13	30.6	159	131 51.7	-22 3.2	243 20.6	15 43.0
18	84 59.6	94 -12	58.8	161	161 55.9	-22 3.3	273 25.9	15 43.1
20	113 56.4	95 -12	26.7	162	192 .2	-22 3.4	303 31.2	15 43.3
22	142 53.4	96 -11	54.2	164	222 4.4	-22 3.4	333 36.5	15 43.4
Δ					21	0	27	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	-14 4.7	.2	16.2	T _m	12 8	2.2	59.9 16.3		
12	-14 2.6	T _{m☉}	12 h 14.0 min	Starost	28.8 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 56	.1	4	-3.8	♄	7 14	.0	105	-1.8
	9 54	.1	65	1.3	♅	23 45	.0	216	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 29.8 -11 50.6		147 34.5	150 54.8 - 2 41.8	211 38.0 -22 8.4		
2	206 29.9 -11 48.8		177 39.4	180 54.2 - 2 39.2	241 38.9 -22 7.8		
4	236 30.0 -11 47.0		207 44.4	210 53.5 - 2 36.6	271 39.9 -22 7.2		
6	266 30.1 -11 45.3		237 49.3	240 52.8 - 2 34.0	301 40.8 -22 6.6		
8	296 30.2 -11 43.5		267 54.2	270 52.1 - 2 31.4	331 41.7 -22 6.0		
10	326 30.3 -11 41.8		297 59.1	300 51.5 - 2 28.8	1 42.6 -22 5.3		
12	356 30.4 -11 40.0		328 4.1	330 50.8 - 2 26.2	31 43.5 -22 4.7		
14	26 30.5 -11 38.2		358 9.0	0 50.1 - 2 23.6	61 44.4 -22 4.1		
16	56 30.6 -11 36.5		28 13.9	30 49.4 - 2 21.0	91 45.4 -22 3.5		
18	86 30.7 -11 34.7		58 18.9	60 48.8 - 2 18.4	121 46.3 -22 2.9		
20	116 30.8 -11 32.9		88 23.8	90 48.1 - 2 15.8	151 47.2 -22 2.3		
22	146 30.9 -11 31.2		118 28.7	120 47.4 - 2 13.2	181 48.1 -22 1.6		
Δ	1	9		-3	13	5	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 31	16 58	0 43	2 20	7 56	.0	18 26	4.4
55	7 17	17 12	0 37	2 2	7 44	.3	18 34	4.0
50	7 6	17 23	0 33	1 48	7 34	.6	18 41	3.6
45	6 57	17 32	0 30	1 38	7 27	.9	18 46	3.4
40	6 50	17 39	0 28	1 31	7 20	1.1	18 50	3.2
35	6 43	17 45	0 26	1 25	7 15	1.2	18 54	3.0
30	6 38	17 51	0 24	1 20	7 10	1.4	18 57	2.8
20	6 28	18 0	0 22	1 14	7 2	1.7	19 2	2.6
10	6 19	18 9	0 21	1 11	6 54	1.9	19 7	2.3
0	6 11	18 17	0 21	1 10	6 47	2.1	19 12	2.1
10	6 2	18 26	0 21	1 12	6 40	2.3	19 16	1.9
20	5 53	18 35	0 23	1 16	6 33	2.6	19 20	1.6
30	5 42	18 45	0 25	1 24	6 24	2.9	19 25	1.4
35	5 36	18 51	0 26	1 30	6 19	3.0	19 28	1.2
40	5 29	18 58	0 28	1 39	6 14	3.2	19 31	1.0
45	5 21	19 6	0 31	1 50	6 7	3.4	19 35	.8
50	5 11	19 16	0 35	2 7	5 59	3.7	19 40	.6
55	4 59	19 28	0 40	2 35	5 49	4.0	19 45	.3
60	4 42	19 44	0 48	3 47	5 37	4.4	19 52	.0
S								

UT	MESEC				JUPITER				SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♄	δ _♄	S _♅	δ _♅
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	171 50.6 97 -11 21.5	165	252 8.6 -22 3.5		3 41.9	15 43.5						
2	200 48.1 98 -10 48.4	167	282 12.8 -22 3.5		33 47.2	15 43.7						
4	229 45.7 99 -10 15.1	168	312 17.1 -22 3.6		63 52.5	15 43.8						
6	258 43.4 100 - 9 41.5	169	342 21.3 -22 3.7		93 57.8	15 43.9						
8	287 41.4 101 - 9 7.6	170	12 25.5 -22 3.7		124 3.1	15 44.1						
10	316 39.5 101 - 8 33.6	171	42 29.7 -22 3.8		154 8.5	15 44.2						
12	345 37.7 102 - 7 59.3	172	72 34.0 -22 3.9		184 13.8	15 44.3						
14	14 36.1 103 - 7 24.8	173	102 38.2 -22 3.9		214 19.1	15 44.5						
16	43 34.7 103 - 6 50.2	174	132 42.4 -22 4.0		244 24.4	15 44.6						
18	72 33.4 104 - 6 15.3	175	162 46.7 -22 4.0		274 29.7	15 44.7						
20	101 32.2 105 - 5 40.3	176	192 50.9 -22 4.1		304 35.1	15 44.9						
22	130 31.1 105 - 5 5.2	176	222 55.1 -22 4.2		334 40.4	15 45.0						
Δ			21	0	27	1						

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	s	'	h min	min	'	'
00	-14 .6	.2	16.2	T _m	12 60	2.1	60.4 16.5
12	-13 58.1	T _{m☉}	12 h 14.0 min	Starost	.3 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☉	h min	'	°		☉	h min	'	°	
♂	13 57	.1	3	-3.8	♂	7 10	.0	105	-1.8
♂	9 53	.1	64	1.3	♂	23 41	.0	216	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 31.0 -11 29.4		148 33.6	150 46.7 - 2 10.6	211 49.0 -22 1.0		
2	206 31.1 -11 27.6		178 38.6	180 46.1 - 2 8.0	241 49.9 -22 .4		
4	236 31.2 -11 25.8		208 43.5	210 45.4 - 2 5.4	271 50.9 -21 59.8		
6	266 31.4 -11 24.1		238 48.4	240 44.7 - 2 2.8	301 51.8 -21 59.2		
8	296 31.5 -11 22.3		268 53.4	270 44.1 - 2 .2	331 52.7 -21 58.5		
10	326 31.6 -11 20.5		298 58.3	300 43.4 - 1 57.6	1 53.6 -21 57.9		
12	356 31.7 -11 18.7		329 3.2	330 42.7 - 1 55.0	31 54.5 -21 57.3		
14	26 31.8 -11 16.9		359 8.1	0 42.1 - 1 52.4	61 55.5 -21 56.6		
16	56 31.9 -11 15.2		29 13.1	30 41.4 - 1 49.8	91 56.4 -21 56.0		
18	86 32.0 -11 13.4		59 18.0	60 40.7 - 1 47.2	121 57.3 -21 55.4		
20	116 32.2 -11 11.6		89 22.9	90 40.1 - 1 44.6	151 58.2 -21 54.7		
22	146 32.3 -11 9.8		119 27.9	120 39.4 - 1 42.0	181 59.2 -21 54.1		
Δ	1	9		-3	13	5	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 28	17 1	0 43	2 20	7 55	.0	20 11	4.4
55	7 15	17 14	0 37	2 2	7 52	.3	20 10	4.0
50	7 4	17 25	0 33	1 48	7 49	.6	20 8	3.6
45	6 55	17 33	0 30	1 38	7 48	.8	20 7	3.4
40	6 48	17 40	0 28	1 31	7 46	1.0	20 7	3.2
35	6 42	17 46	0 26	1 25	7 45	1.2	20 6	3.0
30	6 37	17 51	0 24	1 20	7 44	1.4	20 5	2.8
20	6 27	18 1	0 22	1 14	7 42	1.6	20 4	2.6
10	6 19	18 9	0 21	1 11	7 40	1.9	20 3	2.3
0	6 11	18 17	0 21	1 10	7 38	2.1	20 2	2.1
10	6 2	18 25	0 21	1 12	7 37	2.3	20 1	1.9
20	5 53	18 34	0 23	1 16	7 35	2.6	19 60	1.6
30	5 43	18 44	0 25	1 24	7 33	2.8	19 58	1.4
35	5 37	18 50	0 26	1 30	7 32	3.0	19 57	1.2
40	5 30	18 57	0 28	1 38	7 31	3.2	19 57	1.1
45	5 22	19 4	0 31	1 49	7 29	3.4	19 55	.9
50	5 13	19 14	0 35	2 6	7 27	3.6	19 54	.6
55	5 1	19 26	0 40	2 33	7 25	4.0	19 53	.3
60	4 45	19 41	0 48	3 37	7 23	4.4	19 51	.0
S								

UT	MESEC				JUPITER				SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♄	δ _♄	S _♅	δ _♅
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	159 30.1 105 - 4 30.0	177	252 59.4 -22 4.2		4 45.7	15 45.1						
2	188 29.2 106 - 3 54.6	177	283 3.6 -22 4.3		34 51.0	15 45.3						
4	217 28.4 106 - 3 19.2	178	313 7.9 -22 4.3		64 56.3	15 45.4						
6	246 27.6 107 - 2 43.7	178	343 12.1 -22 4.4		95 1.7	15 45.5						
8	275 26.9 107 - 2 8.1	178	13 16.3 -22 4.5		125 7.0	15 45.7						
10	304 26.3 107 - 1 32.5	178	43 20.6 -22 4.5		155 12.3	15 45.8						
12	333 25.7 107 - 0 56.8	178	73 24.8 -22 4.6		185 17.6	15 45.9						
14	2 25.2 107 - 0 21.1	178	103 29.1 -22 4.6		215 22.9	15 46.1						
16	31 24.7 107 - 0 14.5	178	133 33.3 -22 4.7		245 28.3	15 46.2						
18	60 24.2 108 0 50.2	178	163 37.6 -22 4.8		275 33.6	15 46.3						
20	89 23.7 107 1 25.8	178	193 41.8 -22 4.8		305 38.9	15 46.5						
22	118 23.1 107 2 1.4	178	223 46.1 -22 4.9		335 44.2	15 46.6						
Δ			21	0	27	1						

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	s	'	h min	min	'	'
00	-13 55.7	.2	16.2	T _m	13 50	2.1	60.6 16.5
12	-13 53.0	T _{m☉}	12 h 13.9 min	Starost	1.3 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☉	h min	'	°		☉	h min	'	°	
♂	13 57	.1	2	-3.8	♂	7 7	.0	104	-1.8
♂	9 52	.1	63	1.3	♂	23 37	.0	216	.1

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	32.4	-11	8.0	149	32.8	150	38.7	-1	39.3	212	.1	-21	53.4
2	206	32.5	-11	6.2	179	37.7	180	38.1	-1	36.7	242	1.0	-21	52.8
4	236	32.7	-11	4.4	209	42.6	210	37.4	-1	34.1	272	1.9	-21	52.2
6	266	32.8	-11	2.6	239	47.6	240	36.7	-1	31.5	302	2.9	-21	51.5
8	296	32.9	-11	.9	269	52.5	270	36.1	-1	28.9	332	3.8	-21	50.9
10	326	33.0	-10	59.1	299	57.4	300	35.4	-1	26.3	2	4.7	-21	50.2
12	356	33.2	-10	57.3	330	2.3	330	34.8	-1	23.7	32	5.6	-21	49.6
14	26	33.3	-10	55.5	0	7.3	0	34.1	-1	21.1	62	6.6	-21	48.9
16	56	33.4	-10	53.7	30	12.2	30	33.4	-1	18.5	92	7.5	-21	48.3
18	86	33.6	-10	51.9	60	17.1	60	32.8	-1	15.9	122	8.4	-21	47.6
20	116	33.7	-10	50.1	90	22.1	90	32.1	-1	13.3	152	9.3	-21	47.0
22	146	33.8	-10	48.3	120	27.0	120	31.5	-1	10.7	182	10.3	-21	46.3
Δ		1		9				-3		13		5		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 25	17 3	0 43	2 20	7 54	.0	21 56	4.5
55	7 12	17 16	0 37	2 1	7 60	.4	21 45	4.0
50	7 2	17 26	0 33	1 48	8 4	.7	21 36	3.7
45	6 54	17 34	0 30	1 38	8 8	.9	21 29	3.4
40	6 47	17 41	0 28	1 31	8 11	1.1	21 23	3.2
35	6 41	17 47	0 26	1 25	8 14	1.3	21 18	3.0
30	6 36	17 52	0 24	1 20	8 16	1.4	21 13	2.9
20	6 26	18 1	0 22	1 14	8 21	1.7	21 5	2.6
10	6 18	18 9	0 21	1 11	8 25	1.9	20 59	2.4
0	6 10	18 17	0 21	1 10	8 28	2.1	20 52	2.2
10	6 2	18 25	0 21	1 12	8 32	2.3	20 46	1.9
20	5 54	18 33	0 23	1 16	8 36	2.6	20 39	1.7
30	5 44	18 43	0 25	1 24	8 41	2.8	20 31	1.5
35	5 38	18 49	0 26	1 30	8 44	3.0	20 27	1.3
40	5 32	18 55	0 28	1 38	8 47	3.2	20 22	1.1
45	5 24	19 3	0 31	1 49	8 50	3.4	20 16	.9
50	5 15	19 12	0 35	2 5	8 55	3.7	20 9	.7
55	5 3	19 23	0 40	2 31	9 0	4.0	20 1	.4
60	4 47	19 38	0 47	3 30	9 7	4.4	19 50	.0

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	147	22.6	107	2	36.9	177	253	50.3	-22	4.9	5	49.5	15	46.7		
2	176	22.1	107	3	12.3	177	283	54.5	-22	5.0	35	54.8	15	46.9		
4	205	21.5	107	3	47.7	176	313	58.8	-22	5.1	66	.2	15	47.0		
6	234	20.9	107	4	22.9	176	344	3.1	-22	5.1	96	5.5	15	47.1		
8	263	20.2	106	4	58.0	175	14	7.3	-22	5.2	126	10.8	15	47.3		
10	292	19.5	106	5	33.0	174	44	11.6	-22	5.2	156	16.1	15	47.4		
12	321	18.6	106	6	7.8	173	74	15.8	-22	5.3	186	21.4	15	47.5		
14	350	17.8	105	6	42.5	172	104	20.1	-22	5.4	216	26.7	15	47.7		
16	19	16.8	105	7	17.0	171	134	24.3	-22	5.4	246	32.1	15	47.8		
18	48	15.7	104	7	51.3	170	164	28.6	-22	5.5	276	37.4	15	47.9		
20	77	14.5	103	8	25.4	169	194	32.8	-22	5.5	306	42.7	15	48.1		
22	106	13.1	103	8	59.2	168	224	37.1	-22	5.6	336	48.0	15	48.2		
Δ								21		0			27		1	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	-13 50.2	.3	16.2	T _m	14 40	2.1	60.6	16.5
12	-13 47.1	T _{m☉}	12 h 13.8 min	Starost	2.3 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 58	.1	62	-3.8	♄	7 4	.0	104	-1.8
	9 52	.1	62	1.3	♅	23 33	.0	216	.1

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	34.0	-10	46.5	150	31.9	150	30.8	-1	8.1	212	11.2	-21	45.6
2	206	34.1	-10	44.7	180	36.8	180	30.1	-1	5.4	242	12.1	-21	45.0
4	236	34.2	-10	42.9	210	41.8	210	29.5	-1	2.8	272	13.0	-21	44.3
6	266	34.4	-10	41.1	240	46.7	240	28.8	-1	.2	302	14.0	-21	43.6
8	296	34.5	-10	39.3	270	51.6	270	28.2	-0	57.6	332	14.9	-21	43.0
10	326	34.7	-10	37.5	300	56.6	300	27.5	-0	55.0	2	15.8	-21	42.3
12	356	34.8	-10	35.6	331	1.5	330	26.9	-0	52.4	32	16.8	-21	41.6
14	26	34.9	-10	33.8	1	6.4	0	26.2	-0	49.8	62	17.7	-21	41.0
16	56	35.1	-10	32.0	31	11.3	30	25.6	-0	47.2	92	18.6	-21	40.3
18	86	35.2	-10	30.2	61	16.3	60	24.9	-0	44.6	122	19.6	-21	39.6
20	116	35.4	-10	28.4	91	21.2	90	24.3	-0	41.9	152	20.5	-21	39.0
22	146	35.5	-10	26.6	121	26.1	120	23.6	-0	39.3	182	21.4	-21	38.3
Δ		1		9				-3		13		5		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 23	17 6	0 43	2 20	7 53	.0	23 44	4.6
55	7 10	17 18	0 37	2 1	8 8	.4	23 21	4.0
50	7 0	17 28	0 33	1 48	8 20	.8	23 4	3.7
45	6 52	17 36	0 30	1 38	8 29	1.0	22 50	3.4
40	6 46	17 42	0 28	1 30	8 37	1.2	22 39	3.2
35	6 40	17 48	0 26	1 25	8 44	1.4	22 30	3.0
30	6 35	17 53	0 24	1 20	8 50	1.5	22 22	2.9
20	6 26	18 2	0 22	1 14	9 1	1.8	22 8	2.6
10	6 18	18 10	0 21	1 11	9 10	2.0	21 55	2.4
0	6 10	18 17	0 21	1 10	9 19	2.2	21 44	2.2
10	6 3	18 25	0 21	1 11	9 28	2.4	21 32	2.1
20	5 54	18 33	0 23	1 16	9 38	2.6	21 20	1.8
30	5 45	18 42	0 25	1 24	9 49	2.9	21 6	1.6
35	5 39	18 48	0 26	1 29	9 56	3.0	20 58	1.5
40	5 33	18 54	0 28	1 37	10 3	3.2	20 49	1.3
45	5 25	19 1	0 31	1 48	10 12	3.4	20 39	1.1
50	5 16	19 10	0 34	2 4	10 22	3.7	20 26	.9
55	5 5	19 21	0 39	2 29	10 36	4.0	20 10	.5
60	4 50	19 36	0 47	3 23	10 54	4.6	19 49	.0

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	135	11.7	102	9	32.9	167	254	41.4	-22	5.6	6	53.3	15	48.3		
2	164	10.1	101	10	6.2	166	284	45.6	-22	5.7	36	58.6	15	48.5		
4	193	8.4	101	10	39.3	164	314	49.9	-22	5.8	67	4.0	15	48.6		
6	222	6.5	100	11	12.2	163	344	54.1	-22	5.8	97	9.3	15	48.7		
8	251	4.4	99	11	44.7	161	14	58.4	-22	5.9	127	14.6	15	48.9		
10	280	2.2	98	12	17.0	160	45	2.7	-22	5.9	157	19.9	15	49.0		
12	308	59.8	97	12	48.9	158	75	6.9	-22	6.0	187	25.2	15	49.1		
14	337	57.2	96	13	20.5	156	105	11.2	-22	6.0	217	30.5	15	49.3		
16	6	54.4	95	13	51.7	154	135	15.5	-22	6.1	247	35.8	15	49.4		
18	35	51.5	94	14	22.6	153	165	19.8	-22	6.2	277	41.2	15	49.5		
20	64	48.3	93	14	53.1	151	195	24.0	-22	6.2	307	46.5	15	49.6		
22	93	44.9	92	15	23.2	149	225	28.3	-22	6.3	337	51.8	15	49.8		
Δ								21		0			27		1	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	-13						

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
0	176	35.7	-10	24.8	151	31.1	150	23.0	-0	36.7	212	22.4	-21	37.6
2	206	35.8	-10	23.0	181	36.0	180	22.3	-0	34.1	242	23.3	-21	36.9
4	236	36.0	-10	21.1	211	40.9	210	21.7	-0	31.5	272	24.2	-21	36.2
6	266	36.1	-10	19.3	241	45.8	240	21.0	-0	28.9	302	25.2	-21	35.5
8	296	36.3	-10	17.5	271	50.8	270	20.4	-0	26.3	332	26.1	-21	34.9
10	326	36.4	-10	15.7	301	55.7	300	19.7	-0	23.7	2	27.0	-21	34.2
12	356	36.6	-10	13.9	332	.6	330	19.1	-0	21.0	32	28.0	-21	33.5
14	26	36.8	-10	12.0	2	5.6	0	18.4	-0	18.4	62	28.9	-21	32.8
16	56	36.9	-10	10.2	32	10.5	30	17.8	-0	15.8	92	29.8	-21	32.1
18	86	37.1	-10	8.4	62	15.4	60	17.1	-0	13.2	122	30.8	-21	31.4
20	116	37.2	-10	6.6	92	20.3	90	16.5	-0	10.6	152	31.7	-21	30.7
22	146	37.4	-10	4.7	122	25.3	120	15.8	-0	8.0	182	32.7	-21	30.0
Δ		1		9				-3		13		5		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 20	17 8	0 43	2 20	7 53	.1	. . . .	.0
55	7 8	17 20	0 37	2 1	8 19	.6	. . . .	.0
50	6 58	17 30	0 33	1 48	8 38	1.0	. . . .	.0
45	6 51	17 37	0 30	1 38	8 54	1.2	. . . .	.0
40	6 44	17 43	0 27	1 30	9 6	1.4	23 56	3.1
35	6 39	17 49	0 26	1 24	9 17	1.6	23 43	3.0
30	6 34	17 54	0 24	1 20	9 27	1.7	23 31	2.9
20	6 25	18 2	0 22	1 14	9 43	1.9	23 11	2.7
10	6 18	18 10	0 21	1 11	9 58	2.1	22 54	2.5
0	6 10	18 17	0 21	1 10	10 12	2.3	22 38	2.4
10	6 3	18 24	0 21	1 11	10 26	2.5	22 22	2.2
20	5 55	18 32	0 22	1 16	10 41	2.7	22 4	2.0
30	5 46	18 41	0 25	1 23	10 58	2.9	21 45	1.8
35	5 40	18 46	0 26	1 29	11 8	3.0	21 33	1.7
40	5 34	18 52	0 28	1 37	11 20	3.2	21 20	1.6
45	5 27	18 60	0 31	1 48	11 34	3.4	21 5	1.4
50	5 18	19 8	0 34	2 3	11 51	3.6	20 46	1.1
55	5 7	19 19	0 39	2 28	12 13	4.0	20 22	.8
60	4 53	19 33	0 46	3 18	12 43	4.7	19 49	.1

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	122	41.3	91	15	53.0	147	255	32.6	-22	6.3	7	57.1	15	49.9
2	151	37.4	90	16	22.3	145	285	36.8	-22	6.4	38	2.4	15	50.0
4	180	33.4	89	16	51.2	142	315	41.1	-22	6.4	68	7.7	15	50.2
6	209	29.1	87	17	19.7	140	345	45.4	-22	6.5	98	13.0	15	50.3
8	238	24.6	86	17	47.7	138	15	49.7	-22	6.6	128	18.3	15	50.4
10	267	19.8	85	18	15.3	135	45	54.0	-22	6.6	158	23.7	15	50.6
12	296	14.8	84	18	42.4	133	75	58.2	-22	6.7	188	29.0	15	50.7
14	325	9.5	83	19	9.0	131	106	2.5	-22	6.7	218	34.3	15	50.8
16	354	4.0	81	19	35.1	128	136	6.8	-22	6.8	248	39.6	15	50.9
18	22	58.3	80	20	.7	126	166	11.1	-22	6.8	278	44.9	15	51.1
20	51	52.3	79	20	25.8	123	196	15.4	-22	6.9	308	50.2	15	51.2
22	80	46.1	78	20	50.4	120	226	19.6	-22	6.9	338	55.5	15	51.3
Δ							21			0		27		1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s		h min	min	'	'	
00	-13 37.1	.3	16.2	T _m	16 25	2.3	59.9	16.3
12	-13 33.3	T _{m☉}	12 h 13.6 min	Starost	4.3 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♀	13 59	.1	359	-3.8	♃	6 57	.0	104	-1.9
♂	9 50	.1	61	1.3	♄	23 24	.0	216	.1

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	37.6	-10	2.9	152	30.2	150	15.2	-0	5.4	212	33.6	-21	29.3
2	206	37.7	-10	1.1	182	35.1	180	14.5	-0	2.7	242	34.5	-21	28.6
4	236	37.9	-9	59.3	212	40.1	210	13.9	-0	.1	272	35.5	-21	27.9
6	266	38.1	-9	57.4	242	45.0	240	13.2	-0	2.5	302	36.4	-21	27.2
8	296	38.2	-9	55.6	272	49.9	270	12.6	-0	5.1	332	37.4	-21	26.5
10	326	38.4	-9	53.8	302	54.8	300	12.0	-0	7.7	2	38.3	-21	25.8
12	356	38.6	-9	51.9	332	59.8	330	11.3	-0	10.3	32	39.2	-21	25.1
14	26	38.7	-9	50.1	3	4.7	0	10.7	-0	12.9	62	40.2	-21	24.4
16	56	38.9	-9	48.3	33	9.6	30	10.0	-0	15.6	92	41.1	-21	23.7
18	86	39.1	-9	46.4	63	14.5	60	9.4	-0	18.2	122	42.1	-21	23.0
20	116	39.2	-9	44.6	93	19.5	90	8.7	-0	20.8	152	43.0	-21	22.3
22	146	39.4	-9	42.7	123	24.4	120	8.1	-0	23.4	182	43.9	-21	21.6
Δ		1		9				-3		13		5		4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 17	17 11	0 43	2 19	7 55	.3	1 37	4.7
55	7 5	17 22	0 37	2 1	8 34	1.0	0 59	3.9
50	6 56	17 31	0 33	1 48	9 2	1.3	0 33	3.6
45	6 49	17 39	0 30	1 38	9 23	1.6	0 13	3.3
40	6 43	17 45	0 27	1 30	9 40	1.7	. . . .	.0
35	6 38	17 50	0 26	1 24	9 55	1.8	. . . .	.0
30	6 33	17 54	0 24	1 20	10 8	2.0	. . . .	.0
20	6 24	18 3	0 22	1 14	10 30	2.1	. . . .	.0
10	6 17	18 10	0 21	1 10	10 49	2.3	23 54	2.5
0	6 10	18 17	0 21	1 10	11 7	2.4	23 34	2.4
10	6 3	18 24	0 21	1 11	11 25	2.5	23 14	2.3
20	5 55	18 31	0 22	1 15	11 45	2.7	22 53	2.2
30	5 46	18 40	0 25	1 23	12 7	2.8	22 29	2.1
35	5 41	18 45	0 26	1 29	12 21	2.9	22 14	2.0
40	5 35	18 51	0 28	1 37	12 36	3.1	21 58	1.9
45	5 28	18 58	0 31	1 47	12 55	3.2	21 38	1.8
50	5 20	19 6	0 34	2 2	13 18	3.4	21 14	1.6
55	5 9	19 16	0 39	2 26	13 50	3.8	20 41	1.2
60	4 55	19 30	0 46	3 13	14 36	4.7	19 52	.4

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	109	39.6	76	21	14.4	117	256	23.9	-22	7.0	9	.8	15	51.5
2	138	32.8	75	21	37.9	115	286	28.2	-22	7.0	39	6.1	15	51.6
4	167	25.8	74	22	.8	112	316	32.5	-22	7.1	69	11.5	15	51.7
6	196	18.6	73	22	23.2	109	346	36.8	-22	7.2	99	16.8	15	51.8
8	225	11.1	71	22	45.0	106	16	41.1	-22	7.2	129	22.1	15	52.0
10	254	3.4	70	23	6.1	103	46	45.4	-22	7.3	159	27.4	15	52.1
12	282	55.5	69	23	26.7	100	76	49.7	-22	7.3	189	32.7	15	52.2
14	311	47.3	68	23	46.7	97	106	54.0	-22	7.4	219	38.0	15	52.4
16	340	38.9	67	24	6.1	94	136	58.3	-22	7.4	249	43.3	15	52.5
18	9	30.2	66	24	24.9	91	167	2.5	-22	7.5	279	48.6	15	52.6
20	38	21.4	65	24	43.0	87	197	6.8	-22	7.5	309	53.9	15	52.7
22	67	12.3	64	25	.5	84	227	11.1	-22	7.6	339	59.2	15	52.9
Δ							21			0		27		1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s		h min	min	'	'	
00	-13 29.6	.3	16.2	T _m	17 20	2.5	59.3	16.1
12	-13 25.5	T _{m☉}	12 h 13.4 min	Starost	5.3 d	Faza	☉	

PLANETE							
Pl.	T _m						

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	176 39.6	- 9 40.9	153 29.3	150 7.5	0 26.0	212 44.9	-21 20.8	
2	206 39.8	- 9 39.1	183 34.3	180 6.8	0 28.6	242 45.8	-21 20.1	
4	236 40.0	- 9 37.2	213 39.2	210 6.2	0 31.2	272 46.8	-21 19.4	
6	266 40.1	- 9 35.4	243 44.1	240 5.5	0 33.9	302 47.7	-21 18.7	
8	296 40.3	- 9 33.5	273 49.0	270 4.9	0 36.5	332 48.7	-21 18.0	
10	326 40.5	- 9 31.7	303 54.0	300 4.3	0 39.1	2 49.6	-21 17.2	
12	356 40.7	- 9 29.8	333 58.9	330 3.6	0 41.7	32 50.6	-21 16.5	
14	26 40.9	- 9 28.0	4 3.8	0 3.0	0 44.3	62 51.5	-21 15.8	
16	56 41.0	- 9 26.1	34 8.8	30 2.3	0 46.9	92 52.5	-21 15.1	
18	86 41.2	- 9 24.3	64 13.7	60 1.7	0 49.5	122 53.4	-21 14.3	
20	116 41.4	- 9 22.4	94 18.6	90 1.1	0 52.2	152 54.4	-21 13.6	
22	146 41.6	- 9 20.6	124 23.5	120 .4	0 54.8	182 55.3	-21 12.9	
Δ	1	9		-3	13	5	4	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 14	17 13	0 43	2 19	8 2	.8	3 29	4.3
55	7 3	17 25	0 37	2 1	8 58	1.6	2 33	3.5
50	6 54	17 33	0 33	1 48	9 34	1.8	1 58	3.2
45	6 47	17 40	0 30	1 38	10 0	2.0	1 32	3.1
40	6 41	17 46	0 27	1 30	10 22	2.1	1 12	2.9
35	6 36	17 51	0 26	1 24	10 39	2.2	0 55	2.8
30	6 32	17 55	0 24	1 20	10 55	2.2	0 40	2.8
20	6 24	18 3	0 22	1 14	11 21	2.3	0 15	2.6
10	6 17	18 10	0 21	1 10	11 43	2.4	...	.0
0	6 10	18 17	0 21	1 10	12 5	2.5	...	.0
10	6 3	18 23	0 21	1 11	12 26	2.5	...	.0
20	5 56	18 31	0 22	1 15	12 49	2.6	23 47	2.4
30	5 47	18 39	0 24	1 23	13 16	2.7	23 19	2.3
35	5 42	18 44	0 26	1 29	13 31	2.7	23 3	2.3
40	5 36	18 50	0 28	1 36	13 50	2.8	22 43	2.3
45	5 30	18 56	0 31	1 47	14 12	2.9	22 20	2.2
50	5 21	19 4	0 34	2 2	14 41	3.0	21 51	2.1
55	5 11	19 14	0 39	2 25	15 21	3.2	21 11	2.0
60	4 58	19 27	0 46	3 9	16 28	3.8	20 2	1.3
S								

UT	MESEC				JUPITER			SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ
h	°	'	°	'	°	'	°	'	°	'
0	96 3.1	63 25 17.3	81	257 15.4	-22 7.6	10 4.5	15 53.0			
2	124 53.6	62 25 33.5	78	287 19.7	-22 7.7	40 9.9	15 53.1			
4	153 44.0	61 25 49.1	74	317 24.0	-22 7.7	70 15.2	15 53.3			
6	182 34.2	60 26 3.9	71	347 28.3	-22 7.8	100 20.5	15 53.4			
8	211 24.2	59 26 18.1	68	17 32.6	-22 7.8	130 25.8	15 53.5			
10	240 14.1	59 26 31.7	64	47 37.0	-22 7.9	160 31.1	15 53.6			
12	269 3.9	58 26 44.5	61	77 41.3	-22 7.9	190 36.4	15 53.8			
14	297 53.5	57 26 56.6	57	107 45.6	-22 8.0	220 41.7	15 53.9			
16	326 43.0	57 27 8.1	54	137 49.9	-22 8.0	250 47.0	15 54.0			
18	355 32.3	56 27 18.9	50	167 54.2	-22 8.1	280 52.3	15 54.1			
20	24 21.6	56 27 29.0	47	197 58.5	-22 8.1	310 57.6	15 54.3			
22	53 10.8	56 27 38.3	43	228 2.8	-22 8.2	341 2.9	15 54.4			
Δ				22	0	27	1			

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	-13 21.4	.4	16.2	T _m	18 19	2.5	58.6 16.0		
12	-13 17.0	T _{m☉}	12 h 13.3 min	Starost	6.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 60	.1	357	-3.8	♄	6 50	.0	104	-1.9
	9 49	.1	59	1.3	♅	23 16	.0	217	.1

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	176 41.8	- 9 18.7	154 28.5	149 59.8	0 57.4	212 56.2	-21 12.1	
2	206 42.0	- 9 16.9	184 33.4	179 59.1	0 60.0	242 57.2	-21 11.4	
4	236 42.2	- 9 15.0	214 38.3	209 58.5	1 2.6	272 58.1	-21 10.6	
6	266 42.4	- 9 13.2	244 43.3	239 57.9	1 5.2	302 59.1	-21 9.9	
8	296 42.6	- 9 11.3	274 48.2	269 57.2	1 7.8	333 .1	-21 9.2	
10	326 42.8	- 9 9.5	304 53.1	299 56.6	1 10.5	3 1.0	-21 8.4	
12	356 42.9	- 9 7.6	334 58.0	329 56.0	1 13.1	33 2.0	-21 7.7	
14	26 43.1	- 9 5.8	5 3.0	359 55.3	1 15.7	63 2.9	-21 6.9	
16	56 43.3	- 9 3.9	35 7.9	29 54.7	1 18.3	93 3.9	-21 6.2	
18	86 43.5	- 9 2.0	65 12.8	59 54.1	1 20.9	123 4.8	-21 5.4	
20	116 43.7	- 9 .2	95 17.8	89 53.4	1 23.5	153 5.8	-21 4.7	
22	146 43.9	- 8 58.3	125 22.7	119 52.8	1 26.1	183 6.7	-21 3.9	
Δ	1	9		-3	13	5	4	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 11	17 16	0 42	2 19	8 21	2.2	5 12	2.9
55	7 1	17 27	0 37	2 1	9 35	2.4	3 58	2.7
50	6 52	17 35	0 33	1 48	10 18	2.4	3 16	2.7
45	6 46	17 41	0 30	1 38	10 48	2.4	2 46	2.6
40	6 40	17 47	0 27	1 30	11 12	2.4	2 22	2.6
35	6 35	17 52	0 26	1 24	11 31	2.4	2 3	2.6
30	6 31	17 56	0 24	1 20	11 48	2.4	1 47	2.5
20	6 23	18 3	0 22	1 14	12 16	2.4	1 19	2.5
10	6 16	18 10	0 21	1 10	12 41	2.4	0 55	2.5
0	6 10	18 16	0 21	1 10	13 3	2.4	0 33	2.5
10	6 3	18 23	0 21	1 11	13 26	2.4	0 10	2.4
20	5 56	18 30	0 22	1 15	13 51	2.4	...	.0
30	5 48	18 38	0 24	1 23	14 20	2.4	...	.0
35	5 43	18 43	0 26	1 28	14 37	2.4	23 58	2.6
40	5 37	18 48	0 28	1 36	14 57	2.4	23 38	2.6
45	5 31	18 54	0 30	1 46	15 21	2.3	23 14	2.6
50	5 23	19 2	0 34	2 1	15 52	2.3	22 42	2.7
55	5 13	19 12	0 39	2 23	16 37	2.2	21 58	2.8
60	5 1	19 24	0 45	3 5	18 0	1.9	20 34	3.2
S								

UT	MESEC				JUPITER			SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ
h	°	'	°	'	°	'	°	'	°	'
0	82 .0	56 27 47.0	40	258 7.1	-22 8.3	11 8.2	15 54.5			
2	110 49.1	55 27 55.0	36	288 11.4	-22 8.3	41 13.5	15 54.7			
4	139 38.2	55 28 2.2	33	318 15.7	-22 8.4	71 18.8	15 54.8			
6	168 27.2	55 28 8.8	29	348 20.0	-22 8.4	101 24.1	15 54.9			
8	197 16.2	55 28 14.6	26	18 24.4	-22 8.5	131 29.4	15 55.0			
10	226 5.3	55 28 19.7	22	48 28.7	-22 8.5	161 34.7	15 55.2			
12	254 54.4	56 28 24.2	19	78 33.0	-22 8.6	191 40.0	15 55.3			
14	283 43.5	56 28 27.9	15	108 37.3	-22 8.6	221 45.4	15 55.4			
16	312 32.7	56 28 30.9	12	138 41.6	-22 8.7	251 50.7	15 55.5			
18	341 21.9	57 28 33.2	8	168 46.0	-22 8.7	281 56.0	15 55.7			
20	10 11.2	57 28 34.8	5	198 50.3	-22 8.8	312 1.3	15 55.8			
22	39 .7	58 28 35.7	1	228 54.6	-22 8.8	342 6.6	15 55.9			
Δ				22	0	27	1			

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	-13 12.6	.4	16.2	T _m	19 18	2.4	57.9 15.8		
12	-13 7.9	T _{m☉}	12 h 13.1 min	Starost	7.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 0	.1	356	-3.8	♄	6 47	.0	104	-1.9
	9 48	.1	58	1.3	♅	23 11	.0	217	.1

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	176	44.1	- 8	56.4	149	52.2	1	28.7	213	7.7	-21	3.2		
2	206	44.3	- 8	54.6	179	51.5	1	31.4	243	8.6	-21	2.4		
4	236	44.5	- 8	52.7	215	37.5	209	50.9	1	34.0	273	9.6	-21	1.7
6	266	44.7	- 8	50.8	245	42.4	239	50.2	1	36.6	303	10.5	-21	.9
8	296	45.0	- 8	49.0	275	47.3	269	49.6	1	39.2	333	11.5	-21	.2
10	326	45.2	- 8	47.1	305	52.3	299	49.0	1	41.8	3	12.5	-20	59.4
12	356	45.4	- 8	45.2	335	57.2	329	48.3	1	44.4	33	13.4	-20	58.6
14	26	45.6	- 8	43.4	6	2.1	359	47.7	1	47.0	63	14.4	-20	57.9
16	56	45.8	- 8	41.5	36	7.0	29	47.1	1	49.6	93	15.3	-20	57.1
18	86	46.0	- 8	39.6	66	12.0	59	46.4	1	52.2	123	16.3	-20	56.3
20	116	46.2	- 8	37.8	96	16.9	89	45.8	1	54.9	153	17.3	-20	55.6
22	146	46.4	- 8	35.9	126	21.8	119	45.2	1	57.5	183	18.2	-20	54.8
Δ	1	9			-3	13				5	4			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 8	17 19	0 42	2 19	9 14	3.8	6 22	1.2
55	6 58	17 29	0 37	2 1	10 32	3.1	5 3	1.8
50	6 50	17 36	0 33	1 48	11 16	2.9	4 19	2.0
45	6 44	17 43	0 30	1 38	11 46	2.8	3 49	2.1
40	6 39	17 48	0 27	1 30	12 10	2.7	3 25	2.2
35	6 34	17 53	0 26	1 24	12 30	2.6	3 5	2.2
30	6 30	17 57	0 24	1 20	12 46	2.6	2 48	2.2
20	6 22	18 4	0 22	1 14	13 15	2.5	2 19	2.3
10	6 16	18 10	0 21	1 10	13 39	2.4	1 55	2.4
0	6 10	18 16	0 21	1 9	14 2	2.3	1 32	2.4
10	6 3	18 23	0 21	1 11	14 25	2.3	1 9	2.4
20	5 56	18 29	0 22	1 15	14 49	2.2	0 44	2.5
30	5 48	18 37	0 24	1 23	15 17	2.1	0 15	2.5
35	5 44	18 42	0 26	1 28	15 34	2.0	...	.0
40	5 39	18 47	0 28	1 36	15 53	1.9	...	.0
45	5 32	18 53	0 30	1 46	16 17	1.8	...	.0
50	5 25	19 0	0 34	2 0	16 48	1.7	23 47	3.1
55	5 16	19 9	0 38	2 22	17 30	1.4	23 5	3.4
60	5 3	19 21	0 45	3 2	18 45	.6	21 50	4.2

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	67	50.2	58	28	35.9	-2	258	58.9	-22	8.9	12	11.9	15	56.0
2	96	39.9	59	28	35.4	-6	289	3.3	-22	8.9	42	17.2	15	56.2
4	125	29.7	60	28	34.2	-9	319	7.6	-22	9.0	72	22.5	15	56.3
6	154	19.7	61	28	32.4	-13	349	11.9	-22	9.0	102	27.8	15	56.4
8	183	9.9	62	28	29.8	-16	19	16.2	-22	9.0	132	33.1	15	56.5
10	212	.3	63	28	26.6	-19	49	20.6	-22	9.1	162	38.4	15	56.7
12	240	50.8	64	28	22.7	-23	79	24.9	-22	9.1	192	43.7	15	56.8
14	269	41.6	65	28	18.2	-26	109	29.2	-22	9.2	222	49.0	15	56.9
16	298	32.7	66	28	13.0	-29	139	33.6	-22	9.2	252	54.3	15	57.0
18	327	23.9	68	28	7.1	-32	169	37.9	-22	9.3	282	59.6	15	57.2
20	356	15.5	69	28	.6	-36	199	42.2	-22	9.3	313	4.9	15	57.3
22	25	7.3	70	27	53.5	-39	229	46.6	-22	9.4	343	10.2	15	57.4
Δ							22	0			27	1		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	-13	3.3	.4	16.2	T _m 20 16	2.3	57.3	15.6
12	-12	58.3	T _{m☉} 12 h 13.0 min	Starost 8.3 d	Faza ☉			

PLANETE											
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.		
h	min	'	°	°	h min	'	°	°	°		
♀	14	1	.1	354	-3.8	♀	6	43	.0	104	-1.9
♂	9	47	.1	58	1.3	♂	23	7	.0	217	.1

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	176	46.6	- 8	34.0	149	44.5	2	.1	213	19.2	-20	54.0		
2	206	46.8	- 8	32.1	179	43.9	2	2.7	243	20.1	-20	53.3		
4	236	47.1	- 8	30.3	216	36.6	209	43.3	2	5.3	273	21.1	-20	52.5
6	266	47.3	- 8	28.4	246	41.5	239	42.6	2	7.9	303	22.1	-20	51.7
8	296	47.5	- 8	26.5	276	46.5	269	42.0	2	10.5	333	23.0	-20	50.9
10	326	47.7	- 8	24.6	306	51.4	299	41.4	2	13.1	3	24.0	-20	50.2
12	356	47.9	- 8	22.8	336	56.3	329	40.7	2	15.7	33	24.9	-20	49.4
14	26	48.2	- 8	20.9	7	1.2	359	40.1	2	18.3	63	25.9	-20	48.6
16	56	48.4	- 8	19.0	37	6.2	29	39.5	2	20.9	93	26.9	-20	47.8
18	86	48.6	- 8	17.1	67	11.1	59	38.9	2	23.6	123	27.8	-20	47.0
20	116	48.8	- 8	15.2	97	16.0	89	38.2	2	26.2	153	28.8	-20	46.2
22	146	49.0	- 8	13.4	127	21.0	119	37.6	2	28.8	183	29.8	-20	45.4
Δ	1	9			-3	13				5	4			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 6	17 21	0 42	2 19	10 44	4.2	6 50	.4
55	6 56	17 31	0 37	2 1	11 47	3.5	5 46	1.1
50	6 48	17 38	0 33	1 48	12 25	3.1	5 7	1.4
45	6 42	17 44	0 30	1 38	12 53	2.9	4 39	1.6
40	6 37	17 49	0 27	1 30	13 15	2.8	4 16	1.7
35	6 33	17 53	0 25	1 24	13 33	2.7	3 58	1.8
30	6 29	17 57	0 24	1 20	13 48	2.6	3 42	1.9
20	6 22	18 4	0 22	1 13	14 14	2.4	3 14	2.0
10	6 15	18 10	0 21	1 10	14 37	2.3	2 51	2.2
0	6 9	18 16	0 21	1 9	14 58	2.2	2 29	2.3
10	6 3	18 22	0 21	1 11	15 19	2.1	2 7	2.4
20	5 57	18 28	0 22	1 15	15 41	1.9	1 43	2.5
30	5 49	18 36	0 24	1 22	16 7	1.8	1 16	2.6
35	5 45	18 40	0 26	1 28	16 22	1.7	0 59	2.7
40	5 40	18 45	0 28	1 35	16 40	1.5	0 40	2.8
45	5 34	18 51	0 30	1 45	17 1	1.4	0 17	2.9
50	5 27	18 58	0 34	1 59	17 27	1.2	...	.0
55	5 18	19 7	0 38	2 21	18 3	.8	...	.0
60	5 6	19 18	0 45	2 59	18 59	.2	23 30	4.2

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	53	59.4	72	27	45.7	-42	259	50.9	-22	9.4	13	15.5	15	57.5
2	82	51.7	73	27	37.3	-45	289	55.2	-22	9.5	43	20.8	15	57.7
4	111	44.4	75	27	28.3	-48	319	59.6	-22	9.5	73	26.1	15	57.8
6	140	37.4	77	27	18.7	-51	350	3.9	-22	9.6	103	31.4	15	57.9
8	169	30.7	78	27	8.5	-54	20	8.3	-22	9.6	133	36.7	15	58.0
10	198	24.4	80	26	57.7	-57	50	12.6	-22	9.7	163	42.0	15	58.1
12	227	18.4	82	26	46.3	-60	80	17.0	-22	9.7	193	47.3	15	58.3
14	256	12.7	83	26	34.4	-62	110	21.3	-22	9.8	223	52.5	15	58.4
16	285	7.4	85	26	21.9	-65	140	25.6	-22	9.8	253	57.8	15	58.5
18	314	2.4	87	26	8.9	-68	170	30.0	-22	9.9	284	3.1	15	58.6
20	342	57.8	89	25	55.3	-71	200	34.3	-22	9.9	314	8.4	15	58.8
22	11	53.6	91	25	41.2	-73	230	38.7	-22	10.0	344	13.7	15	58.9
Δ							22	0			26	1		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	-12	53.3	.4	16.2	T _m 21 11	2.1	56.7	15.4
12	-12	48.0	T _{m☉} 12 h 12.8 min	Starost 9.3 d	Faza ☉			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	°	h min	'	°	°</	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	176 49.3	- 8 11.5	157 25.9	149 37.0	2 31.4	213 30.7	-20 44.7	
2	206 49.5	- 8 9.6	187 30.8	179 36.3	2 34.0	243 31.7	-20 43.9	
4	236 49.7	- 8 7.7	217 35.7	209 35.7	2 36.6	273 32.7	-20 43.1	
6	266 49.9	- 8 5.8	247 40.7	239 35.1	2 39.2	303 33.6	-20 42.3	
8	296 50.2	- 8 3.9	277 45.6	269 34.4	2 41.8	333 34.6	-20 41.5	
10	326 50.4	- 8 2.0	307 50.5	299 33.8	2 44.4	3 35.6	-20 40.7	
12	356 50.6	- 8 .1	337 55.5	329 33.2	2 47.0	33 36.6	-20 39.9	
14	26 50.9	- 7 58.3	8 .4	359 32.5	2 49.6	63 37.5	-20 39.1	
16	56 51.1	- 7 56.4	38 5.3	29 31.9	2 52.2	93 38.5	-20 38.3	
18	86 51.3	- 7 54.5	68 10.2	59 31.3	2 54.8	123 39.5	-20 37.5	
20	116 51.6	- 7 52.6	98 15.2	89 30.6	2 57.4	153 40.4	-20 36.7	
22	146 51.8	- 7 50.7	128 20.1	119 30.0	3 .0	183 41.4	-20 35.9	
Δ	1	9		-3	13	5	4	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 3	17 24	0 42	2 19	12 26	4.1	6 59	.1
55	6 53	17 33	0 37	2 1	13 10	3.5	6 12	.7
50	6 46	17 40	0 33	1 48	13 41	3.2	5 41	1.0
45	6 41	17 45	0 30	1 38	14 4	3.0	5 17	1.2
40	6 36	17 50	0 27	1 30	14 22	2.8	4 58	1.4
35	6 31	17 54	0 25	1 24	14 37	2.6	4 42	1.5
30	6 28	17 58	0 24	1 20	14 50	2.5	4 28	1.6
20	6 21	18 5	0 22	1 13	15 13	2.3	4 4	1.8
10	6 15	18 10	0 21	1 10	15 32	2.2	3 43	2.0
0	6 9	18 16	0 21	1 9	15 50	2.0	3 23	2.1
10	6 4	18 22	0 21	1 11	16 8	1.9	3 4	2.2
20	5 57	18 28	0 22	1 15	16 27	1.7	2 43	2.4
30	5 50	18 35	0 24	1 22	16 49	1.5	2 18	2.6
35	5 46	18 39	0 26	1 28	17 2	1.4	2 4	2.7
40	5 41	18 44	0 28	1 35	17 16	1.2	1 47	2.8
45	5 35	18 49	0 30	1 45	17 34	1.1	1 26	3.0
50	5 28	18 56	0 34	1 59	17 55	.8	1 1	3.2
55	5 20	19 4	0 38	2 20	18 23	.5	0 26	3.5
60	5 9	19 15	0 45	2 56	19 3	.0	...	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	40 49.8	93	25 26.5	-76	260 43.0	-22 10.0	14 19.0	15 59.0
2	69 46.3	95	25 11.4	-78	290 47.4	-22 10.0	44 24.3	15 59.1
4	98 43.2	96	24 55.7	-81	320 51.7	-22 10.1	74 29.6	15 59.2
6	127 40.5	98	24 39.6	-83	350 56.1	-22 10.1	104 34.9	15 59.4
8	156 38.1	100	24 23.0	-85	21 .5	-22 10.2	134 40.2	15 59.5
10	185 36.2	102	24 5.9	-88	51 4.8	-22 10.2	164 45.5	15 59.6
12	214 34.6	104	23 48.3	-90	81 9.2	-22 10.3	194 50.8	15 59.7
14	243 33.5	106	23 30.3	-92	111 13.5	-22 10.3	224 56.1	15 59.9
16	272 32.7	108	23 11.9	-94	141 17.9	-22 10.4	255 1.4	15 60.0
18	301 32.3	110	22 53.0	-96	171 22.2	-22 10.4	285 6.7	16 .1
20	330 32.3	112	22 33.7	-98	201 26.6	-22 10.5	315 12.0	16 .2
22	359 32.7	114	22 14.0	-100	231 31.0	-22 10.5	345 17.3	16 .3
Δ					22	0	26	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	-12 42.8	.5	16.2	T _m	22 2	2.0	56.1 15.3		
12	-12 37.2	T _{m☉}	12 h 12.6 min	Starost	10.3 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 2	.1	352	-3.9	♄	6 36	.0	103	-1.9
	9 46	.1	56	1.3	♅	22 59	.0	217	.1

1. MART

ČETVRTAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	176 52.0	- 7 48.8	158 25.0	149 29.4	3 2.6	213 42.4	-20 35.1	
2	206 52.3	- 7 46.9	188 30.0	179 28.7	3 5.2	243 43.4	-20 34.3	
4	236 52.5	- 7 45.0	218 34.9	209 28.1	3 7.8	273 44.3	-20 33.5	
6	266 52.8	- 7 43.1	248 39.8	239 27.5	3 10.4	303 45.3	-20 32.6	
8	296 53.0	- 7 41.2	278 44.7	269 26.8	3 13.0	333 46.3	-20 31.8	
10	326 53.2	- 7 39.3	308 49.7	299 26.2	3 15.6	3 47.3	-20 31.0	
12	356 53.5	- 7 37.4	338 54.6	329 25.6	3 18.2	33 48.2	-20 30.2	
14	26 53.7	- 7 35.5	8 59.5	359 25.0	3 20.8	63 49.2	-20 29.4	
16	56 54.0	- 7 33.6	39 4.5	29 24.3	3 23.4	93 50.2	-20 28.6	
18	86 54.2	- 7 31.7	69 9.4	59 23.7	3 26.0	123 51.2	-20 27.7	
20	116 54.5	- 7 29.8	99 14.3	89 23.1	3 28.6	153 52.1	-20 26.9	
22	146 54.7	- 7 27.9	129 19.2	119 22.4	3 31.2	183 53.1	-20 26.1	
Δ	1	9		-3	13	5	4	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 60	17 26	0 42	2 19	14 4	3.9	7 2	.0
55	6 51	17 35	0 36	2 1	14 35	3.4	6 29	.5
50	6 44	17 41	0 33	1 48	14 57	3.1	6 5	.7
45	6 39	17 47	0 30	1 38	15 14	2.9	5 46	1.0
40	6 34	17 51	0 27	1 30	15 28	2.7	5 31	1.1
35	6 30	17 55	0 25	1 24	15 40	2.5	5 18	1.3
30	6 27	17 59	0 24	1 20	15 51	2.4	5 6	1.4
20	6 20	18 5	0 22	1 13	16 8	2.2	4 47	1.6
10	6 15	18 10	0 21	1 10	16 24	2.0	4 30	1.8
0	6 9	18 16	0 21	1 9	16 38	1.9	4 14	1.9
10	6 4	18 21	0 21	1 11	16 52	1.7	3 57	2.1
20	5 58	18 27	0 22	1 15	17 7	1.5	3 40	2.3
30	5 51	18 34	0 24	1 22	17 25	1.3	3 20	2.5
35	5 47	18 38	0 26	1 27	17 35	1.2	3 8	2.6
40	5 42	18 42	0 28	1 35	17 46	1.0	2 54	2.7
45	5 36	18 48	0 30	1 44	17 60	.9	2 38	2.9
50	5 30	18 54	0 33	1 58	18 16	.6	2 18	3.2
55	5 22	19 2	0 38	2 18	18 36	.4	1 51	3.5
60	5 11	19 12	0 44	2 53	19 4	.0	1 13	4.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	28 33.5	116	21 53.9	-102	261 35.3	-22 10.5	15 22.5	16 .5
2	57 34.6	118	21 33.5	-104	291 39.7	-22 10.6	45 27.8	16 .6
4	86 36.1	120	21 12.6	-106	321 44.1	-22 10.6	75 33.1	16 .7
6	115 38.0	121	20 51.4	-108	351 48.4	-22 10.7	105 38.4	16 .8
8	144 40.3	123	20 29.8	-110	21 52.8	-22 10.7	135 43.7	16 .9
10	173 43.0	125	20 7.9	-111	51 57.2	-22 10.8	165 49.0	16 1.1
12	202 46.0	127	19 45.6	-113	82 1.5	-22 10.8	195 54.3	16 1.2
14	231 49.4	129	19 23.0	-115	112 5.9	-22 10.9	225 59.6	16 1.3
16	260 53.1	130	19 .1	-116	142 10.3	-22 10.9	256 4.9	16 1.4
18	289 57.2	132	18 36.9	-118	172 14.7	-22 10.9	286 10.2	16 1.5
20	319 1.6	134	18 13.4	-119	202 19.0	-22 11.0	316 15.4	16 1.7
22	348 6.4	135	17 49.6	-120	232 23.4	-22 11.0	346 20.7	16 1.8
Δ					22	0	26	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	-12 31.7	.5	16.2	T _m	22 49	1.8	55.6 15.2		
12	-12 25.8	T _{m☉}	12 h 12.4 min	Starost	11.3 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 2	.1	351	-3.9	♄	6 33	.0	103	-1.9
	9 45	.1	55	1.3	♅	22 54	.0	217	.1

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	176 54.9	- 7 26.0	159 24.2	149 21.8	3 33.8	213 54.1	-20 25.3
2	206 55.2	- 7 24.1	189 29.1	179 21.2	3 36.4	243 55.1	-20 24.4
4	236 55.4	- 7 22.2	219 34.0	209 20.5	3 39.0	273 56.1	-20 23.6
6	266 55.7	- 7 20.3	249 39.0	239 19.9	3 41.6	303 57.0	-20 22.8
8	296 55.9	- 7 18.4	279 43.9	269 19.3	3 44.2	333 58.0	-20 22.0
10	326 56.2	- 7 16.5	309 48.8	299 18.6	3 46.8	3 59.0	-20 21.1
12	356 56.4	- 7 14.6	339 53.7	329 18.0	3 49.4	33 60.0	-20 20.3
14	26 56.7	- 7 12.7	9 58.7	359 17.4	3 52.0	64 1.0	-20 19.5
16	56 57.0	- 7 10.8	40 3.6	29 16.7	3 54.6	94 1.9	-20 18.6
18	86 57.2	- 7 8.9	70 8.5	59 16.1	3 57.1	124 2.9	-20 17.8
20	116 57.5	- 7 7.0	100 13.4	89 15.5	3 59.7	154 3.9	-20 16.9
22	146 57.7	- 7 5.0	130 18.4	119 14.8	4 2.3	184 4.9	-20 16.1
Δ	1	10		-3	13	5	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 57	17 29	0 42	2 19	15 36	3.6	7 2	.0
55	6 49	17 37	0 36	2 1	15 56	3.3	6 40	.3
50	6 42	17 43	0 32	1 48	16 11	3.0	6 23	.6
45	6 37	17 48	0 29	1 38	16 23	2.8	6 9	.8
40	6 33	17 52	0 27	1 30	16 33	2.6	5 58	1.0
35	6 29	17 56	0 25	1 24	16 41	2.4	5 48	1.1
30	6 25	17 59	0 24	1 20	16 49	2.3	5 40	1.2
20	6 19	18 5	0 22	1 13	17 1	2.1	5 25	1.4
10	6 14	18 11	0 21	1 10	17 12	1.9	5 12	1.6
0	6 9	18 16	0 21	1 9	17 23	1.7	4 60	1.8
10	6 4	18 21	0 21	1 11	17 33	1.6	4 48	2.0
20	5 58	18 26	0 22	1 15	17 44	1.4	4 34	2.2
30	5 51	18 33	0 24	1 22	17 56	1.2	4 19	2.4
35	5 47	18 36	0 26	1 27	18 3	1.0	4 10	2.5
40	5 43	18 41	0 28	1 34	18 11	.9	4 0	2.6
45	5 38	18 46	0 30	1 44	18 20	.7	3 48	2.8
50	5 32	18 52	0 33	1 57	18 31	.5	3 33	3.0
55	5 24	18 59	0 38	2 17	18 45	.3	3 15	3.3
60	5 14	19 9	0 44	2 51	19 3	.0	2 49	3.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	'	'	'	'
0	17 11.5	137	17 25.5	-122	262 27.8	-22 11.1	16 26.0	16 1.9
2	46 16.9	139	17 1.2	-123	292 32.2	-22 11.1	46 31.3	16 2.0
4	75 22.6	140	16 36.6	-124	322 36.6	-22 11.2	76 36.6	16 2.1
6	104 28.7	142	16 11.7	-125	352 40.9	-22 11.2	106 41.9	16 2.2
8	133 35.1	143	15 46.6	-127	22 45.3	-22 11.2	136 47.2	16 2.4
10	162 41.8	145	15 21.3	-128	52 49.7	-22 11.3	166 52.4	16 2.5
12	191 48.8	146	14 55.7	-129	82 54.1	-22 11.3	196 57.7	16 2.6
14	220 56.0	148	14 29.9	-130	112 58.5	-22 11.4	227 3.0	16 2.7
16	250 3.6	149	14 4.0	-131	143 2.9	-22 11.4	257 8.3	16 2.8
18	279 11.4	150	13 37.8	-132	173 7.2	-22 11.4	287 13.6	16 3.0
20	308 19.5	152	13 11.4	-133	203 11.6	-22 11.5	317 18.9	16 3.1
22	337 27.9	153	12 44.9	-134	233 16.0	-22 11.5	347 24.2	16 3.2
Δ					22	0	26	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	-12 20.0	.5	16.2	T _m	23 33	1.7	55.2 15.0		
12	-12 14.0	T _{m☉}	12 h 12.2 min	Starost	12.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 3	.1	350	-3.9	♄	6 29	.0	103	-1.9
♂	9 44	.1	54	1.3	♂	22 50	.0	217	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	176 58.0	- 7 3.1	160 23.3	149 14.2	4 4.9	214 5.9	-20 15.3
2	206 58.2	- 7 1.2	190 28.2	179 13.6	4 7.5	244 6.9	-20 14.4
4	236 58.5	- 6 59.3	220 33.2	209 12.9	4 10.1	274 7.9	-20 13.6
6	266 58.8	- 6 57.4	250 38.1	239 12.3	4 12.7	304 8.8	-20 12.7
8	296 59.0	- 6 55.5	280 43.0	269 11.7	4 15.3	334 9.8	-20 11.9
10	326 59.3	- 6 53.6	310 47.9	299 11.0	4 17.9	4 10.8	-20 11.0
12	356 59.5	- 6 51.7	340 52.9	329 10.4	4 20.4	34 11.8	-20 10.2
14	26 59.8	- 6 49.7	10 57.8	359 9.8	4 23.0	64 12.8	-20 9.3
16	57 .1	- 6 47.8	41 2.7	29 9.1	4 25.6	94 13.8	-20 8.5
18	87 .3	- 6 45.9	71 7.7	59 8.5	4 28.2	124 14.8	-20 7.6
20	117 .6	- 6 44.0	101 12.6	89 7.8	4 30.8	154 15.8	-20 6.8
22	147 .9	- 6 42.1	131 17.5	119 7.2	4 33.4	184 16.8	-20 5.9
Δ	1	10		-3	13	5	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 54	17 31	0 42	2 19	17 3	3.5	7 1	.0
55	6 46	17 39	0 36	2 1	17 15	3.1	6 48	.3
50	6 40	17 45	0 32	1 48	17 23	2.9	6 37	.5
45	6 35	17 49	0 29	1 38	17 30	2.7	6 28	.7
40	6 31	17 54	0 27	1 30	17 35	2.5	6 21	.9
35	6 28	17 57	0 25	1 24	17 40	2.4	6 15	1.0
30	6 24	18 0	0 24	1 19	17 45	2.2	6 9	1.1
20	6 19	18 6	0 22	1 13	17 52	2.0	5 59	1.3
10	6 14	18 11	0 21	1 10	17 58	1.8	5 51	1.5
0	6 9	18 15	0 21	1 9	18 4	1.7	5 43	1.7
10	6 4	18 20	0 21	1 11	18 10	1.5	5 35	1.9
20	5 58	18 25	0 22	1 14	18 16	1.3	5 26	2.1
30	5 52	18 32	0 24	1 22	18 24	1.1	5 16	2.3
35	5 48	18 35	0 26	1 27	18 28	1.0	5 10	2.4
40	5 44	18 39	0 28	1 34	18 32	.8	5 4	2.6
45	5 39	18 44	0 30	1 44	18 38	.7	4 56	2.7
50	5 33	18 50	0 33	1 57	18 44	.5	4 46	2.9
55	5 26	18 57	0 38	2 16	18 52	.2	4 35	3.2
60	5 16	19 6	0 44	2 48	19 2	.0	4 19	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	'	'	'	'
0	6 36.5	154	12 18.1	-134	263 20.4	-22 11.6	17 29.4	16 3.3
2	35 45.3	155	11 51.2	-135	293 24.8	-22 11.6	47 34.7	16 3.4
4	64 54.4	157	11 24.2	-136	323 29.2	-22 11.7	77 40.0	16 3.5
6	94 3.8	158	10 57.0	-137	353 33.6	-22 11.7	107 45.3	16 3.7
8	123 13.3	159	10 29.7	-137	23 38.0	-22 11.7	137 50.6	16 3.8
10	152 23.1	160	10 2.2	-138	53 42.4	-22 11.8	167 55.8	16 3.9
12	181 33.1	161	9 34.6	-139	83 46.8	-22 11.8	198 1.1	16 4.0
14	210 43.2	162	9 6.9	-139	113 51.2	-22 11.9	228 6.4	16 4.1
16	239 53.6	163	8 39.1	-140	143 55.6	-22 11.9	258 11.7	16 4.2
18	269 4.2	164	8 11.1	-140	173 60.0	-22 11.9	288 17.0	16 4.4
20	298 14.9	164	7 43.1	-141	204 4.4	-22 12.0	318 22.3	16 4.5
22	327 25.8	165	7 15.0	-141	234 8.8	-22 12.0	348 27.5	16 4.6
Δ					22	0	26	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	-12 7.9	.5	16.2	T _m	...	1.0	54.8 14.9		
12	-12 1.6	T _{m☉}	12 h 12.0 min	Starost	13.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 3	.1	349	-3.9	♄	6 26	.0	103	-1.9
♂	9 43	.1	54	1.3	♂	22 46	.0	217	.2

4. MART

2007.

NEDELJA

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	°	'	°	'	°	'			
0	177	1.1	-6	40.1	161	22.4	149	6.6	4	35.9	214	17.7	-20	5.0
2	207	1.4	-6	38.2	191	27.4	179	5.9	4	38.5	244	18.7	-20	4.2
4	237	1.7	-6	36.3	221	32.3	209	5.3	4	41.1	274	19.7	-20	3.3
6	267	1.9	-6	34.4	251	37.2	239	4.7	4	43.7	304	20.7	-20	2.4
8	297	2.2	-6	32.5	281	42.2	269	4.0	4	46.3	334	21.7	-20	1.6
10	327	2.5	-6	30.5	311	47.1	299	3.4	4	48.8	4	22.7	-20	.7
12	357	2.8	-6	28.6	341	52.0	329	2.8	4	51.4	34	23.7	-19	59.8
14	27	3.0	-6	26.7	11	56.9	359	2.1	4	54.0	64	24.7	-19	59.0
16	57	3.3	-6	24.8	42	1.9	29	1.5	4	56.6	94	25.7	-19	58.1
18	87	3.6	-6	22.8	72	6.8	59	.8	4	59.1	124	26.7	-19	57.2
20	117	3.8	-6	20.9	102	11.7	89	.2	5	1.7	154	27.7	-19	56.4
22	147	4.1	-6	19.0	132	16.7	118	59.6	5	4.3	184	28.7	-19	55.5
Δ		1		10				-3		13		5		4

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 51	17 34	0 42	2 20	18 27	3.4	7 0	.0
55	6 44	17 41	0 36	2 1	18 30	3.1	6 54	.2
50	6 38	17 46	0 32	1 48	18 32	2.8	6 49	.5
45	6 34	17 51	0 29	1 38	18 34	2.6	6 45	.6
40	6 30	17 55	0 27	1 30	18 36	2.5	6 41	.8
35	6 26	17 58	0 25	1 24	18 37	2.3	6 39	.9
30	6 23	18 1	0 24	1 19	18 39	2.2	6 36	1.1
20	6 18	18 6	0 22	1 13	18 41	2.0	6 31	1.3
10	6 13	18 11	0 21	1 10	18 42	1.8	6 27	1.5
0	6 9	18 15	0 21	1 9	18 44	1.6	6 24	1.6
10	6 4	18 20	0 21	1 10	18 46	1.5	6 20	1.8
20	5 59	18 25	0 22	1 14	18 48	1.3	6 16	2.0
30	5 53	18 30	0 24	1 21	18 50	1.1	6 11	2.2
35	5 49	18 34	0 26	1 27	18 51	.9	6 8	2.4
40	5 45	18 38	0 27	1 34	18 52	.8	6 5	2.5
45	5 41	18 42	0 30	1 43	18 54	.6	6 1	2.7
50	5 35	18 48	0 33	1 56	18 55	.5	5 57	2.9
55	5 28	18 54	0 37	2 15	18 58	.2	5 52	3.1
60	5 19	19 3	0 44	2 46	19 0	.0	5 45	3.4
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	356	36.8	166	6	46.8	-141	264	13.2	-22	12.1	18	32.8	16	4.7
2	25	48.0	167	6	18.5	-142	294	17.6	-22	12.1	48	38.1	16	4.8
4	54	59.4	167	5	50.2	-142	324	22.0	-22	12.1	78	43.4	16	4.9
6	84	10.9	168	5	21.8	-142	354	26.4	-22	12.2	108	48.6	16	5.1
8	113	22.5	169	4	53.4	-142	24	30.8	-22	12.2	138	53.9	16	5.2
10	142	34.2	169	4	24.9	-143	54	35.2	-22	12.3	168	59.2	16	5.3
12	171	46.1	170	3	56.3	-143	84	39.7	-22	12.3	199	4.5	16	5.4
14	200	58.0	170	3	27.8	-143	114	44.1	-22	12.3	229	9.8	16	5.5
16	230	10.0	171	2	59.2	-143	144	48.5	-22	12.4	259	15.0	16	5.6
18	259	22.2	171	2	30.5	-143	174	52.9	-22	12.4	289	20.3	16	5.7
20	288	34.4	171	2	1.9	-143	204	57.3	-22	12.5	319	25.6	16	5.9
22	317	46.6	172	1	33.3	-143	235	1.7	-22	12.5	349	30.9	16	6.0
Δ							22			0		26		1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	-11 55.3	.5	16.2	T _m	0 14	1.6	54.5 14.9		
12	-11 48.7	T _{m☉}	12 h 11.8 min	Starost	14.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	14 4	.1	348	-3.9	♃	6 22	.0	103	-1.9
♂	9 42	.1	53	1.3	♄	22 42	.0	217	.2

5. MART

PONEDELJAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	°	'	°	'	°	'			
0	177	4.4	-6	17.1	162	21.6	148	58.9	5	6.9	214	29.7	-19	54.6
2	207	4.7	-6	15.1	192	26.5	178	58.3	5	9.4	244	30.7	-19	53.7
4	237	5.0	-6	13.2	222	31.4	208	57.6	5	12.0	274	31.7	-19	52.8
6	267	5.2	-6	11.3	252	36.4	238	57.0	5	14.6	304	32.7	-19	52.0
8	297	5.5	-6	9.4	282	41.3	268	56.4	5	17.2	334	33.7	-19	51.1
10	327	5.8	-6	7.4	312	46.2	298	55.7	5	19.7	4	34.7	-19	50.2
12	357	6.1	-6	5.5	342	51.2	328	55.1	5	22.3	34	35.7	-19	49.3
14	27	6.4	-6	3.6	12	56.1	358	54.4	5	24.9	64	36.7	-19	48.4
16	57	6.6	-6	1.6	43	1.0	28	53.8	5	27.4	94	37.7	-19	47.5
18	87	6.9	-5	59.7	73	5.9	58	53.2	5	30.0	124	38.7	-19	46.6
20	117	7.2	-5	57.8	103	10.9	88	52.5	5	32.6	154	39.7	-19	45.8
22	147	7.5	-5	55.8	133	15.8	118	51.9	5	35.1	184	40.7	-19	44.9
Δ		1		10				-3		13		5		4

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 48	17 36	0 42	2 20	19 49	3.4	6 59	.0
55	6 41	17 43	0 36	2 1	19 44	3.1	6 59	.2
50	6 36	17 48	0 32	1 48	19 41	2.9	6 60	.5
45	6 32	17 52	0 29	1 38	19 38	2.7	7 0	.6
40	6 28	17 56	0 27	1 30	19 36	2.5	7 1	.8
35	6 25	17 59	0 25	1 24	19 33	2.3	7 1	.9
30	6 22	18 2	0 24	1 19	19 32	2.2	7 1	1.1
20	6 17	18 6	0 22	1 13	19 28	2.0	7 2	1.3
10	6 13	18 11	0 21	1 10	19 26	1.8	7 2	1.5
0	6 8	18 15	0 21	1 9	19 23	1.6	7 3	1.6
10	6 4	18 19	0 21	1 10	19 21	1.5	7 3	1.8
20	5 59	18 24	0 22	1 14	19 18	1.3	7 4	2.0
30	5 53	18 29	0 24	1 21	19 15	1.1	7 4	2.2
35	5 50	18 32	0 26	1 27	19 13	1.0	7 5	2.3
40	5 46	18 36	0 27	1 34	19 11	.8	7 5	2.5
45	5 42	18 40	0 30	1 43	19 9	.7	7 5	2.6
50	5 37	18 46	0 33	1 56	19 6	.5	7 6	2.8
55	5 30	18 52	0 37	2 14	19 3	.2	7 6	3.1
60	5 21	19 0	0 43	2 44	18 59	.0	7 7	3.4
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	346	59.0	172	1	4.6	-143	265	6.1	-22	12.5	19	36.1	16	6.1
2	16	11.3	172	0	36.0	-143	295	10.6	-22	12.6	49	41.4	16	6.2
4	45	23.8	172	0	7.4	-143	325	15.0	-22	12.6	79	46.7	16	6.3
6	74	36.3	172	-0	21.2	-143	355	19.4	-22	12.6	109	52.0	16	6.4
8	103	48.8	173	-0	49.8	-143	25	23.8	-22	12.7	139	57.2	16	6.5
10	133	1.3	173	-1	18.4	-143	55	28.3	-22	12.7	170	2.5	16	6.6
12	162	13.8	173	-1	46.9	-142	85	32.7	-22	12.8	200	7.8	16	6.8
14	191	26.3	173	-2	15.4	-142	115	37.1	-22	12.8	230	13.0	16	6.9
16	220	38.9	173	-2	43.8	-142	145	41.5	-22	12.8	260	18.3	16	7.0
18	249	51.4	173	-3	12.2	-142	175	46.0	-22	12.9	290	23.6	16	7.1
20	279	3.9	173	-3	40.5	-141	205	50.4	-22	12.9	320	28.9	16	7.2
22	308	16.4	172	-4	8.7	-141	235	54.8	-22	12.9	350	34.1	16	7.3
Δ							22			0		26		1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	-11 42.2	.6	16.2	T _m	0 53	1.7	54.3 14.8
12	-11 35.4	T _{m☉}	12 h 11.6 min	Starost	15.3 d	Faza	☉
PLANETE							
Pl.	T _m	π	360-α</				

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	7.8	-5	53.9	163	20.7	148	51.2	5	37.7	214	41.7	-19	44.0	
2	207	8.1	-5	52.0	193	25.7	178	50.6	5	40.3	244	42.7	-19	43.1	
4	237	8.4	-5	50.0	223	30.6	208	49.9	5	42.8	274	43.7	-19	42.2	
6	267	8.6	-5	48.1	253	35.5	238	49.3	5	45.4	304	44.7	-19	41.3	
8	297	8.9	-5	46.2	283	40.4	268	48.6	5	47.9	334	45.7	-19	40.4	
10	327	9.2	-5	44.2	313	45.4	298	48.0	5	50.5	4	46.7	-19	39.5	
12	357	9.5	-5	42.3	343	50.3	328	47.4	5	53.1	34	47.7	-19	38.6	
14	27	9.8	-5	40.4	13	55.2	358	46.7	5	55.6	64	48.7	-19	37.7	
16	57	10.1	-5	38.4	44	.1	28	46.1	5	58.2	94	49.8	-19	36.8	
18	87	10.4	-5	36.5	74	5.1	58	45.4	6	.7	124	50.8	-19	35.9	
20	117	10.7	-5	34.5	104	10.0	88	44.8	6	3.3	154	51.8	-19	34.9	
22	147	11.0	-5	32.6	134	14.9	118	44.1	6	5.8	184	52.8	-19	34.0	
Δ		1		10				-3		13			5		5

UT	MESEC				JUPITER			SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	337	28.8	172	-4	36.9	-140	265	59.3	-22	13.0	20	39.4	16	7.4	
2	6	41.2	172	-5	5.0	-140	296	3.7	-22	13.0	50	44.7	16	7.5	
4	35	53.6	171	-5	33.0	-140	326	8.1	-22	13.1	80	49.9	16	7.7	
6	65	5.9	171	-6	.9	-139	356	12.6	-22	13.1	110	55.2	16	7.8	
8	94	18.1	171	-6	28.8	-139	26	17.0	-22	13.1	141	.5	16	7.9	
10	123	30.2	170	-6	56.5	-138	56	21.5	-22	13.2	171	5.7	16	8.0	
12	152	42.3	170	-7	24.1	-138	86	25.9	-22	13.2	201	11.0	16	8.1	
14	181	54.3	169	-7	51.6	-137	116	30.3	-22	13.2	231	16.3	16	8.2	
16	211	6.1	169	-8	19.0	-136	146	34.8	-22	13.3	261	21.5	16	8.3	
18	240	17.9	168	-8	46.2	-136	176	39.2	-22	13.3	291	26.8	16	8.4	
20	269	29.6	168	-9	13.4	-135	206	43.7	-22	13.3	321	32.1	16	8.5	
22	298	41.1	167	-9	40.3	-134	236	48.1	-22	13.4	351	37.3	16	8.6	
Δ								22		0			26		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 45	17 39	0 42	2 20	21 12	3.5	6 57	.0
55	6 39	17 45	0 36	2 1	20 59	3.2	7 5	.3
50	6 34	17 50	0 32	1 48	20 49	2.9	7 11	.5
45	6 30	17 54	0 29	1 38	20 42	2.7	7 16	.7
40	6 27	17 57	0 27	1 30	20 35	2.5	7 20	.8
35	6 24	17 60	0 25	1 24	20 30	2.4	7 24	1.0
30	6 21	18 2	0 24	1 19	20 25	2.3	7 27	1.1
20	6 16	18 7	0 22	1 13	20 16	2.0	7 32	1.3
10	6 12	18 11	0 21	1 10	20 9	1.9	7 37	1.5
0	6 8	18 15	0 21	1 9	20 2	1.7	7 42	1.7
10	6 4	18 19	0 21	1 10	19 56	1.5	7 47	1.8
20	5 59	18 23	0 22	1 14	19 49	1.3	7 52	2.0
30	5 54	18 28	0 24	1 21	19 41	1.1	7 57	2.2
35	5 51	18 31	0 26	1 26	19 36	1.0	8 1	2.4
40	5 47	18 35	0 27	1 33	19 31	.9	8 4	2.5
45	5 43	18 39	0 30	1 43	19 25	.7	8 9	2.7
50	5 38	18 43	0 33	1 55	19 17	.5	8 14	2.9
55	5 32	18 49	0 37	2 13	19 9	.3	8 21	3.1
60	5 24	18 57	0 43	2 43	18 57	.0	8 29	3.5
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	-11 28.7	.6	16.2	T _m	1 33	1.6	54.1	14.7	
12	-11 21.7	T _{m☉}	12 h 11.4 min	Starost	16.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 5	.1	346	-3.9	♄	6 15	.0	103	-1.9
♂	9 41	.1	51	1.3	♅	22 33	.0	217	.2

7. MART

SREDA

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	11.3	-5	30.7	164	19.9	148	43.5	6	8.4	214	53.8	-19	33.1	
2	207	11.6	-5	28.7	194	24.8	178	42.8	6	10.9	244	54.8	-19	32.2	
4	237	11.9	-5	26.8	224	29.7	208	42.2	6	13.5	274	55.8	-19	31.3	
6	267	12.2	-5	24.8	254	34.6	238	41.5	6	16.0	304	56.8	-19	30.4	
8	297	12.5	-5	22.9	284	39.6	268	40.9	6	18.6	334	57.8	-19	29.5	
10	327	12.7	-5	20.9	314	44.5	298	40.2	6	21.1	4	58.9	-19	28.5	
12	357	13.0	-5	19.0	344	49.4	328	39.6	6	23.7	34	59.9	-19	27.6	
14	27	13.3	-5	17.1	14	54.4	358	38.9	6	26.2	65	.9	-19	26.7	
16	57	13.6	-5	15.1	44	59.3	28	38.3	6	28.8	95	1.9	-19	25.8	
18	87	13.9	-5	13.2	75	4.2	58	37.6	6	31.3	125	2.9	-19	24.9	
20	117	14.2	-5	11.2	105	9.1	88	37.0	6	33.9	155	3.9	-19	23.9	
22	147	14.5	-5	9.3	135	14.1	118	36.3	6	36.4	185	4.9	-19	23.0	
Δ		1		10				-3		13			5		5

UT	MESEC				JUPITER			SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	327	52.5	166	-10	7.2	-133	266	52.6	-22	13.4	21	42.6	16	8.8	
2	357	3.8	166	-10	33.9	-133	296	57.0	-22	13.5	51	47.9	16	8.9	
4	26	14.9	165	-11	.4	-132	327	1.5	-22	13.5	81	53.1	16	9.0	
6	55	25.9	164	-11	26.8	-131	357	5.9	-22	13.5	111	58.4	16	9.1	
8	84	36.7	163	-11	53.0	-130	27	10.4	-22	13.6	142	3.7	16	9.2	
10	113	47.3	162	-12	19.0	-129	57	14.8	-22	13.6	172	8.9	16	9.3	
12	142	57.8	161	-12	44.8	-128	87	19.3	-22	13.6	202	14.2	16	9.4	
14	172	8.1	160	-13	10.5	-127	117	23.7	-22	13.7	232	19.4	16	9.5	
16	201	18.2	159	-13	36.0	-126	147	28.2	-22	13.7	262	24.7	16	9.6	
18	230	28.1	158	-14	1.2	-125	177	32.6	-22	13.7	292	30.0	16	9.7	
20	259	37.8	157	-14	26.3	-124	207	37.1	-22	13.8	322	35.2	16	9.8	
22	288	47.3	156	-14	51.1	-123	237	41.6	-22	13.8	352	40.5	16	10.0	
Δ								22		0			26		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 42	17 41	0 42	2 20	22 37	3.7	6 56	.0
55	6 36	17 47	0 36	2 1	22 15	3.3	7 11	.3
50	6 32	17 51	0 32	1 48	21 59	3.0	7 23	.6
45	6 28	17 55	0 29	1 38	21 46	2.8	7 32	.8
40	6 25	17 58	0 27	1 30	21 36	2.6	7 40	.9
35	6 22	18 0	0 25	1 24	21 27	2.4	7 47	1.1
30	6 20	18 3	0 24	1 19	21 19	2.3	7 53	1.2
20	6 16	18 7	0 22	1 13	21 6	2.1	8 4	1.4
10	6 12	18 11	0 21	1 10	20 54	1.9	8 13	1.6
0	6 8	18 14	0 21	1 9	20 43	1.8	8 22	1.7
10	6 4	18 18	0 21	1 10	20 32	1.6	8 31	1.9
20	5 60	18 22	0 22	1 14	20 21	1.5	8 40	2.1
30	5 55	18 27	0 24	1 21	20 8	1.3	8 51	2.3
35	5 52	18 30	0 26	1 26	20 0	1.1	8 57	2.4
40	5 49	18 33	0 27	1 33	19 52	1.0	9 4	2.5
45	5 45	18 37	0 30	1 42	19 42	.8	9 13	2.7
50	5 40	18 41	0 33	1 55	19 30	.6	9 23	2.9
55	5 34	18 47	0 37	2 12	19 15	.4	9 36	3.2
60	5 27	18 54	0 43	2 41	18 56	.0	9 53	3.6
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	-11 14.7	.6	16.1	T _m	2 12		

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	177	14.9	-5	7.3	165	19.0	148	35.7	6	39.0	215	6.0	-19	22.1
2	207	15.2	-5	5.4	195	23.9	178	35.0	6	41.5	245	7.0	-19	21.2
4	237	15.5	-5	3.4	225	28.9	208	34.3	6	44.0	275	8.0	-19	20.2
6	267	15.8	-5	1.5	255	33.8	238	33.7	6	46.6	305	9.0	-19	19.3
8	297	16.1	-4	59.5	285	38.7	268	33.0	6	49.1	335	10.0	-19	18.4
10	327	16.4	-4	57.6	315	43.6	298	32.4	6	51.6	5	11.1	-19	17.4
12	357	16.7	-4	55.6	345	48.6	328	31.7	6	54.2	35	12.1	-19	16.5
14	27	17.0	-4	53.7	15	53.5	358	31.1	6	56.7	65	13.1	-19	15.5
16	57	17.3	-4	51.7	45	58.4	28	30.4	6	59.3	95	14.1	-19	14.6
18	87	17.6	-4	49.8	76	3.4	58	29.8	7	1.8	125	15.1	-19	13.7
20	117	17.9	-4	47.8	106	8.3	88	29.1	7	4.3	155	16.2	-19	12.7
22	147	18.2	-4	45.9	136	13.2	118	28.4	7	6.8	185	17.2	-19	11.8
Δ		2		10				-3		13		5		5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 39	17 44	0 42	2 20	. . . .	.0	6 55	.0
55	6 34	17 49	0 36	2 1	23 33	3.3	7 18	.4
50	6 30	17 53	0 32	1 48	23 10	3.0	7 36	.7
45	6 26	17 56	0 29	1 38	22 52	2.8	7 51	.9
40	6 23	17 59	0 27	1 30	22 38	2.6	8 3	1.1
35	6 21	18 1	0 25	1 24	22 25	2.5	8 13	1.2
30	6 19	18 4	0 24	1 19	22 15	2.4	8 22	1.3
20	6 15	18 7	0 22	1 13	21 56	2.2	8 37	1.5
10	6 11	18 11	0 21	1 10	21 41	2.1	8 51	1.7
0	6 8	18 14	0 21	1 9	21 26	1.9	9 3	1.8
10	6 4	18 18	0 21	1 10	21 11	1.8	9 16	2.0
20	6 0	18 21	0 22	1 14	20 56	1.6	9 30	2.2
30	5 55	18 26	0 24	1 21	20 38	1.4	9 46	2.4
35	5 53	18 28	0 25	1 26	20 28	1.3	9 55	2.5
40	5 50	18 31	0 27	1 33	20 16	1.2	10 6	2.6
45	5 46	18 35	0 30	1 42	20 2	1.0	10 18	2.8
50	5 42	18 39	0 33	1 54	19 46	.8	10 33	3.0
55	5 36	18 44	0 37	2 12	19 24	.5	10 53	3.3
60	5 29	18 51	0 43	2 39	18 56	.1	11 19	3.8
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	317	56.5	155	-15	15.7	-122	267	46.0	-22	13.8	22	45.7	16	10.1		
2	347	5.6	154	-15	40.1	-121	297	50.5	-22	13.9	52	51.0	16	10.2		
4	16	14.4	153	-16	4.3	-120	327	54.9	-22	13.9	82	56.3	16	10.3		
6	45	22.9	152	-16	28.2	-118	357	59.4	-22	13.9	113	1.5	16	10.4		
8	74	31.3	150	-16	51.9	-117	28	3.9	-22	14.0	143	6.8	16	10.5		
10	103	39.3	149	-17	15.3	-116	58	8.3	-22	14.0	173	12.0	16	10.6		
12	132	47.2	148	-17	38.5	-114	88	12.8	-22	14.0	203	17.3	16	10.7		
14	161	54.7	146	-18	1.4	-113	118	17.3	-22	14.1	233	22.6	16	10.8		
16	191	2.0	145	-18	24.0	-112	148	21.8	-22	14.1	263	27.8	16	10.9		
18	220	9.0	144	-18	46.3	-110	178	26.2	-22	14.1	293	33.1	16	11.0		
20	249	15.7	142	-19	8.4	-109	208	30.7	-22	14.2	323	38.3	16	11.1		
22	278	22.2	141	-19	30.1	-107	238	35.2	-22	14.2	353	43.6	16	11.2		
Δ								22		0		26		1		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	-11	.4	.6	16.1	T _m	2 53	1.8	54.1	14.7
12	-10	53.0	T _{m☉}	12 h 10.9 min	Starost	18.3 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 6	.1	343	-3.9	♄	6 8	.0	102	-1.9
♂	9 39	.1	50	1.2	♄	22 25	.0	217	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	177	18.5	-4	43.9	166	18.1	148	27.8	7	9.4	215	18.2	-19	10.8
2	207	18.8	-4	42.0	196	23.1	178	27.1	7	11.9	245	19.2	-19	9.9
4	237	19.2	-4	40.0	226	28.0	208	26.4	7	14.4	275	20.3	-19	8.9
6	267	19.5	-4	38.1	256	32.9	238	25.8	7	17.0	305	21.3	-19	8.0
8	297	19.8	-4	36.1	286	37.9	268	25.1	7	19.5	335	22.3	-19	7.0
10	327	20.1	-4	34.2	316	42.8	298	24.5	7	22.0	5	23.4	-19	6.1
12	357	20.4	-4	32.2	346	47.7	328	23.8	7	24.5	35	24.4	-19	5.1
14	27	20.7	-4	30.3	16	52.6	358	23.1	7	27.1	65	25.4	-19	4.2
16	57	21.0	-4	28.3	46	57.6	28	22.5	7	29.6	95	26.4	-19	3.2
18	87	21.3	-4	26.4	77	2.5	58	21.8	7	32.1	125	27.5	-19	2.3
20	117	21.7	-4	24.4	107	7.4	88	21.1	7	34.6	155	28.5	-19	1.3
22	147	22.0	-4	22.4	137	12.3	118	20.5	7	37.1	185	29.5	-19	.4
Δ		2		10				-3		13		5		5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 36	17 46	0 42	2 21	0 7	3.9	6 55	.1
55	6 31	17 51	0 36	2 2	. . . .	.0	7 29	.6
50	6 28	17 55	0 32	1 48	. . . .	.0	7 54	1.0
45	6 25	17 57	0 29	1 38	23 60	2.8	8 13	1.2
40	6 22	18 0	0 27	1 30	23 41	2.6	8 29	1.3
35	6 20	18 2	0 25	1 24	23 26	2.5	8 42	1.4
30	6 18	18 4	0 24	1 19	23 12	2.4	8 54	1.5
20	6 14	18 8	0 22	1 13	22 49	2.3	9 14	1.7
10	6 11	18 11	0 21	1 10	22 30	2.2	9 31	1.8
0	6 7	18 14	0 21	1 9	22 12	2.1	9 48	2.0
10	6 4	18 17	0 21	1 10	21 54	1.9	10 4	2.1
20	6 0	18 21	0 22	1 14	21 34	1.8	10 22	2.3
30	5 56	18 25	0 24	1 21	21 12	1.7	10 42	2.4
35	5 54	18 27	0 25	1 26	20 59	1.6	10 54	2.5
40	5 51	18 30	0 27	1 33	20 45	1.5	11 8	2.6
45	5 47	18 33	0 30	1 42	20 27	1.3	11 25	2.8
50	5 43	18 37	0 33	1 54	20 5	1.1	11 45	3.0
55	5 38	18 42	0 37	2 11	19 37	.8	12 12	3.3
60	5 32	18 48	0 43	2 38	18 57	.2	12 50	4.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	307	28.3	139	-19	51.6	-106	268	39.7	-22	14.2	23	48.8	16	11.3		
2	336	34.2	138	-20	12.7	-104	298	44.1	-22	14.3	53	54.1	16	11.4		
4	5	39.7	136	-20	33.6	-103	328	48.6	-22	14.3	83	59.3	16	11.6		
6	34	45.0	135	-20	54.1	-101	358	53.1	-22	14.3	114	4.6	16	11.7		
8	63	49.9	133	-21	14.2	-99	28	57.6	-22	14.4	144	9.9	16	11.8		
10	92	54.5	131	-21	34.0	-97	59	2.1	-22	14.4	174	15.1	16	11.9		
12	121	58.8	130	-21	53.5	-96	89	6.5	-22	14.4	204	20.4	16	12.0		
14	151	2.8	128	-22	12.6	-94	119	11.0	-22	14.5	234	25.6	16	12.1		
16	180	6.4	127	-22	31.4	-92	149	15.5	-22	14.5	264	30.9	16	12.2		
18	209	9.7	125	-22	49.8	-90	179	20.0	-22	14.5	294	36.1	16	12.3		
20	238	12.7	123	-23	7.8	-88	209	24.5	-22	14.5	324	41.4	16	12.4		
22	267	15.4	122	-23	25.4	-86	239	29.0	-22	14.6	354	46.6	16	12.5		
Δ								22		0		26		1		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 22.3 - 4	20.5	167 17.3	148 19.8	7 39.6	215 30.6	-18 59.4
2	207 22.6 - 4	18.5	197 22.2	178 19.1	7 42.2	245 31.6	-18 58.4
4	237 22.9 - 4	16.6	227 27.1	208 18.5	7 44.7	275 32.6	-18 57.5
6	267 23.2 - 4	14.6	257 32.1	238 17.8	7 47.2	305 33.7	-18 56.5
8	297 23.6 - 4	12.7	287 37.0	268 17.1	7 49.7	335 34.7	-18 55.5
10	327 23.9 - 4	10.7	317 41.9	298 16.5	7 52.2	5 35.7	-18 54.6
12	357 24.2 - 4	8.7	347 46.8	328 15.8	7 54.7	35 36.8	-18 53.6
14	27 24.5 - 4	6.8	17 51.8	358 15.1	7 57.2	65 37.8	-18 52.6
16	57 24.9 - 4	4.8	47 56.7	28 14.4	7 59.7	95 38.8	-18 51.7
18	87 25.2 - 4	2.9	78 1.6	58 13.8	8 2.2	125 39.9	-18 50.7
20	117 25.5 - 4	.9	108 6.6	88 13.1	8 4.7	155 40.9	-18 49.7
22	147 25.8 - 3	58.9	138 11.5	118 12.4	8 7.2	185 41.9	-18 48.7
Δ	2	10		-3	13	5	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 33	17 49	0 41	2 21	1 41	4.0	6 57	.3
55	6 29	17 53	0 36	2 2	0 54	3.3	7 44	1.0
50	6 25	17 56	0 32	1 48	0 23	3.0	8 16	1.3
45	6 23	17 59	0 29	1 38	...	.0	8 41	1.5
40	6 20	18 1	0 27	1 30	...	.0	9 0	1.6
35	6 18	18 3	0 25	1 24	...	.0	9 16	1.7
30	6 16	18 5	0 24	1 19	...	.0	9 31	1.8
20	6 13	18 8	0 22	1 13	23 45	2.3	9 55	1.9
10	6 10	18 11	0 21	1 10	23 22	2.3	10 16	2.0
0	6 7	18 14	0 21	1 9	23 1	2.2	10 35	2.1
10	6 4	18 17	0 21	1 10	22 40	2.1	10 55	2.2
20	6 1	18 20	0 22	1 14	22 18	2.1	11 16	2.3
30	5 57	18 24	0 24	1 21	21 52	2.0	11 40	2.4
35	5 54	18 26	0 25	1 26	21 37	1.9	11 55	2.5
40	5 52	18 28	0 27	1 32	21 20	1.8	12 12	2.6
45	5 49	18 31	0 30	1 41	20 59	1.7	12 32	2.7
50	5 45	18 35	0 33	1 53	20 32	1.6	12 57	2.9
55	5 40	18 39	0 37	2 10	19 57	1.3	13 32	3.2
60	5 34	18 45	0 43	2 36	19 2	.6	14 26	3.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	296 17.7	120 -23	42.6	-84	269 33.5	-22 14.6	24 51.9	16 12.6
2	325 19.6	118 -23	59.4	-82	299 38.0	-22 14.6	54 57.1	16 12.7
4	354 21.2	116 -24	15.8	-80	329 42.4	-22 14.7	85 2.4	16 12.8
6	23 22.5	115 -24	31.8	-78	359 46.9	-22 14.7	115 7.6	16 12.9
8	52 23.5	113 -24	47.4	-76	29 51.4	-22 14.7	145 12.9	16 13.0
10	81 24.0	111 -25	2.5	-73	59 55.9	-22 14.8	175 18.1	16 13.1
12	110 24.3	110 -25	17.2	-71	90 .4	-22 14.8	205 23.3	16 13.2
14	139 24.2	108 -25	31.4	-69	120 4.9	-22 14.8	235 28.6	16 13.3
16	168 23.8	106 -25	45.1	-66	150 9.4	-22 14.9	265 33.8	16 13.4
18	197 23.0	104 -25	58.4	-64	180 13.9	-22 14.9	295 39.1	16 13.5
20	226 21.9	103 -26	11.2	-62	210 18.4	-22 14.9	325 44.3	16 13.6
22	255 20.4	101 -26	23.6	-59	240 22.9	-22 14.9	355 49.6	16 13.7
Δ					22	0	26	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-10 30.6	.6	16.1	T _m	4 23	2.1	54.6 14.9		
12	-10 22.9	T _{m☉}	12 h 10.4 min	Starost	20.3 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 7	.1	341	-3.9	♄	6 1	.0	102	-2.0
	9 38	.1	48	1.2	♅	22 17	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 26.1 - 3	57.0	168 16.4	148 11.7	8 9.7	215 43.0	-18 47.8
2	207 26.5 - 3	55.0	198 21.3	178 11.1	8 12.2	245 44.0	-18 46.8
4	237 26.8 - 3	53.0	228 26.3	208 10.4	8 14.7	275 45.1	-18 45.8
6	267 27.1 - 3	51.1	258 31.2	238 9.7	8 17.2	305 46.1	-18 44.8
8	297 27.4 - 3	49.1	288 36.1	268 9.0	8 19.7	335 47.1	-18 43.8
10	327 27.8 - 3	47.2	318 41.1	298 8.4	8 22.2	5 48.2	-18 42.9
12	357 28.1 - 3	45.2	348 46.0	328 7.7	8 24.7	35 49.2	-18 41.9
14	27 28.4 - 3	43.2	18 50.9	358 7.0	8 27.2	65 50.3	-18 40.9
16	57 28.7 - 3	41.3	48 55.8	28 6.3	8 29.7	95 51.3	-18 39.9
18	87 29.1 - 3	39.3	79 .8	58 5.6	8 32.2	125 52.3	-18 38.9
20	117 29.4 - 3	37.3	109 5.7	88 4.9	8 34.7	155 53.4	-18 37.9
22	147 29.7 - 3	35.4	139 10.6	118 4.3	8 37.2	185 54.4	-18 36.9
Δ	2	10		-3	12	5	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 30	17 51	0 41	2 21	3 18	3.7	7 4	1.0
55	6 26	17 55	0 36	2 2	2 13	3.0	8 9	1.6
50	6 23	17 58	0 32	1 48	1 35	2.8	8 48	1.8
45	6 21	18 0	0 29	1 38	1 7	2.6	9 17	1.9
40	6 19	18 2	0 27	1 30	0 45	2.6	9 39	2.0
35	6 17	18 4	0 25	1 24	0 27	2.5	9 58	2.1
30	6 15	18 5	0 24	1 19	0 11	2.4	10 14	2.1
20	6 12	18 8	0 22	1 13	...	.0	10 41	2.2
10	6 10	18 11	0 21	1 10	...	.0	11 4	2.2
0	6 7	18 13	0 21	1 9	23 54	2.3	11 26	2.3
10	6 4	18 16	0 21	1 10	23 32	2.3	11 48	2.3
20	6 1	18 19	0 22	1 14	23 7	2.3	12 12	2.3
30	5 57	18 22	0 24	1 21	22 39	2.3	12 39	2.4
35	5 55	18 24	0 25	1 26	22 23	2.3	12 55	2.4
40	5 53	18 27	0 27	1 32	22 3	2.2	13 14	2.5
45	5 50	18 29	0 30	1 41	21 40	2.2	13 37	2.5
50	5 47	18 33	0 33	1 53	21 10	2.2	14 7	2.6
55	5 42	18 37	0 37	2 9	20 29	2.1	14 48	2.7
60	5 37	18 42	0 42	2 35	19 16	1.7	15 59	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	284 18.6	99 -26	35.4	-57	270 27.4	-22 15.0	25 54.8	16 13.8
2	313 16.5	98 -26	46.7	-54	300 32.0	-22 15.0	56 .1	16 13.9
4	342 14.0	96 -26	57.5	-52	330 36.5	-22 15.0	86 5.3	16 14.0
6	11 11.3	95 -27	7.8	-49	0 41.0	-22 15.1	116 10.5	16 14.1
8	40 8.2	93 -27	17.6	-46	30 45.5	-22 15.1	146 15.8	16 14.2
10	69 4.8	91 -27	26.8	-43	60 50.0	-22 15.1	176 21.0	16 14.3
12	98 1.0	90 -27	35.5	-41	90 54.5	-22 15.2	206 26.3	16 14.4
14	126 57.0	88 -27	43.7	-38	120 59.0	-22 15.2	236 31.5	16 14.5
16	155 52.7	87 -27	51.2	-35	150 3.5	-22 15.2	266 36.8	16 14.6
18	184 48.1	86 -27	58.3	-32	181 8.1	-22 15.2	296 42.0	16 14.7
20	213 43.2	84 -28	4.7	-29	211 12.6	-22 15.3	326 47.2	16 14.8
22	242 38.0	83 -28	10.6	-26	241 17.1	-22 15.3	356 52.5	16 14.9
Δ					23	0	26	1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-10 15.3	.7	16.1	T _m	5 14	2.2	55.0 15.0		
12	-10 7.4	T _{m☉}	12 h 10.1 min	Starost	21.3 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 8	.1	340	-3.9	♄	5 57	.0	102	-2.0
	9 37	.1	47	1.2	♅	22 12	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 30.1 - 3 33.4		169 15.6	148 3.6 8 39.7	215 55.5 -18 35.9		
2	207 30.4 - 3 31.4		199 20.5	178 2.9 8 42.1	245 56.5 -18 34.9		
4	237 30.7 - 3 29.5		229 25.4	208 2.2 8 44.6	275 57.6 -18 34.0		
6	267 31.1 - 3 27.5		259 30.3	238 1.5 8 47.1	305 58.6 -18 33.0		
8	297 31.4 - 3 25.5		289 35.3	268 .8 8 49.6	335 59.7 -18 32.0		
10	327 31.7 - 3 23.6		319 40.2	298 .1 8 52.1	6 .7 -18 31.0		
12	357 32.1 - 3 21.6		349 45.1	327 59.5 8 54.6	36 1.8 -18 30.0		
14	27 32.4 - 3 19.6		19 50.1	357 58.8 8 57.0	66 2.8 -18 29.0		
16	57 32.7 - 3 17.7		49 55.0	27 58.1 8 59.5	96 3.9 -18 28.0		
18	87 33.1 - 3 15.7		79 59.9	57 57.4 9 2.0	126 4.9 -18 26.9		
20	117 33.4 - 3 13.7		110 4.8	87 56.7 9 4.5	156 6.0 -18 25.9		
22	147 33.7 - 3 11.8		140 9.8	117 56.0 9 6.9	186 7.0 -18 24.9		
Δ	2	10		-3	12	5	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 27	17 54	0 41	2 22	4 46	2.3	7 27	2.6
55	6 24	17 57	0 36	2 2	3 25	2.3	8 48	2.5
50	6 21	17 59	0 32	1 48	2 41	2.4	9 32	2.5
45	6 19	18 1	0 29	1 38	2 10	2.4	10 3	2.5
40	6 17	18 3	0 27	1 30	1 46	2.4	10 27	2.4
35	6 16	18 5	0 25	1 24	1 26	2.3	10 47	2.4
30	6 14	18 6	0 24	1 19	1 9	2.3	11 4	2.4
20	6 11	18 9	0 22	1 13	0 41	2.3	11 33	2.4
10	6 9	18 11	0 21	1 10	0 17	2.3	11 58	2.4
0	6 7	18 13	0 21	1 9	...	.0	12 21	2.3
10	6 4	18 15	0 21	1 10	...	.0	12 44	2.3
20	6 1	18 18	0 22	1 14	...	.0	13 8	2.3
30	5 58	18 21	0 24	1 20	23 34	2.6	13 37	2.3
35	5 56	18 23	0 25	1 25	23 17	2.6	13 54	2.2
40	5 54	18 25	0 27	1 32	22 57	2.6	14 13	2.2
45	5 51	18 28	0 29	1 41	22 33	2.7	14 38	2.2
50	5 48	18 31	0 33	1 52	22 2	2.8	15 8	2.1
55	5 44	18 34	0 37	2 9	21 18	3.0	15 52	2.0
60	5 39	18 39	0 42	2 34	19 58	3.5	17 12	1.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	271 32.6 82 -28 15.9 -23				271 21.6 -22 15.3	26 57.7 16 15.0		
2	300 26.9 80 -28 20.6 -21				301 26.1 -22 15.4	57 2.9 16 15.1		
4	329 21.0 79 -28 24.7 -17				331 30.7 -22 15.4	87 8.2 16 15.2		
6	358 14.8 78 -28 28.2 -14				1 35.2 -22 15.4	117 13.4 16 15.3		
8	27 8.4 77 -28 31.0 -11				31 39.7 -22 15.4	147 18.7 16 15.4		
10	56 1.8 76 -28 33.3 -8				61 44.2 -22 15.5	177 23.9 16 15.5		
12	84 54.9 75 -28 34.9 -5				91 48.8 -22 15.5	207 29.1 16 15.6		
14	113 47.9 74 -28 35.9 -2				121 53.3 -22 15.5	237 34.4 16 15.7		
16	142 40.7 73 -28 36.3 1				151 57.8 -22 15.5	267 39.6 16 15.8		
18	171 33.3 72 -28 36.1 4				182 2.4 -22 15.6	297 44.8 16 15.9		
20	200 25.7 71 -28 35.2 8				212 6.9 -22 15.6	327 50.1 16 16.0		
22	229 18.0 71 -28 33.6 11				242 11.4 -22 15.6	357 55.3 16 16.1		
Δ					23	0	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 9 59.6	.7	16.1	T _m	6 7	2.3	55.7 15.2
12	- 9 51.5	T _m ☉	12 h 9.9 min	Starost	22.3 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	14 8	.1	339	-3.9	♃	5 54	.0	102	-2.0
♂	9 36	.1	47	1.2	♄	22 8	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 34.1 - 3 9.8		170 14.7	147 55.3 9 9.4	216 8.1 -18 23.9		
2	207 34.4 - 3 7.8		200 19.6	177 54.6 9 11.9	246 9.1 -18 22.9		
4	237 34.7 - 3 5.9		230 24.6	207 53.9 9 14.3	276 10.2 -18 21.9		
6	267 35.1 - 3 3.9		260 29.5	237 53.2 9 16.8	306 11.2 -18 20.9		
8	297 35.4 - 3 1.9		290 34.4	267 52.5 9 19.3	336 12.3 -18 19.9		
10	327 35.7 - 3 .0		320 39.3	297 51.8 9 21.7	6 13.3 -18 18.9		
12	357 36.1 - 2 58.0		350 44.3	327 51.1 9 24.2	36 14.4 -18 17.8		
14	27 36.4 - 2 56.0		20 49.2	357 50.4 9 26.6	66 15.5 -18 16.8		
16	57 36.8 - 2 54.0		50 54.1	27 49.7 9 29.1	96 16.5 -18 15.8		
18	87 37.1 - 2 52.1		80 59.0	57 49.0 9 31.6	126 17.6 -18 14.8		
20	117 37.4 - 2 50.1		111 4.0	87 48.3 9 34.0	156 18.6 -18 13.8		
22	147 37.8 - 2 48.1		141 8.9	117 47.6 9 36.5	186 19.7 -18 12.7		
Δ	2	10		-3	12	5	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 24	17 56	0 41	2 22	5 40	.8	8 30	4.2
55	6 21	17 59	0 36	2 2	4 21	1.6	9 48	3.3
50	6 19	18 1	0 32	1 48	3 37	1.8	10 32	3.1
45	6 17	18 3	0 29	1 38	3 6	2.0	11 2	2.9
40	6 16	18 4	0 27	1 30	2 42	2.1	11 26	2.8
35	6 14	18 6	0 25	1 24	2 23	2.1	11 46	2.7
30	6 13	18 7	0 24	1 19	2 6	2.2	12 2	2.7
20	6 11	18 9	0 22	1 13	1 37	2.2	12 30	2.6
10	6 8	18 11	0 21	1 10	1 13	2.3	12 55	2.5
0	6 6	18 13	0 21	1 9	0 50	2.4	13 17	2.4
10	6 4	18 15	0 21	1 10	0 27	2.4	13 39	2.3
20	6 2	18 17	0 22	1 14	0 2	2.5	14 3	2.2
30	5 59	18 20	0 24	1 20	...	.0	14 31	2.1
35	5 57	18 22	0 25	1 25	...	.0	14 47	2.0
40	5 55	18 24	0 27	1 32	...	.0	15 6	1.9
45	5 53	18 26	0 29	1 40	23 38	3.1	15 29	1.8
50	5 50	18 28	0 32	1 52	23 9	3.3	15 59	1.6
55	5 46	18 32	0 37	2 8	22 29	3.6	16 39	1.3
60	5 42	18 36	0 42	2 32	21 22	4.4	17 47	.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	258 10.2 70 -28 31.4 14				272 16.0 -22 15.7	28 .5 16 16.2		
2	287 2.2 70 -28 28.6 18				302 20.5 -22 15.7	58 5.8 16 16.3		
4	315 54.1 69 -28 25.0 21				332 25.0 -22 15.7	88 11.0 16 16.4		
6	344 46.0 69 -28 20.9 24				2 29.6 -22 15.7	118 16.2 16 16.5		
8	13 37.7 68 -28 16.0 27				32 34.1 -22 15.8	148 21.5 16 16.6		
10	42 29.3 68 -28 10.5 31				62 38.7 -22 15.8	178 26.7 16 16.7		
12	71 20.9 68 -28 4.4 34				92 43.2 -22 15.8	208 31.9 16 16.8		
14	100 12.5 68 -27 57.6 37				122 47.7 -22 15.8	238 37.1 16 16.9		
16	129 4.0 67 -27 50.1 41				152 52.3 -22 15.9	268 42.4 16 17.0		
18	157 55.5 67 -27 41.9 44				182 56.8 -22 15.9	298 47.6 16 17.1		
20	186 46.9 67 -27 33.1 48				213 1.4 -22 15.9	328 52.8 16 17.2		
22	215 38.4 67 -27 23.5 51				243 5.9 -22 15.9	358 58.0 16 17.3		
Δ					23	0	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 9 43.6	.7	16.1	T _m	7 3	2.4	56.4 15.4
12	- 9 35.4	T _m ☉	12 h 9.6 min	Starost	23.3 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	14 9	.1	338	-3.9	♃	5 50	.0	102	-2.0
♂	9 35	.1	46	1.2	♄	22 4	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 38.1 - 2 46.2		171 13.8	147 46.9 9 38.9	216 20.7 -18 11.7		
2	207 38.5 - 2 44.2		201 18.8	177 46.2 9 41.4	246 21.8 -18 10.7		
4	237 38.8 - 2 42.2		231 23.7	207 45.5 9 43.8	276 22.9 -18 9.7		
6	267 39.2 - 2 40.2		261 28.6	237 44.8 9 46.3	306 23.9 -18 8.6		
8	297 39.5 - 2 38.3		291 33.5	267 44.1 9 48.7	336 25.0 -18 7.6		
10	327 39.8 - 2 36.3		321 38.5	297 43.4 9 51.2	6 26.1 -18 6.6		
12	357 40.2 - 2 34.3		351 43.4	327 42.7 9 53.6	36 27.1 -18 5.6		
14	27 40.5 - 2 32.3		21 48.3	357 42.0 9 56.0	66 28.2 -18 4.5		
16	57 40.9 - 2 30.4		51 53.3	27 41.2 9 58.5	96 29.2 -18 3.5		
18	87 41.2 - 2 28.4		81 58.2	57 40.5 10 .9	126 30.3 -18 2.5		
20	117 41.6 - 2 26.4		112 3.1	87 39.8 10 3.4	156 31.4 -18 1.4		
22	147 41.9 - 2 24.5		142 8.0	117 39.1 10 5.8	186 32.4 -18 .4		
Δ	2	10		-4 12	5 5		

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	244 29.9 68 -27 13.4	54	273 10.5 -22 16.0	29 3.3 16 17.4				
2	273 21.4 68 -27 2.5	58	303 15.0 -22 16.0	59 8.5 16 17.5				
4	302 12.9 68 -26 51.0	61	333 19.6 -22 16.0	89 13.7 16 17.6				
6	331 4.5 68 -26 38.8	64	3 24.1 -22 16.0	119 19.0 16 17.7				
8	359 56.1 69 -26 26.0	67	33 28.7 -22 16.1	149 24.2 16 17.7				
10	28 47.9 69 -26 12.5	71	63 33.3 -22 16.1	179 29.4 16 17.8				
12	57 39.6 69 -25 58.4	74	93 37.8 -22 16.1	209 34.6 16 17.9				
14	86 31.5 70 -25 43.6	77	123 42.4 -22 16.1	239 39.8 16 18.0				
16	115 23.5 70 -25 28.1	80	153 46.9 -22 16.2	269 45.1 16 18.1				
18	144 15.6 71 -25 12.0	84	183 51.5 -22 16.2	299 50.3 16 18.2				
20	173 7.8 72 -24 55.2	87	213 56.1 -22 16.2	329 55.5 16 18.3				
22	202 .1 72 -24 37.9	90	244 .6 -22 16.2	0 .7 16 18.4				
Δ			23	0	26	0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 21	17 59	0 41	2 23	5 60	.3	10 9	4.6
55	6 19	18 1	0 36	2 3	4 59	1.0	11 9	3.8
50	6 17	18 3	0 32	1 49	4 21	1.4	11 46	3.5
45	6 15	18 4	0 29	1 38	3 54	1.6	12 12	3.2
40	6 14	18 5	0 27	1 30	3 32	1.7	12 34	3.1
35	6 13	18 6	0 25	1 24	3 13	1.8	12 51	2.9
30	6 12	18 7	0 24	1 20	2 58	1.9	13 6	2.8
20	6 10	18 9	0 22	1 13	2 31	2.1	13 32	2.6
10	6 8	18 11	0 21	1 10	2 8	2.2	13 54	2.5
0	6 6	18 13	0 21	1 9	1 47	2.4	14 14	2.3
10	6 4	18 14	0 21	1 10	1 25	2.5	14 34	2.2
20	6 2	18 16	0 22	1 13	1 2	2.6	14 56	2.0
30	5 59	18 19	0 24	1 20	0 35	2.8	15 20	1.8
35	5 58	18 20	0 25	1 25	0 19	2.9	15 35	1.7
40	5 56	18 22	0 27	1 32	0 1	3.0	15 52	1.6
45	5 54	18 24	0 29	1 40	...	.0	16 12	1.4
50	5 51	18 26	0 32	1 52	...	.0	16 36	1.2
55	5 48	18 29	0 36	2 7	23 56	4.0	17 10	.8
60	5 44	18 33	0 42	2 31	23 8	4.6	17 59	.2
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	- 9 27.3	.7	16.1	T _m	8 0	2.4	57.3 15.6
12	- 9 19.0	T _{m☉}	12 h 9.3 min	Starost	24.3 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 9	.1	337	-3.9	♃	5 46	.0	102	-2.0
♂	9 34	.1	45	1.2	♄	21 60	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 42.3 - 2 22.5		172 13.0	147 38.4 10 8.2	216 33.5 -17 59.3		
2	207 42.6 - 2 20.5		202 17.9	177 37.7 10 10.7	246 34.6 -17 58.3		
4	237 42.9 - 2 18.5		232 22.8	207 37.0 10 13.1	276 35.6 -17 57.3		
6	267 43.3 - 2 16.6		262 27.8	237 36.2 10 15.5	306 36.7 -17 56.2		
8	297 43.6 - 2 14.6		292 32.7	267 35.5 10 17.9	336 37.8 -17 55.2		
10	327 44.0 - 2 12.6		322 37.6	297 34.8 10 20.4	6 38.9 -17 54.1		
12	357 44.3 - 2 10.6		352 42.5	327 34.1 10 22.8	36 39.9 -17 53.1		
14	27 44.7 - 2 8.7		22 47.5	357 33.4 10 25.2	66 41.0 -17 52.0		
16	57 45.0 - 2 6.7		52 52.4	27 32.6 10 27.6	96 42.1 -17 51.0		
18	87 45.4 - 2 4.7		82 57.3	57 31.9 10 30.1	126 43.1 -17 49.9		
20	117 45.7 - 2 2.7		113 2.3	87 31.2 10 32.5	156 44.2 -17 48.9		
22	147 46.1 - 2 .8		143 7.2	117 30.5 10 34.9	186 45.3 -17 47.8		
Δ	2	10		-4 12	5 5		

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	230 52.5 73 -24 19.9	93	274 5.2 -22 16.3	30 6.0 16 18.5				
2	259 45.1 74 -24 1.2	96	304 9.8 -22 16.3	60 11.2 16 18.6				
4	288 37.9 74 -23 42.0	99	334 14.3 -22 16.3	90 16.4 16 18.7				
6	317 30.7 75 -23 22.1	102	4 18.9 -22 16.3	120 21.6 16 18.8				
8	346 23.8 76 -23 1.6	105	34 23.5 -22 16.4	150 26.8 16 18.9				
10	15 17.0 77 -22 40.5	108	64 28.0 -22 16.4	180 32.0 16 19.0				
12	44 10.3 78 -22 18.9	111	94 32.6 -22 16.4	210 37.3 16 19.0				
14	73 3.9 79 -21 56.6	114	124 37.2 -22 16.4	240 42.5 16 19.1				
16	101 57.6 79 -21 33.8	117	154 41.8 -22 16.5	270 47.7 16 19.2				
18	130 51.5 80 -21 10.4	120	184 46.4 -22 16.5	300 52.9 16 19.3				
20	159 45.5 81 -20 46.4	123	214 50.9 -22 16.5	330 58.1 16 19.4				
22	188 39.8 82 -20 21.9	125	244 55.5 -22 16.5	1 3.3 16 19.5				
Δ			23	0	26	0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 18	18 1	0 41	2 23	6 6	.1	12 0	4.6
55	6 16	18 3	0 36	2 3	5 23	.7	12 41	4.0
50	6 15	18 4	0 32	1 49	4 54	1.0	13 9	3.7
45	6 13	18 5	0 29	1 38	4 31	1.3	13 30	3.4
40	6 12	18 6	0 27	1 30	4 13	1.4	13 47	3.2
35	6 11	18 7	0 25	1 24	3 58	1.6	14 1	3.0
30	6 11	18 8	0 24	1 20	3 45	1.7	14 14	2.9
20	6 9	18 9	0 22	1 13	3 22	1.9	14 35	2.6
10	6 7	18 11	0 21	1 10	3 2	2.1	14 53	2.4
0	6 6	18 12	0 21	1 9	2 43	2.3	15 10	2.3
10	6 4	18 14	0 21	1 10	2 25	2.5	15 26	2.1
20	6 2	18 16	0 22	1 13	2 5	2.6	15 44	1.9
30	6 0	18 18	0 24	1 20	1 41	2.9	16 4	1.6
35	5 59	18 19	0 25	1 25	1 28	3.0	16 16	1.5
40	5 57	18 20	0 27	1 31	1 12	3.1	16 29	1.3
45	5 55	18 22	0 29	1 40	0 53	3.3	16 45	1.1
50	5 53	18 24	0 32	1 50	0 29	3.6	17 4	.9
55	5 50	18 27	0 36	2 7	...	.0	17 29	.6
60	5 47	18 30	0 42	2 30	...	.0	18 3	.0
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	- 9 10.8	.7	16.1	T _m	8 57	2.3	58.3 15.9
12	- 9 2.4	T _{m☉}	12 h 9.0 min	Starost	25.3 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 10	.1	335	-3.9	♃	5 43	.0	102	-2.0
♂	9 33	.1	44	1.2	♄	21 56	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 46.4 - 1 58.8		173 12.1	147 29.7 10 37.3	216 46.4 -17 46.8		
2	207 46.8 - 1 56.8		203 17.0	177 29.0 10 39.7	246 47.4 -17 45.7		
4	237 47.1 - 1 54.8		233 22.0	207 28.3 10 42.1	276 48.5 -17 44.7		
6	267 47.5 - 1 52.8		263 26.9	237 27.5 10 44.5	306 49.6 -17 43.6		
8	297 47.8 - 1 50.9		293 31.8	267 26.8 10 46.9	336 50.7 -17 42.5		
10	327 48.2 - 1 48.9		323 36.8	297 26.1 10 49.4	6 51.7 -17 41.5		
12	357 48.6 - 1 46.9		353 41.7	327 25.4 10 51.8	36 52.8 -17 40.4		
14	27 48.9 - 1 44.9		23 46.6	357 24.6 10 54.2	66 53.9 -17 39.4		
16	57 49.3 - 1 43.0		53 51.5	27 23.9 10 56.6	96 55.0 -17 38.3		
18	87 49.6 - 1 41.0		83 56.5	57 23.1 10 59.0	126 56.1 -17 37.2		
20	117 50.0 - 1 39.0		114 1.4	87 22.4 11 1.4	156 57.1 -17 36.2		
22	147 50.3 - 1 37.0		144 6.3	117 21.7 11 3.8	186 58.2 -17 35.1		
Δ	2	10		-4 12	5 5		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 15	18 4	0 42	2 24	6 8	.0	13 52	4.5
55	6 14	18 5	0 36	2 3	5 39	.5	14 18	4.0
50	6 13	18 6	0 32	1 49	5 18	.8	14 37	3.7
45	6 12	18 7	0 29	1 38	5 2	1.0	14 52	3.4
40	6 11	18 7	0 27	1 30	4 48	1.2	15 4	3.2
35	6 10	18 8	0 25	1 24	4 36	1.4	15 14	3.0
30	6 9	18 9	0 24	1 20	4 26	1.6	15 23	2.9
20	6 8	18 10	0 22	1 13	4 8	1.8	15 38	2.6
10	6 7	18 11	0 21	1 10	3 53	2.0	15 51	2.4
0	6 5	18 12	0 21	1 9	3 38	2.2	16 4	2.2
10	6 4	18 13	0 21	1 10	3 24	2.4	16 16	2.0
20	6 3	18 15	0 22	1 13	3 8	2.6	16 29	1.7
30	6 1	18 16	0 24	1 20	2 50	2.9	16 43	1.5
35	5 59	18 17	0 25	1 25	2 39	3.0	16 52	1.3
40	5 58	18 19	0 27	1 31	2 27	3.2	17 1	1.2
45	5 57	18 20	0 29	1 40	2 13	3.4	17 12	1.0
50	5 55	18 22	0 32	1 51	1 55	3.7	17 26	.7
55	5 52	18 24	0 36	2 6	1 32	4.0	17 42	.4
60	5 49	18 27	0 42	2 29	1 1	4.6	18 4	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	217 34.2 83 -19 56.8	128	275 .1 -22 16.5	31 8.6	16 19.6			
2	246 28.8 84 -19 31.3	131	305 4.7 -22 16.6	61 13.8	16 19.7			
4	275 23.6 85 -19 5.2	133	335 9.3 -22 16.6	91 19.0	16 19.8			
6	304 18.6 86 -18 38.5	136	5 13.8 -22 16.6	121 24.2	16 19.9			
8	333 13.7 87 -18 11.4	138	35 18.4 -22 16.6	151 29.4	16 20.0			
10	2 9.1 88 -17 43.8	140	65 23.0 -22 16.7	181 34.6	16 20.0			
12	31 4.6 88 -17 15.7	143	95 27.6 -22 16.7	211 39.8	16 20.1			
14	60 .3 89 -16 47.2	145	125 32.2 -22 16.7	241 45.0	16 20.2			
16	88 56.2 90 -16 18.1	147	155 36.8 -22 16.7	271 50.2	16 20.3			
18	117 52.2 91 -15 48.7	149	185 41.4 -22 16.8	301 55.5	16 20.4			
20	146 48.4 92 -15 18.8	152	215 46.0 -22 16.8	332 .7	16 20.5			
22	175 44.8 93 -14 48.5	154	245 50.6 -22 16.8	2 5.9	16 20.6			
Δ			23	0	26	0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 8 54.1	.7	16.1	T _m	9 51	2.2	59.2 16.1		
12	- 8 45.6	T _{m☉}	12 h 8.8 min	Starost	26.3 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 10	.1	334	-3.9	♄	5 39	.0	102	-2.0
	9 33	.1	44	1.2	♅	21 52	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 50.7 - 1 35.1		174 11.2	147 20.9 11 6.1	216 59.3 -17 34.0		
2	207 51.0 - 1 33.1		204 16.2	177 20.2 11 8.5	247 .4 -17 33.0		
4	237 51.4 - 1 31.1		234 21.1	207 19.5 11 10.9	277 1.5 -17 31.9		
6	267 51.7 - 1 29.1		264 26.0	237 18.7 11 13.3	307 2.5 -17 30.8		
8	297 52.1 - 1 27.1		294 31.0	267 18.0 11 15.7	337 3.6 -17 29.7		
10	327 52.5 - 1 25.2		324 35.9	297 17.2 11 18.1	7 4.7 -17 28.7		
12	357 52.8 - 1 23.2		354 40.8	327 16.5 11 20.5	37 5.8 -17 27.6		
14	27 53.2 - 1 21.2		24 45.7	357 15.7 11 22.9	67 6.9 -17 26.5		
16	57 53.5 - 1 19.2		54 50.7	27 15.0 11 25.2	97 8.0 -17 25.4		
18	87 53.9 - 1 17.3		84 55.6	57 14.2 11 27.6	127 9.1 -17 24.4		
20	117 54.2 - 1 15.3		115 .5	87 13.5 11 30.0	157 10.2 -17 23.3		
22	147 54.6 - 1 13.3		145 5.5	117 12.7 11 32.4	187 11.2 -17 22.2		
Δ	2	10		-4 12	5 5		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 12	18 6	0 42	2 24	6 8	.0	15 41	4.5
55	6 11	18 7	0 36	2 4	5 51	.4	15 55	4.0
50	6 10	18 7	0 32	1 49	5 37	.7	16 5	3.7
45	6 10	18 8	0 29	1 39	5 27	.9	16 14	3.4
40	6 9	18 8	0 27	1 31	5 18	1.1	16 21	3.2
35	6 9	18 9	0 25	1 24	5 10	1.3	16 27	3.0
30	6 8	18 9	0 24	1 20	5 3	1.4	16 32	2.9
20	6 7	18 10	0 22	1 13	4 52	1.7	16 41	2.6
10	6 6	18 11	0 21	1 10	4 41	1.9	16 49	2.4
0	6 5	18 12	0 21	1 9	4 31	2.2	16 56	2.1
10	6 4	18 13	0 21	1 10	4 22	2.4	17 3	1.9
20	6 3	18 14	0 22	1 13	4 11	2.6	17 11	1.7
30	6 1	18 15	0 24	1 20	3 59	2.9	17 19	1.4
35	6 0	18 16	0 25	1 25	3 52	3.0	17 24	1.3
40	5 59	18 17	0 27	1 31	3 44	3.2	17 29	1.1
45	5 58	18 18	0 29	1 39	3 35	3.4	17 36	.9
50	5 56	18 20	0 32	1 50	3 24	3.7	17 43	.6
55	5 54	18 22	0 36	2 6	3 10	4.0	17 52	.3
60	5 52	18 24	0 42	2 28	2 51	4.5	18 4	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	204 41.3 93 -14 17.7	156	275 55.2 -22 16.8	32 11.1	16 20.7			
2	233 38.0 94 -13 46.6	157	305 59.8 -22 16.8	62 16.3	16 20.8			
4	262 34.8 95 -13 15.1	159	336 4.4 -22 16.9	92 21.5	16 20.8			
6	291 31.8 96 -12 43.2	161	6 9.0 -22 16.9	122 26.7	16 20.9			
8	320 28.9 96 -12 11.0	163	36 13.6 -22 16.9	152 31.9	16 21.0			
10	349 26.2 97 -11 38.4	164	66 18.2 -22 16.9	182 37.1	16 21.1			
12	18 23.6 98 -11 5.5	166	96 22.8 -22 16.9	212 42.3	16 21.2			
14	47 21.1 98 -10 32.3	168	126 27.4 -22 17.0	242 47.5	16 21.3			
16	76 18.7 99 - 9 58.8	169	156 32.0 -22 17.0	272 52.7	16 21.4			
18	105 16.4 99 - 9 25.0	170	186 36.6 -22 17.0	302 57.9	16 21.5			
20	134 14.3 100 - 8 50.9	172	216 41.2 -22 17.0	333 3.1	16 21.5			
22	163 12.2 100 - 8 16.6	173	246 45.8 -22 17.0	3 8.3	16 21.6			
Δ			23	0	26	0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 8 37.1	.7	16.1	T _m	10 44	2.1	60.1 16.4		
12	- 8 28.5	T _{m☉}	12 h 8.5 min	Starost	27.3 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 11	.1	333	-3.9	♄	5 35	.0	102	-2.0
	9 32	.1	43	1.2	♅	21 47	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 55.0	- 1 11.3	175 10.4	147 12.0	11 34.7	217 12.3	-17 21.1
2	207 55.3	- 1 9.3	205 15.3	177 11.2	11 37.1	247 13.4	-17 20.0
4	237 55.7	- 1 7.4	235 20.2	207 10.5	11 39.5	277 14.5	-17 18.9
6	267 56.0	- 1 5.4	265 25.2	237 9.7	11 41.8	307 15.6	-17 17.9
8	297 56.4	- 1 3.4	295 30.1	267 9.0	11 44.2	337 16.7	-17 16.8
10	327 56.8	- 1 1.4	325 35.0	297 8.2	11 46.6	7 17.8	-17 15.7
12	357 57.1	- 0 59.5	355 40.0	327 7.4	11 48.9	37 18.9	-17 14.6
14	27 57.5	- 0 57.5	25 44.9	357 6.7	11 51.3	67 20.0	-17 13.5
16	57 57.9	- 0 55.5	55 49.8	27 5.9	11 53.6	97 21.1	-17 12.4
18	87 58.2	- 0 53.5	85 54.7	57 5.2	11 56.0	127 22.2	-17 11.3
20	117 58.6	- 0 51.5	115 59.7	87 4.4	11 58.4	157 23.3	-17 10.2
22	147 58.9	- 0 49.6	146 4.6	117 3.6	12 .7	187 24.4	-17 9.1
Δ	2	10		-4	12	5	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 9	18 9	0 42	2 25	6 7	.0	17 28	4.5
55	6 9	18 9	0 36	2 4	5 59	.3	17 32	4.0
50	6 8	18 9	0 32	1 49	5 53	.6	17 34	3.7
45	6 8	18 9	0 29	1 39	5 49	.9	17 36	3.5
40	6 8	18 9	0 27	1 31	5 44	1.1	17 38	3.2
35	6 7	18 10	0 25	1 24	5 41	1.2	17 40	3.1
30	6 7	18 10	0 24	1 20	5 38	1.4	17 41	2.9
20	6 6	18 10	0 22	1 13	5 32	1.7	17 43	2.6
10	6 6	18 11	0 21	1 10	5 28	1.9	17 45	2.4
0	6 5	18 11	0 21	1 9	5 23	2.1	17 47	2.1
10	6 4	18 12	0 21	1 10	5 19	2.4	17 49	1.9
20	6 3	18 13	0 22	1 13	5 14	2.6	17 51	1.7
30	6 2	18 14	0 24	1 20	5 8	2.9	17 53	1.4
35	6 1	18 15	0 25	1 25	5 5	3.0	17 54	1.2
40	6 0	18 15	0 27	1 31	5 2	3.2	17 55	1.1
45	5 59	18 16	0 29	1 39	4 58	3.4	17 57	.9
50	5 58	18 18	0 32	1 50	4 53	3.7	17 58	.6
55	5 56	18 19	0 36	2 5	4 46	4.0	18 0	.3
60	5 54	18 21	0 42	2 27	4 38	4.5	18 3	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	192 10.2	100 - 7	42.0	174	276 50.5	-22 17.1	33 13.5	16 21.7
2	221 8.2	101 - 7	7.2	175	306 55.1	-22 17.1	63 18.7	16 21.8
4	250 6.4	101 - 6	32.2	176	336 59.7	-22 17.1	93 23.9	16 21.9
6	279 4.6	101 - 5	57.0	177	7 4.3	-22 17.1	123 29.1	16 22.0
8	308 2.8	101 - 5	21.6	178	37 8.9	-22 17.1	153 34.3	16 22.1
10	337 1.1	102 - 4	46.0	179	67 13.5	-22 17.2	183 39.5	16 22.1
12	5 59.5	102 - 4	10.3	179	97 18.2	-22 17.2	213 44.7	16 22.2
14	34 57.8	102 - 3	34.4	180	127 22.8	-22 17.2	243 49.9	16 22.3
16	63 56.2	102 - 2	58.5	180	157 27.4	-22 17.2	273 55.1	16 22.4
18	92 54.5	102 - 2	22.4	181	187 32.0	-22 17.2	304 .3	16 22.5
20	121 52.9	102 - 1	46.2	181	217 36.7	-22 17.3	334 5.5	16 22.6
22	150 51.2	102 - 1	10.0	181	247 41.3	-22 17.3	4 10.7	16 22.6
Δ					23	0	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 8 19.9	.7	16.1	T _m	11 35	2.1	60.8	16.6	
12	- 8 11.3	T _{m☉}	12 h 8.2 min	Starost	28.3 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 12	.1	332	-3.9	♄	5 32	.0	102	-2.0
	9 31	.1	42	1.2	♅	21 43	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 59.3	- 0 47.6	176 9.5	147 2.9	12 3.1	217 25.5	-17 8.0
2	207 59.7	- 0 45.6	206 14.5	177 2.1	12 5.4	247 26.6	-17 6.9
4	238 .0	- 0 43.6	236 19.4	207 1.3	12 7.7	277 27.7	-17 5.8
6	268 .4	- 0 41.6	266 24.3	237 .6	12 10.1	307 28.8	-17 4.7
8	298 .8	- 0 39.7	296 29.2	266 59.8	12 12.4	337 29.9	-17 3.6
10	328 1.1	- 0 37.7	326 34.2	296 59.0	12 14.8	7 31.0	-17 2.5
12	358 1.5	- 0 35.7	356 39.1	326 58.3	12 17.1	37 32.1	-17 1.4
14	28 1.8	- 0 33.7	26 44.0	356 57.5	12 19.4	67 33.2	-17 .3
16	58 2.2	- 0 31.8	56 49.0	26 56.7	12 21.8	97 34.3	-16 59.2
18	88 2.6	- 0 29.8	86 53.9	56 55.9	12 24.1	127 35.4	-16 58.1
20	118 2.9	- 0 27.8	116 58.8	86 55.2	12 26.4	157 36.5	-16 57.0
22	148 3.3	- 0 25.8	147 3.7	116 54.4	12 28.8	187 37.6	-16 55.9
Δ	2	10		-4	12	6	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 6	18 11	0 42	2 25	6 6	.0	19 15	4.6
55	6 6	18 11	0 36	2 4	6 7	.3	19 9	4.1
50	6 6	18 11	0 32	1 50	6 8	.6	19 4	3.8
45	6 6	18 11	0 29	1 39	6 9	.9	18 60	3.5
40	6 6	18 11	0 27	1 31	6 10	1.1	18 56	3.3
35	6 6	18 11	0 25	1 25	6 11	1.3	18 53	3.1
30	6 6	18 11	0 24	1 20	6 11	1.4	18 51	2.9
20	6 5	18 11	0 22	1 13	6 12	1.7	18 46	2.7
10	6 5	18 11	0 21	1 10	6 13	1.9	18 42	2.4
0	6 5	18 11	0 21	1 9	6 14	2.2	18 39	2.2
10	6 4	18 12	0 21	1 10	6 15	2.4	18 35	2.0
20	6 3	18 12	0 22	1 13	6 16	2.6	18 31	1.7
30	6 3	18 13	0 24	1 20	6 18	2.9	18 26	1.5
35	6 2	18 13	0 25	1 25	6 18	3.1	18 24	1.3
40	6 1	18 14	0 27	1 31	6 19	3.3	18 21	1.1
45	6 0	18 15	0 29	1 39	6 20	3.5	18 17	.9
50	5 59	18 15	0 32	1 50	6 22	3.7	18 13	.7
55	5 58	18 16	0 36	2 5	6 23	4.1	18 8	.4
60	5 56	18 18	0 42	2 27	6 25	4.5	18 2	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 49.6	101 - 0	33.7	182	277 45.9	-22 17.3	34 15.9	16 22.7
2	208 47.8	101 - 0	2.6	182	307 50.5	-22 17.3	64 21.1	16 22.8
4	237 46.1	101 - 0	38.9	182	337 55.2	-22 17.3	94 26.3	16 22.9
6	266 44.3	101 - 1	15.3	182	7 59.8	-22 17.4	124 31.5	16 23.0
8	295 42.4	100 - 1	51.6	182	38 4.4	-22 17.4	154 36.6	16 23.1
10	324 40.5	100 - 2	27.9	181	68 9.1	-22 17.4	184 41.8	16 23.1
12	353 38.5	99 - 3	4.2	181	98 13.7	-22 17.4	214 47.0	16 23.2
14	22 36.3	99 - 3	40.4	181	128 18.4	-22 17.4	244 52.2	16 23.3
16	51 34.1	98 - 4	16.5	180	158 23.0	-22 17.4	274 57.4	16 23.4
18	80 31.8	98 - 4	52.5	180	188 27.6	-22 17.5	305 2.6	16 23.5
20	109 29.4	97 - 5	28.5	179	218 32.3	-22 17.5	335 7.8	16 23.5
22	138 26.8	96 - 6	4.2	178	248 36.9	-22 17.5	5 13.0	16 23.6
Δ					23	0	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 8 2.6	.7	16.1	T _m	12 26	2.2	61.2	16.7	
12	- 7 53.8	T _{m☉}	12 h 7.9 min	Starost	29.3 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 12	.1	331	-3.9	♄	5 28	.0	102	-2.0
	9 30	.1	41	1.2	♅	21 39	.0	218	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	3.7	-0	23.8	177	8.7	146	53.6	12	31.1	217	38.7	-16	54.8	
2	208	4.0	-0	21.9	207	13.6	176	52.8	12	33.4	247	39.8	-16	53.6	
4	238	4.4	-0	19.9	237	18.5	206	52.0	12	35.7	277	40.9	-16	52.5	
6	268	4.8	-0	17.9	267	23.5	236	51.3	12	38.1	307	42.0	-16	51.4	
8	298	5.1	-0	15.9	297	28.4	266	50.5	12	40.4	337	43.1	-16	50.3	
10	328	5.5	-0	14.0	327	33.3	296	49.7	12	42.7	7	44.2	-16	49.2	
12	358	5.9	-0	12.0	357	38.2	326	48.9	12	45.0	37	45.3	-16	48.1	
14	28	6.2	-0	10.0	27	43.2	356	48.1	12	47.3	67	46.4	-16	46.9	
16	58	6.6	-0	8.0	57	48.1	26	47.3	12	49.6	97	47.5	-16	45.8	
18	88	7.0	-0	6.0	87	53.0	56	46.5	12	51.9	127	48.6	-16	44.7	
20	118	7.4	-0	4.1	117	57.9	86	45.7	12	54.2	157	49.8	-16	43.6	
22	148	7.7	-0	2.1	148	2.9	116	45.0	12	56.6	187	50.9	-16	42.5	
Δ		2		10				-4		12			6		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 3	18 14	0 42	2 26	6 5	.0	21 5	4.7
55	6 4	18 13	0 36	2 5	6 16	.4	20 47	4.2
50	6 4	18 12	0 32	1 50	6 24	.7	20 34	3.8
45	6 4	18 12	0 29	1 39	6 31	1.0	20 24	3.6
40	6 4	18 12	0 27	1 31	6 36	1.2	20 15	3.3
35	6 4	18 11	0 25	1 25	6 41	1.4	20 8	3.1
30	6 5	18 11	0 24	1 20	6 45	1.5	20 1	3.0
20	6 5	18 11	0 22	1 13	6 53	1.8	19 50	2.7
10	6 5	18 11	0 21	1 10	6 60	2.0	19 40	2.5
0	6 4	18 11	0 21	1 9	7 6	2.2	19 31	2.3
10	6 4	18 11	0 21	1 10	7 13	2.5	19 22	2.1
20	6 4	18 11	0 22	1 13	7 20	2.7	19 12	1.9
30	6 3	18 12	0 24	1 20	7 28	3.0	19 1	1.6
35	6 3	18 12	0 25	1 25	7 32	3.1	18 55	1.4
40	6 2	18 12	0 27	1 31	7 38	3.3	18 48	1.3
45	6 2	18 13	0 29	1 39	7 44	3.5	18 39	1.1
50	6 1	18 13	0 32	1 50	7 52	3.8	18 30	.8
55	6 0	18 14	0 36	2 4	8 1	4.2	18 17	.5
60	5 59	18 15	0 42	2 26	8 14	4.7	18 1	.0

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	167	24.1	96	6	39.9	177	278	41.6	-22	17.5	35	18.2	16	23.7		
2	196	21.2	95	7	15.4	176	308	46.2	-22	17.5	65	23.3	16	23.8		
4	225	18.2	94	7	50.7	175	338	50.9	-22	17.6	95	28.5	16	23.9		
6	254	15.1	93	8	25.7	174	8	55.5	-22	17.6	125	33.7	16	23.9		
8	283	11.7	92	9	.6	173	39	.2	-22	17.6	155	38.9	16	24.0		
10	312	8.2	91	9	35.3	172	69	4.8	-22	17.6	185	44.1	16	24.1		
12	341	4.5	90	10	9.7	171	99	9.5	-22	17.6	215	49.3	16	24.2		
14	10	.6	89	10	43.8	169	129	14.1	-22	17.6	245	54.5	16	24.3		
16	38	56.5	88	11	17.7	168	159	18.8	-22	17.7	275	59.6	16	24.3		
18	67	52.1	87	11	51.3	166	189	23.4	-22	17.7	306	4.8	16	24.4		
20	96	47.6	86	12	24.5	165	219	28.1	-22	17.7	336	10.0	16	24.5		
22	125	42.8	85	12	57.4	163	249	32.8	-22	17.7	6	15.2	16	24.6		
Δ								23		0			26		0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	- 7 45.1	.7	16.1	T _m	13 18	2.3	61.3	16.7
12	- 7 36.3	T _{m☉}	12 h 7.6 min	Starost	.9 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♀	14 13	.1	330	-3.9	♃	5 24	.0	102	-2.0
♂	9 29	.1	40	1.2	♄	21 35	.0	218	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	8.1	-0	.1	178	7.8	146	44.2	12	58.9	217	52.0	-16	41.3	
2	208	8.5	-0	1.9	208	12.7	176	43.4	13	1.2	247	53.1	-16	40.2	
4	238	8.8	0	3.8	238	17.7	206	42.6	13	3.5	277	54.2	-16	39.1	
6	268	9.2	0	5.8	268	22.6	236	41.8	13	5.7	307	55.3	-16	37.9	
8	298	9.6	0	7.8	298	27.5	266	41.0	13	8.0	337	56.4	-16	36.8	
10	328	9.9	0	9.8	328	32.4	296	40.2	13	10.3	7	57.6	-16	35.7	
12	358	10.3	0	11.7	358	37.4	326	39.4	13	12.6	37	58.7	-16	34.6	
14	28	10.7	0	13.7	28	42.3	356	38.6	13	14.9	67	59.8	-16	33.4	
16	58	11.0	0	15.7	58	47.2	26	37.8	13	17.2	98	.9	-16	32.3	
18	88	11.4	0	17.7	88	52.2	56	37.0	13	19.5	128	2.0	-16	31.2	
20	118	11.8	0	19.6	118	57.1	86	36.2	13	21.8	158	3.1	-16	30.0	
22	148	12.2	0	21.6	149	2.0	116	35.4	13	24.0	188	4.3	-16	28.9	
Δ		2		10				-4		11			6		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 0	18 16	0 42	2 27	6 5	.1	22 58	4.9
55	6 1	18 15	0 36	2 5	6 26	.6	22 28	4.2
50	6 2	18 14	0 32	1 50	6 41	.9	22 6	3.8
45	6 2	18 13	0 29	1 39	6 54	1.2	21 49	3.5
40	6 3	18 13	0 27	1 31	7 5	1.4	21 35	3.3
35	6 3	18 12	0 25	1 25	7 14	1.5	21 23	3.1
30	6 3	18 12	0 24	1 20	7 22	1.7	21 13	3.0
20	6 4	18 11	0 22	1 13	7 36	1.9	20 55	2.8
10	6 4	18 11	0 21	1 10	7 48	2.1	20 40	2.6
0	6 4	18 11	0 21	1 9	7 60	2.3	20 26	2.4
10	6 4	18 10	0 21	1 10	8 11	2.5	20 12	2.2
20	6 4	18 10	0 22	1 13	8 24	2.8	19 57	2.0
30	6 4	18 10	0 24	1 20	8 39	3.0	19 40	1.8
35	6 4	18 10	0 25	1 24	8 47	3.2	19 30	1.7
40	6 3	18 11	0 27	1 31	8 57	3.3	19 18	1.5
45	6 3	18 11	0 29	1 39	9 9	3.6	19 5	1.3
50	6 3	18 11	0 32	1 49	9 23	3.8	18 49	1.0
55	6 2	18 11	0 36	2 4	9 41	4.2	18 29	.7
60	6 1	18 12	0 41	2 25	10 6	4.8	18 1	.1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	154	37.9	84	13	30.0	161	279	37.4	-22	17.7	36	20.4	16	24.7		
2	183	32.6	83	14	2.2	159	309	42.1	-22	17.7	66	25.5	16	24.7		
4	212	27.2	81	14	34.0	157	339	46.7	-22	17.8	96	30.7	16	24.8		
6	241	21.4	80	15	5.5	155	9	51.4	-22	17.8	126	35.9	16	24.9		
8	270	15.5	79	15	36.5	153	39	56.1	-22	17.8	156	41.1	16	25.0		
10	299	9.2	78	16	7.1	151	70	.7	-22	17.8	186	46.2	16	25.0		
12	328	2.8	76	16	37.3	149	100	5.4	-22	17.8	216	51.4	16	25.1		
14	356	56.0	75	17	7.0	146	130	10.1	-22	17.8	246	56.6	16	25.2		
16	25	49.0	74	17	36.2	144	160	14.8	-22	17.8	277	1.8	16	25.3		
18	54	41.8	72	18	5.0	141	190	19.4	-22	17.9	307	6.9	16	25.4		
20	83	34.2	71	18	33.3	139	220	24.1	-22	17.9	337	12.1	16	25.4		
22	112	26.4	70	19	1.0	136	250	28.8	-22	17.9	7	17.3	16	25.5		
Δ								23		0			26		0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 7 27.5	.7	16.1	T _m	14 13	2.	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 12.5	0 23.6	179 6.9	146 34.5	13 26.3	218 5.4	-16 27.7
2	208 12.9	0 25.6	209 11.9	176 33.7	13 28.6	248 6.5	-16 26.6
4	238 13.3	0 27.6	239 16.8	206 32.9	13 30.9	278 7.6	-16 25.5
6	268 13.6	0 29.5	269 21.7	236 32.1	13 33.1	308 8.8	-16 24.3
8	298 14.0	0 31.5	299 26.7	266 31.3	13 35.4	338 9.9	-16 23.2
10	328 14.4	0 33.5	329 31.6	296 30.5	13 37.7	8 11.0	-16 22.0
12	358 14.8	0 35.5	359 36.5	326 29.7	13 39.9	38 12.1	-16 20.9
14	28 15.1	0 37.4	29 41.4	356 28.9	13 42.2	68 13.3	-16 19.7
16	58 15.5	0 39.4	59 46.4	26 28.0	13 44.4	98 14.4	-16 18.6
18	88 15.9	0 41.4	89 51.3	56 27.2	13 46.7	128 15.5	-16 17.4
20	118 16.3	0 43.3	119 56.2	86 26.4	13 48.9	158 16.6	-16 16.3
22	148 16.6	0 45.3	150 1.2	116 25.6	13 51.2	188 17.8	-16 15.1
Δ	2	10		-4	11	6	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 57	18 18	0 42	2 28	6 7	.2	...	.0
55	5 58	18 17	0 36	2 6	6 39	.9	...	.5
50	5 60	18 15	0 32	1 50	7 3	1.2	23 37	3.5
45	6 0	18 14	0 29	1 39	7 22	1.5	23 13	3.3
40	6 1	18 14	0 27	1 31	7 38	1.7	22 54	3.1
35	6 2	18 13	0 25	1 25	7 51	1.8	22 39	3.0
30	6 2	18 12	0 24	1 20	8 2	1.9	22 25	2.9
20	6 3	18 11	0 22	1 13	8 22	2.1	22 2	2.8
10	6 3	18 11	0 21	1 10	8 40	2.3	21 42	2.6
0	6 4	18 10	0 21	1 9	8 56	2.5	21 24	2.5
10	6 4	18 10	0 21	1 10	9 13	2.6	21 5	2.4
20	6 4	18 9	0 22	1 13	9 30	2.8	20 45	2.2
30	6 4	18 9	0 24	1 20	9 51	3.0	20 23	2.1
35	6 4	18 9	0 25	1 24	10 3	3.1	20 10	2.0
40	6 4	18 9	0 27	1 30	10 17	3.2	19 54	1.8
45	6 4	18 9	0 29	1 39	10 34	3.4	19 36	1.7
50	6 4	18 9	0 32	1 49	10 55	3.7	19 14	1.4
55	6 4	18 9	0 36	2 4	11 22	4.1	18 45	1.1
60	6 4	18 9	0 41	2 24	12 2	4.9	18 3	.3

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	141 18.3	68 19 28.2	133	280 33.5	-22 17.9	37 22.5	16 25.6	
2	170 10.0	67 19 54.9	131	310 38.1	-22 17.9	67 27.6	16 25.7	
4	199 1.4	66 20 21.1	128	340 42.8	-22 17.9	97 32.8	16 25.7	
6	227 52.5	64 20 46.6	125	10 47.5	-22 18.0	127 38.0	16 25.8	
8	256 43.4	63 21 11.6	122	40 52.2	-22 18.0	157 43.1	16 25.9	
10	285 34.0	62 21 36.0	119	70 56.9	-22 18.0	187 48.3	16 26.0	
12	314 24.3	60 21 59.8	116	101 1.6	-22 18.0	217 53.5	16 26.0	
14	343 14.4	59 22 23.0	113	131 6.2	-22 18.0	247 58.7	16 26.1	
16	12 4.2	58 22 45.5	110	161 10.9	-22 18.0	278 3.8	16 26.2	
18	40 53.9	57 23 7.4	106	191 15.6	-22 18.0	308 9.0	16 26.3	
20	69 43.2	56 23 28.7	103	221 20.3	-22 18.1	338 14.2	16 26.3	
22	98 32.4	55 23 49.3	100	251 25.0	-22 18.1	8 19.3	16 26.4	
Δ				23	0	26	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 7 9.7	.7	16.1	T _m	15 10	2.5	60.5 16.5
12	- 7 .7	T _{m☉}	12 h 7.0 min	Starost	2.9 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♀	h min	'	°	
♂	14 14	.1	327	-3.9	♂	5 17	.0	101	-2.0
♂	9 27	.1	39	1.2	♂	21 27	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 17.0	0 47.3	180 6.1	146 24.7	13 53.4	218 18.9	-16 14.0
2	208 17.4	0 49.3	210 11.0	176 23.9	13 55.7	248 20.0	-16 12.8
4	238 17.8	0 51.2	240 15.9	206 23.1	13 57.9	278 21.1	-16 11.7
6	268 18.1	0 53.2	270 20.9	236 22.3	14 .2	308 22.3	-16 10.5
8	298 18.5	0 55.2	300 25.8	266 21.4	14 2.4	338 23.4	-16 9.4
10	328 18.9	0 57.2	330 30.7	296 20.6	14 4.7	8 24.5	-16 8.2
12	358 19.2	0 59.1	0 35.7	326 19.8	14 6.9	38 25.7	-16 7.0
14	28 19.6	1 1.1	30 40.6	356 18.9	14 9.1	68 26.8	-16 5.9
16	58 20.0	1 3.1	60 45.5	26 18.1	14 11.4	98 27.9	-16 4.7
18	88 20.4	1 5.0	90 50.4	56 17.3	14 13.6	128 29.1	-16 3.6
20	118 20.7	1 7.0	120 55.4	86 16.4	14 15.8	158 30.2	-16 2.4
22	148 21.1	1 9.0	151 .3	116 15.6	14 18.0	188 31.3	-16 1.2
Δ	2	10		-4	11	6	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 54	18 21	0 42	2 29	6 11	.6	0 57	4.7
55	5 56	18 19	0 36	2 6	6 60	1.4	0 9	3.8
50	5 57	18 17	0 32	1 51	7 33	1.7	...	.0
45	5 59	18 16	0 29	1 40	7 58	1.9	...	.0
40	5 59	18 15	0 27	1 31	8 17	2.0	...	.0
35	6 0	18 14	0 25	1 25	8 34	2.1	23 51	2.8
30	6 1	18 13	0 24	1 20	8 49	2.2	23 35	2.7
20	6 2	18 12	0 22	1 13	9 13	2.3	23 8	2.6
10	6 3	18 11	0 21	1 10	9 35	2.4	22 45	2.6
0	6 3	18 10	0 21	1 9	9 55	2.5	22 24	2.5
10	6 4	18 9	0 21	1 10	10 15	2.6	22 2	2.5
20	6 5	18 9	0 22	1 13	10 37	2.7	21 39	2.4
30	6 5	18 8	0 24	1 20	11 3	2.8	21 12	2.3
35	6 5	18 8	0 25	1 24	11 18	2.9	20 57	2.3
40	6 5	18 7	0 27	1 30	11 35	3.0	20 38	2.2
45	6 6	18 7	0 29	1 38	11 56	3.1	20 16	2.1
50	6 6	18 7	0 32	1 49	12 23	3.3	19 48	2.0
55	6 6	18 6	0 36	2 3	13 0	3.5	19 10	1.7
60	6 6	18 6	0 41	2 24	13 60	4.4	18 10	.9

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	127 21.3	54 24 9.2	96	281 29.7	-22 18.1	38 24.5	16 26.5	
2	156 10.0	53 24 28.5	93	311 34.4	-22 18.1	68 29.6	16 26.5	
4	184 58.5	52 24 47.1	89	341 39.1	-22 18.1	98 34.8	16 26.6	
6	213 46.8	51 25 5.0	86	11 43.8	-22 18.1	128 40.0	16 26.7	
8	242 35.0	50 25 22.2	82	41 48.5	-22 18.1	158 45.1	16 26.8	
10	271 23.0	49 25 38.6	79	71 53.2	-22 18.2	188 50.3	16 26.8	
12	300 10.8	48 25 54.4	75	101 57.9	-22 18.2	218 55.5	16 26.9	
14	328 58.4	48 26 9.5	72	132 2.6	-22 18.2	249 .6	16 27.0	
16	357 46.0	47 26 23.8	68	162 7.3	-22 18.2	279 5.8	16 27.1	
18	26 33.4	47 26 37.4	64	192 12.0	-22 18.2	309 10.9	16 27.1	
20	55 20.7	46 26 50.2	61	222 16.7	-22 18.2	339 16.1	16 27.2	
22	84 8.0	46 27 2.4	57	252 21.4	-22 18.2	9 21.3	16 27.3	
Δ				24	0	26	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 6 51.8	.7	16.1	T _m	16 9	2.5	59.8 16.3
12	- 6 42.8	T _{m☉}	12 h 6.7 min	Starost	3.9 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♀	h min	'	°	
♂	14 15	.1	326	-3.9	♂	5 13	.0	101	-2.0
♂	9 26	.1	38	1.2	♂	21 23	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 21.5	1 11.0	181 5.2	146 14.8	14 20.3	218 32.5	-16 1.1
2	208 21.9	1 12.9	211 10.2	176 13.9	14 22.5	248 33.6	-15 58.9
4	238 22.3	1 14.9	241 15.1	206 13.1	14 24.7	278 34.8	-15 57.7
6	268 22.6	1 16.9	271 20.0	236 12.2	14 26.9	308 35.9	-15 56.6
8	298 23.0	1 18.8	301 24.9	266 11.4	14 29.1	338 37.0	-15 55.4
10	328 23.4	1 20.8	331 29.9	296 10.6	14 31.3	8 38.2	-15 54.2
12	358 23.8	1 22.8	1 34.8	326 9.7	14 33.5	38 39.3	-15 53.1
14	28 24.1	1 24.8	31 39.7	356 8.9	14 35.7	68 40.5	-15 51.9
16	58 24.5	1 26.7	61 44.6	26 8.0	14 37.9	98 41.6	-15 50.7
18	88 24.9	1 28.7	91 49.6	56 7.2	14 40.1	128 42.7	-15 49.5
20	118 25.3	1 30.7	121 54.5	86 6.3	14 42.3	158 43.9	-15 48.4
22	148 25.6	1 32.6	151 59.4	116 5.5	14 44.5	188 45.0	-15 47.2
Δ	2	10		-4	11	6	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 51	18 23	0 42	2 30	6 25	1.7	2 50	3.6
55	5 53	18 21	0 36	2 7	7 33	2.1	1 42	3.1
50	5 55	18 19	0 32	1 51	8 13	2.3	1 2	3.0
45	5 57	18 17	0 29	1 40	8 43	2.3	0 33	2.9
40	5 58	18 16	0 27	1 31	9 6	2.4	0 10	2.8
35	5 59	18 15	0 25	1 25	9 25	2.4	...	2.7
30	5 60	18 14	0 24	1 20	9 41	2.4	...	2.6
20	6 1	18 12	0 22	1 13	10 9	2.5	...	2.5
10	6 2	18 11	0 21	1 10	10 33	2.5	23 47	2.4
0	6 3	18 10	0 21	1 9	10 56	2.5	23 24	2.5
10	6 4	18 9	0 21	1 10	11 18	2.5	23 2	2.5
20	6 5	18 8	0 22	1 13	11 42	2.5	22 37	2.5
30	6 6	18 7	0 24	1 19	12 11	2.6	22 8	2.5
35	6 6	18 6	0 25	1 24	12 27	2.6	21 51	2.5
40	6 6	18 6	0 27	1 30	12 47	2.6	21 31	2.5
45	6 7	18 5	0 29	1 38	13 11	2.6	21 7	2.6
50	6 7	18 4	0 32	1 49	13 42	2.6	20 36	2.6
55	6 8	18 4	0 36	2 3	14 25	2.6	19 52	2.6
60	6 9	18 3	0 41	2 23	15 45	2.6	18 32	2.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	112 55.1	46 27 13.8	53	282 26.1	-22 18.2	39 26.4	16 27.3	
2	141 42.2	45 27 24.4	49	312 30.8	-22 18.3	69 31.6	16 27.4	
4	170 29.3	45 27 34.3	46	342 35.6	-22 18.3	99 36.7	16 27.5	
6	199 16.3	45 27 43.4	42	12 40.3	-22 18.3	129 41.9	16 27.5	
8	228 3.4	45 27 51.8	38	42 45.0	-22 18.3	159 47.0	16 27.6	
10	256 50.4	45 27 59.4	34	72 49.7	-22 18.3	189 52.2	16 27.7	
12	285 37.5	46 28 6.3	31	102 54.4	-22 18.3	219 57.3	16 27.8	
14	314 24.6	46 28 12.5	27	132 59.1	-22 18.3	250 2.5	16 27.8	
16	343 11.8	46 28 17.9	23	163 3.9	-22 18.3	280 7.6	16 27.9	
18	11 59.0	47 28 22.5	20	193 8.6	-22 18.4	310 12.8	16 28.0	
20	40 46.3	47 28 26.4	16	223 13.3	-22 18.4	340 18.0	16 28.0	
22	69 33.8	48 28 29.6	12	253 18.0	-22 18.4	10 23.1	16 28.1	
Δ				24	0	26	0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s / ' / "	h min	h min	min	' / "	' / "	
00	- 6 33.8	.8	16.1	T _m	17 10	2.5	59.0	16.1
12	- 6 24.8	T _{m☉}	12 h 6.4 min	Starost	4.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♂	14 15 .1	325	-3.9	♃	5 9 .0	101	-2.1		
♂	9 25 .1	37	1.2	♄	21 19 .0	218	.2		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 26.0	1 34.6	182 4.4	146 4.6	14 46.7	218 46.2	-15 46.0
2	208 26.4	1 36.6	212 9.3	176 3.7	14 48.9	248 47.3	-15 44.8
4	238 26.8	1 38.5	242 14.2	206 2.9	14 51.1	278 48.5	-15 43.7
6	268 27.1	1 40.5	272 19.1	236 2.0	14 53.3	308 49.6	-15 42.5
8	298 27.5	1 42.5	302 24.1	266 1.2	14 55.5	338 50.7	-15 41.3
10	328 27.9	1 44.4	332 29.0	296 .3	14 57.7	8 51.9	-15 40.1
12	358 28.3	1 46.4	2 33.9	325 59.4	14 59.8	38 53.0	-15 38.9
14	28 28.7	1 48.4	32 38.9	355 58.6	15 2.0	68 54.2	-15 37.7
16	58 29.0	1 50.3	62 43.8	25 57.7	15 4.2	98 55.3	-15 36.5
18	88 29.4	1 52.3	92 48.7	55 56.8	15 6.4	128 56.5	-15 35.4
20	118 29.8	1 54.3	122 53.6	85 56.0	15 8.5	158 57.6	-15 34.2
22	148 30.2	1 56.2	152 58.6	115 55.1	15 10.7	188 58.8	-15 33.0
Δ	2	10		-4	11	6	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 48	18 26	0 42	2 31	7 5	3.4	4 16	1.7
55	5 51	18 23	0 36	2 7	8 24	3.0	2 56	2.1
50	5 53	18 20	0 32	1 51	9 8	2.8	2 12	2.2
45	5 55	18 18	0 29	1 40	9 39	2.7	1 41	2.3
40	5 56	18 17	0 27	1 32	10 3	2.7	1 17	2.3
35	5 57	18 15	0 25	1 25	10 23	2.6	0 58	2.4
30	5 58	18 14	0 24	1 20	10 40	2.6	0 41	2.4
20	6 0	18 12	0 22	1 13	11 8	2.5	0 12	2.4
10	6 2	18 11	0 21	1 10	11 33	2.5	...	2.4
0	6 3	18 9	0 21	1 9	11 56	2.4	...	2.4
10	6 4	18 8	0 21	1 10	12 19	2.3	...	2.4
20	6 5	18 7	0 22	1 13	12 43	2.3	23 37	2.5
30	6 6	18 6	0 24	1 19	13 12	2.2	23 9	2.6
35	6 7	18 5	0 25	1 24	13 29	2.2	22 52	2.7
40	6 7	18 4	0 27	1 30	13 49	2.1	22 32	2.8
45	6 8	18 3	0 29	1 38	14 13	2.0	22 8	2.9
50	6 9	18 2	0 32	1 48	14 44	1.9	21 38	3.0
55	6 10	18 1	0 36	2 3	15 28	1.6	20 54	3.3
60	6 11	17 60	0 41	2 23	16 48	.9	19 34	4.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	98 21.4	49 28 32.0	8	283 22.8	-22 18.4	40 28.3	16 28.2	
2	127 9.1	49 28 33.7	5	313 27.5	-22 18.4	70 33.4	16 28.2	
4	155 57.0	50 28 34.6	1	343 32.2	-22 18.4	100 38.6	16 28.3	
6	184 45.1	51 28 34.9	-2	13 36.9	-22 18.4	130 43.7	16 28.4	
8	213 33.3	52 28 34.4	-6	43 41.7	-22 18.4	160 48.8	16 28.4	
10	242 21.8	54 28 33.2	-10	73 46.4	-22 18.4	190 54.0	16 28.5	
12	271 10.5	55 28 31.3	-13	103 51.1	-22 18.5	220 59.1	16 28.6	
14	299 59.5	56 28 28.7	-16	133 55.9	-22 18.5	251 4.3	16 28.6	
16	328 48.7	57 28 25.4	-20	164 .6	-22 18.5	281 9.4	16 28.7	
18	357 38.2	59 28 21.4	-23	194 5.4	-22 18.5	311 14.6	16 28.8	
20	26 27.9	60 28 16.7	-27	224 10.1	-22 18.5	341 19.7	16 28.8	
22	55 18.0	62 28 11.4	-30	254 14.8	-22 18.5	11 24.9	16 28.9	
Δ				24	0	26	0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s / ' / "	h min	h min	min	' / "	' / "	
00	- 6 15.8	.8	16.1	T _m	18 10	2.4	58.1	15.8
12	- 6 6.7	T _{m☉}	12 h 6.1 min	Starost	5.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♂	14 16 .1	324	-3.9	♃	5 6 .0	101	-2.1		
♂	9 25 .1	37	1.2	♄	21 14 .0	218	.2		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 30.5	1 58.2	183 3.5	145 54.2	15 12.9	218 59.9	-15 31.8
2	208 30.9	2 .2	213 8.4	175 53.4	15 15.0	249 1.1	-15 30.6
4	238 31.3	2 2.1	243 13.4	205 52.5	15 17.2	279 2.3	-15 29.4
6	268 31.7	2 4.1	273 18.3	235 51.6	15 19.3	309 3.4	-15 28.2
8	298 32.1	2 6.0	303 23.2	265 50.7	15 21.5	339 4.6	-15 27.0
10	328 32.4	2 8.0	333 28.1	295 49.9	15 23.6	9 5.7	-15 25.8
12	358 32.8	2 10.0	3 33.1	325 49.0	15 25.8	39 6.9	-15 24.6
14	28 33.2	2 11.9	33 38.0	355 48.1	15 27.9	69 8.0	-15 23.4
16	58 33.6	2 13.9	63 42.9	25 47.2	15 30.1	99 9.2	-15 22.2
18	88 33.9	2 15.9	93 47.9	55 46.3	15 32.2	129 10.3	-15 21.0
20	118 34.3	2 17.8	123 52.8	85 45.5	15 34.3	159 11.5	-15 19.8
22	148 34.7	2 19.8	153 57.7	115 44.6	15 36.5	189 12.7	-15 18.6
Δ	2	10		-4	11	6	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 45	18 28	0 42	2 32	8 27	4.2	4 56	.6
55	5 48	18 25	0 37	2 8	9 35	3.4	3 47	1.3
50	5 51	18 22	0 32	1 52	10 15	3.1	3 6	1.6
45	5 53	18 20	0 29	1 40	10 44	2.9	2 37	1.8
40	5 55	18 18	0 27	1 32	11 7	2.8	2 14	1.9
35	5 56	18 16	0 25	1 25	11 25	2.7	1 54	2.0
30	5 57	18 15	0 24	1 20	11 42	2.6	1 38	2.0
20	5 59	18 13	0 22	1 14	12 9	2.5	1 10	2.1
10	6 1	18 11	0 21	1 10	12 32	2.3	0 46	2.2
0	6 3	18 9	0 21	1 9	12 53	2.2	0 24	2.3
10	6 4	18 8	0 21	1 10	13 15	2.1	0 1	2.4
20	6 5	18 6	0 22	1 13	13 38	2.0	...	.0
30	6 7	18 4	0 24	1 19	14 5	1.9	...	.0
35	6 8	18 3	0 25	1 24	14 21	1.8	23 56	2.7
40	6 8	18 2	0 27	1 30	14 39	1.7	23 38	2.8
45	6 9	18 1	0 29	1 38	15 1	1.5	23 17	3.0
50	6 11	18 0	0 32	1 48	15 29	1.3	22 50	3.2
55	6 12	17 59	0 36	2 2	16 7	1.0	22 12	3.5
60	6 14	17 57	0 41	2 22	17 9	.3	21 11	4.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	84 8.3	63 28	5.4	-33	284 19.6	-22 18.5	41 30.0	16 29.0
2	112 59.0	65 27	58.7	-36	314 24.3	-22 18.5	71 35.1	16 29.0
4	141 50.0	67 27	51.4	-40	344 29.1	-22 18.5	101 40.3	16 29.1
6	170 41.4	69 27	43.5	-43	14 33.8	-22 18.5	131 45.4	16 29.2
8	199 33.1	70 27	34.9	-46	44 38.6	-22 18.6	161 50.6	16 29.2
10	228 25.2	72 27	25.7	-49	74 43.3	-22 18.6	191 55.7	16 29.3
12	257 17.6	74 27	15.9	-52	104 48.1	-22 18.6	222 .8	16 29.3
14	286 10.5	76 27	5.6	-55	134 52.8	-22 18.6	252 6.0	16 29.4
16	315 3.7	78 26	54.6	-58	164 57.6	-22 18.6	282 11.1	16 29.5
18	343 57.3	80 26	43.0	-61	195 2.3	-22 18.6	312 16.3	16 29.5
20	12 51.3	82 26	30.9	-63	225 7.1	-22 18.6	342 21.4	16 29.6
22	41 45.7	84 26	18.3	-66	255 11.8	-22 18.6	12 26.5	16 29.7
Δ					24	0	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 5 57.6	.8	16.1	T _m	19 7	2.2	57.2 15.6
12	- 5 48.6	T _{m☉}	12 h 5.8 min	Starost	6.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 17	.1	323	-3.9	♃	5 2	.0	101	-2.1
♂	9 24	.1	36	1.2	♄	21 10	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 35.1	2 21.7	184 2.6	145 43.7	15 38.6	219 13.8	-15 17.4
2	208 35.5	2 23.7	214 7.6	175 42.8	15 40.7	249 15.0	-15 16.2
4	238 35.8	2 25.7	244 12.5	205 41.9	15 42.9	279 16.1	-15 15.0
6	268 36.2	2 27.6	274 17.4	235 41.0	15 45.0	309 17.3	-15 13.8
8	298 36.6	2 29.6	304 22.4	265 40.1	15 47.1	339 18.5	-15 12.6
10	328 37.0	2 31.5	334 27.3	295 39.2	15 49.2	9 19.6	-15 11.4
12	358 37.4	2 33.5	4 32.2	325 38.3	15 51.4	39 20.8	-15 10.2
14	28 37.7	2 35.5	34 37.1	355 37.4	15 53.5	69 22.0	-15 9.0
16	58 38.1	2 37.4	64 42.1	25 36.5	15 55.6	99 23.1	-15 7.8
18	88 38.5	2 39.4	94 47.0	55 35.6	15 57.7	129 24.3	-15 6.6
20	118 38.9	2 41.3	124 51.9	85 34.7	15 59.8	159 25.5	-15 5.3
22	148 39.2	2 43.3	154 56.8	115 33.8	16 1.9	189 26.6	-15 4.1
Δ	2	10		-4	11	6	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 42	18 31	0 42	2 33	10 8	4.1	5 9	.2
55	5 46	18 26	0 37	2 8	10 57	3.5	4 18	.8
50	5 49	18 23	0 33	1 52	11 30	3.2	3 44	1.1
45	5 51	18 21	0 30	1 41	11 54	3.0	3 19	1.3
40	5 53	18 19	0 27	1 32	12 14	2.8	2 58	1.5
35	5 55	18 17	0 25	1 25	12 30	2.7	2 42	1.6
30	5 56	18 15	0 24	1 20	12 44	2.5	2 27	1.7
20	5 58	18 13	0 22	1 14	13 8	2.4	2 2	1.9
10	6 0	18 11	0 21	1 10	13 28	2.2	1 40	2.0
0	6 2	18 9	0 21	1 9	13 47	2.0	1 20	2.1
10	6 4	18 7	0 21	1 10	14 6	1.9	0 59	2.3
20	6 6	18 5	0 22	1 13	14 26	1.7	0 37	2.4
30	6 7	18 3	0 24	1 19	14 49	1.6	0 12	2.6
35	6 8	18 2	0 25	1 24	15 3	1.4	...	.0
40	6 10	18 1	0 27	1 30	15 19	1.3	...	.0
45	6 11	17 60	0 29	1 38	15 37	1.1	...	.0
50	6 12	17 58	0 32	1 48	16 0	.9	...	.0
55	6 14	17 56	0 36	2 2	16 31	.6	23 37	3.5
60	6 16	17 54	0 41	2 22	17 15	.1	22 54	4.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	70 40.5	86 26	5.0	-69	285 16.6	-22 18.6	42 31.7	16 29.7
2	99 35.7	88 25	51.3	-71	315 21.4	-22 18.6	72 36.8	16 29.8
4	128 31.4	90 25	37.0	-74	345 26.1	-22 18.7	102 41.9	16 29.9
6	157 27.4	92 25	22.2	-76	15 30.9	-22 18.7	132 47.1	16 29.9
8	186 23.9	94 25	7.0	-79	45 35.7	-22 18.7	162 52.2	16 30.0
10	215 20.8	97 24	51.2	-81	75 40.4	-22 18.7	192 57.3	16 30.0
12	244 18.1	99 24	34.9	-84	105 45.2	-22 18.7	223 2.4	16 30.1
14	273 15.9	101 24	18.2	-86	135 50.0	-22 18.7	253 7.6	16 30.2
16	302 14.0	103 24	1.0	-88	165 54.7	-22 18.7	283 12.7	16 30.2
18	331 12.6	105 23	43.4	-90	195 59.5	-22 18.7	313 17.8	16 30.3
20	0 11.6	107 23	25.4	-92	226 4.3	-22 18.7	343 23.0	16 30.3
22	29 11.0	109 23	6.9	-94	256 9.1	-22 18.7	13 28.1	16 30.4
Δ					24	0	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 5 39.5	.8	16.1	T _m	19 59	2.0	56.5 15.4
12	- 5 30.4	T _{m☉}	12 h 5.5 min	Starost	7.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 18	.1	322	-3.9	♃	4 58	.0	101	-2.1
♂	9 23	.1	35	1.2	♄	21 6	.0	218	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 39.6	2 45.2	185 1.8	145 32.9	16 4.0	219 27.8	-15 2.9
2	208 40.0	2 47.2	215 6.7	175 32.0	16 6.1	249 29.0	-15 1.7
4	238 40.4	2 49.1	245 11.6	205 31.1	16 8.2	279 30.1	-15 1.5
6	268 40.8	2 51.1	275 16.6	235 30.2	16 10.3	309 31.3	-14 59.3
8	298 41.1	2 53.1	305 21.5	265 29.3	16 12.4	339 32.5	-14 58.0
10	328 41.5	2 55.0	335 26.4	295 28.4	16 14.5	9 33.6	-14 56.8
12	358 41.9	2 57.0	5 31.3	325 27.5	16 16.5	39 34.8	-14 55.6
14	28 42.3	2 58.9	35 36.3	355 26.6	16 18.6	69 36.0	-14 54.4
16	58 42.7	3 .9	65 41.2	25 25.7	16 20.7	99 37.2	-14 53.2
18	88 43.0	3 2.8	95 46.1	55 24.7	16 22.8	129 38.3	-14 51.9
20	118 43.4	3 4.8	125 51.1	85 23.8	16 24.9	159 39.5	-14 50.7
22	148 43.8	3 6.7	155 56.0	115 22.9	16 26.9	189 40.7	-14 49.5
Δ	2	10		-5	10	6	6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	58 10.9	111 22	48.0	-97	286 13.8	-22 18.7	43 33.2	16 30.5
2	87 11.1	113 22	28.7	-98	316 18.6	-22 18.7	73 38.3	16 30.5
4	116 11.8	115 22	9.0	-100	346 23.4	-22 18.8	103 43.5	16 30.6
6	145 12.9	117 21	48.9	-102	16 28.2	-22 18.8	133 48.6	16 30.6
8	174 14.3	119 21	28.4	-104	46 32.9	-22 18.8	163 53.7	16 30.7
10	203 16.2	121 21	7.6	-106	76 37.7	-22 18.8	193 58.8	16 30.8
12	232 18.5	123 20	46.4	-108	106 42.5	-22 18.8	224 4.0	16 30.8
14	261 21.2	125 20	24.9	-109	136 47.3	-22 18.8	254 9.1	16 30.9
16	290 24.2	127 20	3.1	-111	166 52.1	-22 18.8	284 14.2	16 30.9
18	319 27.6	129 19	40.9	-112	196 56.9	-22 18.8	314 19.3	16 31.0
20	348 31.4	131 19	18.4	-114	227 1.7	-22 18.8	344 24.4	16 31.1
22	17 35.6	133 18	55.6	-115	257 6.5	-22 18.8	14 29.6	16 31.1
Δ					24	0	26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 39	18 33	0 42	2 34	11 47	3.9	5 14	.0
55	5 43	18 28	0 37	2 9	12 22	3.4	4 37	.5
50	5 46	18 25	0 33	1 52	12 46	3.1	4 11	.8
45	5 49	18 22	0 30	1 41	13 5	2.9	3 50	1.0
40	5 51	18 20	0 27	1 32	13 21	2.7	3 34	1.2
35	5 53	18 18	0 25	1 26	13 34	2.6	3 20	1.3
30	5 55	18 16	0 24	1 20	13 45	2.4	3 8	1.4
20	5 58	18 13	0 22	1 14	14 4	2.2	2 47	1.6
10	5 60	18 11	0 21	1 10	14 21	2.0	2 28	1.8
0	6 2	18 8	0 21	1 9	14 36	1.9	2 11	2.0
10	6 4	18 6	0 21	1 10	14 52	1.7	1 54	2.1
20	6 6	18 4	0 22	1 13	15 8	1.5	1 35	2.3
30	6 8	18 2	0 24	1 19	15 27	1.3	1 14	2.5
35	6 9	18 1	0 25	1 24	15 38	1.2	1 1	2.6
40	6 11	17 59	0 27	1 30	15 50	1.1	0 46	2.8
45	6 12	17 58	0 29	1 38	16 5	.9	0 29	2.9
50	6 14	17 56	0 32	1 48	16 23	.7	0 7	3.2
55	6 16	17 54	0 36	2 2	16 45	.4	...	.0
60	6 18	17 51	0 41	2 21	17 16	.0	...	.0
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 5 21.3	.8	16.1	T _m	20 47	1.9	55.8 15.2
12	- 5 12.2	T _{m☉}	12 h 5.2 min	Starost	8.9 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 18	.1	321	-3.9	♃	4 54	.0	101	-2.1
♂	9 22	.1	34	1.1	♄	21 2	.0	219	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 44.2	3 8.7	186 .9	145 22.0	16 29.0	219 41.8	-14 48.3
2	208 44.5	3 10.6	216 5.8	175 21.1	16 31.1	249 43.0	-14 47.0
4	238 44.9	3 12.6	246 10.8	205 20.1	16 33.1	279 44.2	-14 45.8
6	268 45.3	3 14.5	276 15.7	235 19.2	16 35.2	309 45.4	-14 44.6
8	298 45.7	3 16.5	306 20.6	265 18.3	16 37.2	339 46.6	-14 43.3
10	328 46.1	3 18.4	336 25.6	295 17.4	16 39.3	9 47.7	-14 42.1
12	358 46.4	3 20.4	6 30.5	325 16.4	16 41.3	39 48.9	-14 40.9
14	28 46.8	3 22.3	36 35.4	355 15.5	16 43.4	69 50.1	-14 39.6
16	58 47.2	3 24.3	66 40.3	25 14.6	16 45.4	99 51.3	-14 38.4
18	88 47.6	3 26.2	96 45.3	55 13.6	16 47.5	129 52.5	-14 37.2
20	118 48.0	3 28.2	126 50.2	85 12.7	16 49.5	159 53.6	-14 35.9
22	148 48.3	3 30.1	156 55.1	115 11.8	16 51.6	189 54.8	-14 34.7
Δ	2	10		-5	10	6	6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	46 40.1	134 18	32.5	-117	287 11.2	-22 18.8	44 34.7	16 31.2
2	75 45.0	136 18	9.1	-118	317 16.0	-22 18.8	74 39.8	16 31.2
4	104 50.2	138 17	45.5	-120	347 20.8	-22 18.8	104 44.9	16 31.3
6	133 55.8	140 17	21.6	-121	17 25.6	-22 18.8	134 50.0	16 31.3
8	163 1.7	141 16	57.4	-122	47 30.4	-22 18.9	164 55.2	16 31.4
10	192 7.9	143 16	32.9	-123	77 35.2	-22 18.9	195 .3	16 31.4
12	221 14.4	144 16	8.3	-125	107 40.0	-22 18.9	225 5.4	16 31.5
14	250 21.3	146 15	43.4	-126	137 44.8	-22 18.9	255 10.5	16 31.6
16	279 28.5	147 15	18.2	-127	167 49.6	-22 18.9	285 15.6	16 31.6
18	308 35.9	149 14	52.9	-128	197 54.4	-22 18.9	315 20.7	16 31.7
20	337 43.7	150 14	27.3	-129	227 59.2	-22 18.9	345 25.8	16 31.7
22	6 51.7	152 14	1.6	-130	258 4.1	-22 18.9	15 30.9	16 31.8
Δ					24	0	26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 36	18 35	0 43	2 35	13 20	3.7	5 15	.0
55	5 41	18 30	0 37	2 10	13 44	3.3	4 49	.4
50	5 44	18 26	0 33	1 53	14 1	3.0	4 30	.6
45	5 47	18 23	0 30	1 41	14 14	2.8	4 15	.8
40	5 50	18 21	0 27	1 32	14 26	2.6	4 3	1.0
35	5 52	18 19	0 25	1 26	14 35	2.5	3 52	1.1
30	5 54	18 17	0 24	1 21	14 43	2.3	3 42	1.3
20	5 57	18 13	0 22	1 14	14 58	2.1	3 26	1.5
10	5 59	18 11	0 21	1 10	15 10	1.9	3 12	1.6
0	6 2	18 8	0 21	1 9	15 21	1.8	2 58	1.8
10	6 4	18 6	0 21	1 10	15 33	1.6	2 45	2.0
20	6 6	18 3	0 22	1 13	15 45	1.4	2 30	2.2
30	6 9	18 1	0 24	1 19	15 59	1.2	2 13	2.4
35	6 10	17 59	0 25	1 24	16 7	1.1	2 4	2.5
40	6 12	17 58	0 27	1 30	16 16	.9	1 52	2.7
45	6 13	17 56	0 29	1 38	16 27	.8	1 39	2.8
50	6 15	17 54	0 32	1 48	16 39	.6	1 23	3.1
55	6 18	17 51	0 36	2 2	16 55	.3	1 2	3.4
60	6 21	17 48	0 41	2 21	17 16	.0	0 33	3.8
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 5 3.1	.8	16.0	T _m	21 32	1.7	55.2 15.1
12	- 4 54.0	T _{m☉}	12 h 4.9 min	Starost	9.9 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 19	.1	319	-3.9	♃	4 50	.0	101	-2.1
♂	9 21	.1	34	1.1	♄	20 58	.0	219	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 48.7	3 32.1	187 .1	145 10.8	16 53.6	219 56.0	-14 33.5
2	208 49.1	3 34.0	217 5.0	175 9.9	16 55.6	249 57.2	-14 32.2
4	238 49.5	3 35.9	247 9.9	205 8.9	16 57.7	279 58.4	-14 31.0
6	268 49.8	3 37.9	277 14.8	235 8.0	16 59.7	309 59.5	-14 29.7
8	298 50.2	3 39.8	307 19.8	265 7.1	17 1.7	340 .7	-14 28.5
10	328 50.6	3 41.8	337 24.7	295 6.1	17 3.7	40 1.9	-14 27.3
12	358 51.0	3 43.7	7 29.6	325 5.2	17 5.7	10 3.1	-14 26.0
14	28 51.4	3 45.7	37 34.6	355 4.2	17 7.8	70 4.3	-14 24.8
16	58 51.7	3 47.6	67 39.5	25 3.3	17 9.8	100 5.5	-14 23.5
18	88 52.1	3 49.5	97 44.4	55 2.3	17 11.8	130 6.7	-14 22.3
20	118 52.5	3 51.5	127 49.3	85 1.4	17 13.8	160 7.9	-14 21.0
22	148 52.9	3 53.4	157 54.3	115 .4	17 15.8	190 9.0	-14 19.8
Δ	2	10		-5	10	6	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 33	18 38	0 43	2 36	14 48	3.5	5 14	.0
55	5 38	18 32	0 37	2 10	15 2	3.2	4 58	.3
50	5 42	18 28	0 33	1 53	15 13	2.9	4 45	.5
45	5 45	18 25	0 30	1 41	15 21	2.7	4 35	.7
40	5 48	18 22	0 27	1 33	15 28	2.5	4 26	.9
35	5 50	18 19	0 25	1 26	15 34	2.4	4 19	1.0
30	5 52	18 17	0 24	1 21	15 39	2.3	4 13	1.1
20	5 56	18 14	0 22	1 14	15 48	2.0	4 1	1.3
10	5 59	18 11	0 21	1 10	15 56	1.8	3 51	1.5
0	6 1	18 8	0 21	1 9	16 3	1.7	3 42	1.7
10	6 4	18 5	0 21	1 10	16 11	1.5	3 32	1.9
20	6 6	18 3	0 22	1 13	16 19	1.3	3 22	2.1
30	6 9	17 60	0 24	1 19	16 27	1.1	3 11	2.3
35	6 11	17 58	0 25	1 24	16 32	1.0	3 4	2.4
40	6 13	17 56	0 27	1 30	16 38	.8	2 56	2.6
45	6 15	17 54	0 29	1 38	16 45	.7	2 47	2.7
50	6 17	17 51	0 32	1 48	16 53	.5	2 36	2.9
55	6 20	17 48	0 36	2 1	17 2	.2	2 22	3.2
60	6 23	17 45	0 41	2 21	17 15	.0	2 4	3.6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	36 .0	153	13 35.6	-131	288 8.9	-22 18.9	45 36.1	16 31.8
2	65 8.6	154	13 9.5	-132	318 13.7	-22 18.9	75 41.2	16 31.9
4	94 17.4	155	12 43.2	-132	348 18.5	-22 18.9	105 46.3	16 31.9
6	123 26.5	157	12 16.7	-133	18 23.3	-22 18.9	135 51.4	16 32.0
8	152 35.8	158	11 50.1	-134	48 28.1	-22 18.9	165 56.5	16 32.1
10	181 45.3	159	11 23.3	-135	78 32.9	-22 18.9	196 1.6	16 32.1
12	210 55.1	160	10 56.3	-135	108 37.7	-22 18.9	226 6.7	16 32.2
14	240 5.1	161	10 29.2	-136	138 42.6	-22 18.9	256 11.8	16 32.2
16	269 15.3	162	10 2.0	-137	168 47.4	-22 18.9	286 16.9	16 32.3
18	298 25.7	163	9 34.7	-137	198 52.2	-22 18.9	316 22.0	16 32.3
20	327 36.3	164	9 7.2	-138	228 57.0	-22 19.0	346 27.1	16 32.4
22	356 47.0	165	8 39.7	-138	259 1.9	-22 19.0	16 32.2	16 32.4
Δ					24	0	26	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s	'	h min	min	'	'	
00	- 4 45.0	.8	16.0	T _m	22 13	1.7	54.8	14.9
12	- 4 35.9	T _{m☉}	12 h 4.6 min	Starost	10.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 20	.1	318	-3.9	♃	4 47	.0	101	-2.1
♂	9 20	.1	33	1.1	♄	20 54	.0	219	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 53.2	3 55.4	187 59.2	144 59.4	17 17.8	220 10.2	-14 18.5
2	208 53.6	3 57.3	218 4.1	174 58.5	17 19.8	250 11.4	-14 17.3
4	238 54.0	3 59.2	248 9.1	204 57.5	17 21.8	280 12.6	-14 16.0
6	268 54.4	4 1.2	278 14.0	234 56.6	17 23.8	310 13.8	-14 14.8
8	298 54.7	4 3.1	308 18.9	264 55.6	17 25.8	340 15.0	-14 13.5
10	328 55.1	4 5.1	338 23.8	294 54.7	17 27.7	10 16.2	-14 12.3
12	358 55.5	4 7.0	8 28.8	324 53.7	17 29.7	40 17.4	-14 11.0
14	28 55.9	4 8.9	38 33.7	354 52.7	17 31.7	70 18.6	-14 9.8
16	58 56.2	4 10.9	68 38.6	24 51.8	17 33.7	100 19.8	-14 8.5
18	88 56.6	4 12.8	98 43.5	54 50.8	17 35.7	130 21.0	-14 7.2
20	118 57.0	4 14.7	128 48.5	84 49.8	17 37.6	160 22.2	-14 6.0
22	148 57.4	4 16.7	158 53.4	114 48.8	17 39.6	190 23.4	-14 4.7
Δ	2	10		-5	10	6	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 30	18 40	0 43	2 38	16 12	3.4	5 13	.0
55	5 36	18 34	0 37	2 11	16 18	3.1	5 4	.2
50	5 40	18 30	0 33	1 54	16 22	2.8	4 58	.5
45	5 44	18 26	0 30	1 42	16 26	2.6	4 52	.7
40	5 46	18 23	0 27	1 33	16 29	2.5	4 47	.8
35	5 49	18 20	0 25	1 26	16 31	2.3	4 43	.9
30	5 51	18 18	0 24	1 21	16 33	2.2	4 40	1.1
20	5 55	18 14	0 22	1 14	16 37	2.0	4 34	1.3
10	5 58	18 11	0 21	1 10	16 40	1.8	4 28	1.5
0	6 1	18 8	0 21	1 9	16 43	1.6	4 23	1.6
10	6 4	18 5	0 21	1 10	16 47	1.4	4 18	1.8
20	6 7	18 2	0 22	1 13	16 50	1.3	4 12	2.0
30	6 10	17 58	0 24	1 19	16 54	1.1	4 6	2.2
35	6 12	17 56	0 25	1 24	16 56	.9	4 2	2.4
40	6 14	17 54	0 27	1 30	16 58	.8	3 58	2.5
45	6 16	17 52	0 29	1 38	17 1	.6	3 53	2.7
50	6 18	17 49	0 32	1 48	17 4	.5	3 47	2.9
55	6 22	17 46	0 36	2 1	17 8	.2	3 39	3.1
60	6 26	17 42	0 41	2 20	17 13	.0	3 30	3.4

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	25 58.0	166	8 12.0	-139	289 6.7	-22 19.0	46 37.3	16 32.5
2	55 9.1	166	7 44.2	-139	319 11.5	-22 19.0	76 42.4	16 32.5
4	84 20.3	167	7 16.3	-140	349 16.3	-22 19.0	106 47.5	16 32.6
6	113 31.8	168	6 48.4	-140	19 21.2	-22 19.0	136 52.6	16 32.6
8	142 43.3	168	6 20.4	-140	49 26.0	-22 19.0	166 57.7	16 32.7
10	171 55.0	169	5 52.3	-141	79 30.8	-22 19.0	197 2.8	16 32.7
12	201 6.8	170	5 24.1	-141	109 35.7	-22 19.0	227 7.9	16 32.8
14	230 18.7	170	4 55.9	-141	139 40.5	-22 19.0	257 13.0	16 32.8
16	259 30.8	171	4 27.6	-142	169 45.3	-22 19.0	287 18.1	16 32.9
18	288 42.9	171	3 59.3	-142	199 50.2	-22 19.0	317 23.2	16 32.9
20	317 55.1	172	3 30.9	-142	229 55.0	-22 19.0	347 28.3	16 33.0
22	347 7.4	172	3 2.6	-142	259 59.9	-22 19.0	17 33.4	16 33.0
Δ					24	0	25	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s	'	h min	min	'	'	
00	- 4 26.9	.8	16.0	T _m	22 53	1.6	54.4	14.8
12	- 4 17.8	T _{m☉}	12 h 4.3 min	Starost	11.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 20	.1	317	-3.9	♃	4 43	.0	101	-2.1
♂	9 19	.1	32	1.1	♄	20 50	.0	219	.2

1. APRIL

2007.

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 57.7	4 18.6	188 58.3	144 47.9	17 41.6	220 24.6	-14 3.5
2	208 58.1	4 20.5	219 3.3	174 46.9	17 43.5	250 25.8	-14 2.2
4	238 58.5	4 22.5	249 8.2	204 45.9	17 45.5	280 27.0	-14 .9
6	268 58.9	4 24.4	279 13.1	234 44.9	17 47.4	310 28.2	-13 59.7
8	298 59.2	4 26.3	309 18.0	264 44.0	17 49.4	340 29.4	-13 58.4
10	328 59.6	4 28.3	339 23.0	294 43.0	17 51.3	10 30.6	-13 57.1
12	359 .0	4 30.2	9 27.9	324 42.0	17 53.3	40 31.8	-13 55.9
14	29 .4	4 32.1	39 32.8	354 41.0	17 55.2	70 33.0	-13 54.6
16	59 .7	4 34.0	69 37.8	24 40.0	17 57.2	100 34.2	-13 53.3
18	89 1.1	4 36.0	99 42.7	54 39.1	17 59.1	130 35.4	-13 52.1
20	119 1.5	4 37.9	129 47.6	84 38.1	18 1.0	160 36.6	-13 50.8
22	149 1.9	4 39.8	159 52.5	114 37.1	18 3.0	190 37.8	-13 49.5
Δ	2	10		-5	10	6	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 27	18 43	0 43	2 39	17 34	3.4	5 12	.0
55	5 33	18 36	0 37	2 12	17 32	3.1	5 10	.2
50	5 38	18 31	0 33	1 54	17 30	2.8	5 9	.5
45	5 42	18 27	0 30	1 42	17 29	2.6	5 8	.6
40	5 45	18 24	0 27	1 33	17 28	2.5	5 7	.8
35	5 48	18 21	0 26	1 26	17 27	2.3	5 6	.9
30	5 50	18 18	0 24	1 21	17 26	2.2	5 6	1.1
20	5 54	18 14	0 22	1 14	17 25	2.0	5 4	1.3
10	5 58	18 11	0 21	1 10	17 24	1.8	5 3	1.4
0	6 1	18 7	0 21	1 9	17 22	1.6	5 2	1.6
10	6 4	18 4	0 21	1 10	17 21	1.5	5 1	1.8
20	6 7	18 1	0 22	1 13	17 20	1.3	5 0	2.0
30	6 10	17 57	0 24	1 19	17 19	1.1	4 59	2.2
35	6 12	17 55	0 25	1 24	17 18	.9	4 58	2.3
40	6 15	17 53	0 27	1 30	17 17	.8	4 57	2.5
45	6 17	17 50	0 29	1 37	17 16	.6	4 57	2.6
50	6 20	17 47	0 32	1 48	17 15	.5	4 55	2.8
55	6 24	17 43	0 36	2 1	17 14	.2	4 54	3.1
60	6 28	17 39	0 41	2 20	17 12	.0	4 52	3.4
S								

UT	MESEC				JUPITER				SATURN				
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ	S _♅	δ _♅	Δ
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	' / "	° / ' / "	' / "	' / "	° / ' / "	' / "	' / "
0	16 19.8	172	2 34.1	-142	290 4.7	-22 19.0		47 38.5	16 33.1				
2	45 32.3	173	2 5.7	-142	320 9.5	-22 19.0		77 43.6	16 33.1				
4	74 44.8	173	1 37.3	-142	350 14.4	-22 19.0		107 48.7	16 33.2				
6	103 57.3	173	1 8.8	-142	20 19.2	-22 19.0		137 53.8	16 33.2				
8	133 9.9	173	0 40.3	-142	50 24.1	-22 19.0		167 58.9	16 33.3				
10	162 22.5	173	0 11.9	-142	80 28.9	-22 19.0		198 4.0	16 33.3				
12	191 35.2	173	-0 16.6	-142	110 33.8	-22 19.0		228 9.1	16 33.4				
14	220 47.9	173	-0 45.0	-142	140 38.6	-22 19.0		258 14.1	16 33.4				
16	250 .5	173	-1 13.4	-142	170 43.5	-22 19.0		288 19.2	16 33.5				
18	279 13.2	173	-1 41.8	-142	200 48.3	-22 19.0		318 24.3	16 33.5				
20	308 25.9	173	-2 10.1	-142	230 53.2	-22 19.0		348 29.4	16 33.6				
22	337 38.5	173	-2 38.4	-141	260 58.1	-22 19.0		18 34.5	16 33.6				
Δ					24	0		25	0				

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s / ' / "		h min min	' / "	' / "	' / "		
00	- 4 8.8	.7	16.0	T _m 23 32	1.6	54.2	14.8		
12	- 3 59.8	T _{m☉} 12 h 4.0 min		Starost 12.9 d	Faza ☉				
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	' / "	°	°	♃	h min / ' / "	' / "	°	°
♂	14 21	.1	316	-3.9	♄	4 39	.0	101	-2.1
	9 18	.1	31	1.1	♅	20 46	.0	219	.2

2. APRIL

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 2.2	4 41.8	189 57.5	144 36.1	18 4.9	220 39.0	-13 48.3
2	209 2.6	4 43.7	220 2.4	174 35.1	18 6.8	250 40.2	-13 47.0
4	239 3.0	4 45.6	250 7.3	204 34.1	18 8.7	280 41.4	-13 45.7
6	269 3.4	4 47.5	280 12.3	234 33.1	18 10.7	310 42.6	-13 44.4
8	299 3.7	4 49.5	310 17.2	264 32.1	18 12.6	340 43.8	-13 43.2
10	329 4.1	4 51.4	340 22.1	294 31.1	18 14.5	10 45.0	-13 41.9
12	359 4.5	4 53.3	10 27.0	324 30.1	18 16.4	40 46.2	-13 40.6
14	29 4.8	4 55.2	40 32.0	354 29.1	18 18.3	70 47.4	-13 39.3
16	59 5.2	4 57.1	70 36.9	24 28.1	18 20.2	100 48.6	-13 38.1
18	89 5.6	4 59.1	100 41.8	54 27.1	18 22.1	130 49.9	-13 36.8
20	119 6.0	5 1.0	130 46.8	84 26.1	18 24.0	160 51.1	-13 35.5
22	149 6.3	5 2.9	160 51.7	114 25.1	18 25.9	190 52.3	-13 34.2
Δ	2	10		-5	10	6	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 24	18 45	0 43	2 41	18 56	3.5	5 10	.0
55	5 30	18 38	0 37	2 13	18 46	3.1	5 16	.2
50	5 36	18 33	0 33	1 55	18 38	2.9	5 20	.5
45	5 40	18 28	0 30	1 42	18 32	2.7	5 23	.7
40	5 43	18 25	0 27	1 33	18 27	2.5	5 26	.8
35	5 46	18 22	0 26	1 26	18 23	2.4	5 29	1.0
30	5 49	18 19	0 24	1 21	18 19	2.2	5 31	1.1
20	5 53	18 14	0 22	1 14	18 13	2.0	5 35	1.3
10	5 57	18 11	0 21	1 10	18 7	1.8	5 38	1.5
0	6 0	18 7	0 21	1 9	18 2	1.7	5 41	1.6
10	6 4	18 4	0 21	1 10	17 56	1.5	5 44	1.8
20	6 7	17 60	0 22	1 13	17 51	1.3	5 48	2.0
30	6 11	17 56	0 24	1 19	17 44	1.1	5 52	2.2
35	6 13	17 54	0 25	1 24	17 41	1.0	5 54	2.3
40	6 16	17 51	0 27	1 30	17 37	.9	5 57	2.5
45	6 18	17 48	0 29	1 37	17 32	.7	5 60	2.7
50	6 22	17 45	0 32	1 47	17 26	.5	6 3	2.9
55	6 25	17 41	0 36	2 1	17 19	.3	6 8	3.1
60	6 30	17 36	0 41	2 20	17 10	.0	6 14	3.4
S								

UT	MESEC				JUPITER				SATURN				
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ	S _♅	δ _♅	Δ
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	' / "	° / ' / "	' / "	' / "	° / ' / "	' / "	' / "
0	6 51.2	173 - 3	6.7	-141	291 2.9	-22 19.0		48 39.6	16 33.7				
2	36 3.8	173 - 3	34.9	-141	321 7.8	-22 19.0		78 44.7	16 33.7				
4	65 16.4	173 - 4	3.0	-140	351 12.6	-22 19.0		108 49.8	16 33.7				
6	94 28.9	172 - 4	31.1	-140	21 17.5	-22 19.0		138 54.8	16 33.8				
8	123 41.3	172 - 4	59.1	-140	51 22.4	-22 19.1		168 59.9	16 33.8				
10	152 53.7	172 - 5	27.1	-139	81 27.2	-22 19.1		199 5.0	16 33.9				
12	182 6.1	171 - 5	54.9	-139	111 32.1	-22 19.1		229 10.1	16 33.9				
14	211 18.3	171 - 6	22.7	-138	141 37.0	-22 19.1		259 15.2	16 34.0				
16	240 30.5	170 - 6	50.3	-138	171 41.8	-22 19.1		289 20.2	16 34.0				
18	269 42.6	170 - 7	17.9	-137	201 46.7	-22 19.1		319 25.3	16 34.1				
20	298 54.6	169 - 7	45.4	-137	231 51.6	-22 19.1		349 30.4	16 34.1				
22	328 6.4	169 - 8	12.7	-136	261 56.5	-22 19.1		19 35.5	16 34.1				
Δ					24	0		25	0				

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s / ' / "		h min min	' / "	' / "	' / "		
00	- 3 50.9	.7	16.0	T _m ...	1.0	54.0	14.7		
12	- 3 41.9	T _{m☉} 12 h 3.7 min		Starost 13.9 d	Faza ☉				
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	' / "	°	°	♃	h min / ' / "	' / "	°	°
♂	14 22	.1	315	-3.9	♄	4 35	.0	101	-2.1
	9 17	.1	31	1.1	♅	20 42	.0	219	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	6.7	5	4.8	190	56.6	144	24.1	18	27.8	220	53.5	-13	32.9
2	209	7.1	5	6.7	221	1.5	174	23.1	18	29.7	250	54.7	-13	31.6
4	239	7.4	5	8.7	251	6.5	204	22.1	18	31.6	280	55.9	-13	30.4
6	269	7.8	5	10.6	281	11.4	234	21.1	18	33.4	310	57.1	-13	29.1
8	299	8.2	5	12.5	311	16.3	264	20.0	18	35.3	340	58.3	-13	27.8
10	329	8.5	5	14.4	341	21.3	294	19.0	18	37.2	10	59.6	-13	26.5
12	359	8.9	5	16.3	11	26.2	324	18.0	18	39.1	41	.8	-13	25.2
14	29	9.3	5	18.2	41	31.1	354	17.0	18	40.9	71	2.0	-13	23.9
16	59	9.6	5	20.2	71	36.0	24	16.0	18	42.8	101	3.2	-13	22.6
18	89	10.0	5	22.1	101	41.0	54	14.9	18	44.7	131	4.4	-13	21.3
20	119	10.4	5	24.0	131	45.9	84	13.9	18	46.5	161	5.6	-13	20.1
22	149	10.8	5	25.9	161	50.8	114	12.9	18	48.4	191	6.9	-13	18.8
Δ		2		10				-5		9		6		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 21	18 48	0 43	2 43	20 20	3.6	5 9	.0
55	5 28	18 40	0 37	2 13	20 1	3.2	5 21	.3
50	5 33	18 34	0 33	1 55	19 48	2.9	5 31	.5
45	5 38	18 30	0 30	1 43	19 37	2.7	5 39	.7
40	5 42	18 26	0 27	1 33	19 27	2.6	5 46	.9
35	5 45	18 23	0 26	1 26	19 20	2.4	5 52	1.0
30	5 48	18 20	0 24	1 21	19 13	2.3	5 57	1.2
20	5 52	18 15	0 22	1 14	19 1	2.1	6 5	1.4
10	5 56	18 11	0 21	1 10	18 51	1.9	6 13	1.5
0	6 0	18 7	0 21	1 9	18 42	1.8	6 21	1.7
10	6 4	18 3	0 21	1 10	18 32	1.6	6 28	1.9
20	6 7	17 59	0 22	1 13	18 22	1.4	6 36	2.1
30	6 12	17 55	0 24	1 19	18 11	1.2	6 45	2.3
35	6 14	17 52	0 25	1 24	18 4	1.1	6 50	2.4
40	6 17	17 50	0 27	1 30	17 57	1.0	6 56	2.5
45	6 20	17 47	0 29	1 37	17 49	.8	7 3	2.7
50	6 23	17 43	0 32	1 47	17 38	.6	7 12	2.9
55	6 27	17 38	0 36	2 1	17 26	.3	7 23	3.2
60	6 33	17 33	0 41	2 19	17 9	.0	7 36	3.6

UT	MESEC				JUPITER				SATURN																
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄										
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'									
0	357	18.2	168	-8	39.9	-135	292	1.3	-22	19.1	49	40.6	16	34.2	322	6.2	-22	19.1	79	45.6	16	34.2			
2	26	29.8	168	-9	7.0	-135	322	6.2	-22	19.1	79	45.6	16	34.2	352	11.1	-22	19.1	109	50.7	16	34.3			
4	55	41.3	167	-9	34.0	-134	22	16.0	-22	19.1	139	55.8	16	34.3	52	20.9	-22	19.1	170	.9	16	34.4			
6	84	52.7	166	-10	.8	-133	82	25.7	-22	19.1	200	5.9	16	34.4	114	3.9	165	-10	27.5	-133	170	.9	16	34.4	
8	114	3.9	165	-10	27.5	-133	112	30.6	-22	19.1	230	11.0	16	34.4	143	15.0	165	-10	54.0	-132	200	5.9	16	34.4	
10	143	15.0	165	-10	54.0	-132	142	35.5	-22	19.1	260	16.1	16	34.5	172	25.9	165	-10	81.0	-131	230	11.0	16	34.4	
12	172	25.9	164	-11	20.4	-131	172	40.4	-22	19.1	290	21.2	16	34.5	201	36.7	163	-11	46.6	-130	260	16.1	16	34.5	
14	201	36.7	163	-11	46.6	-130	202	45.3	-22	19.1	320	26.2	16	34.6	230	47.2	162	-12	12.6	-129	290	21.2	16	34.5	
16	230	47.2	162	-12	12.6	-129	232	50.2	-22	19.1	350	31.3	16	34.6	259	57.6	161	-12	38.4	-128	320	26.2	16	34.6	
18	259	57.6	161	-12	38.4	-128	262	55.1	-22	19.1	20	36.4	16	34.7	289	7.8	160	-13	4.1	-127	350	31.3	16	34.6	
20	289	7.8	160	-13	4.1	-127	262	55.1	-22	19.1	20	36.4	16	34.7	318	17.9	159	-13	29.6	-126	20	36.4	16	34.7	
22	318	17.9	159	-13	29.6	-126	24			0	25			0								25			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	- 3 33.0	.7	16.0	T _m	0 11	1.7	54.0	14.7
12	- 3 24.2	T _m ☉	12 h 3.4 min	Starost	14.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	14 23	.1	313	-3.9	♃	4 31	.0	101	-2.1
♄	9 16	.1	30	1.1	♄	20 38	.0	219	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	11.1	5	27.8	191	55.7	144	11.9	18	50.2	221	8.1	-13	17.5
2	209	11.5	5	29.7	222	.7	174	10.8	18	52.1	251	9.3	-13	16.2
4	239	11.9	5	31.6	252	5.6	204	9.8	18	53.9	281	10.5	-13	14.9
6	269	12.2	5	33.5	282	10.5	234	8.8	18	55.8	311	11.7	-13	13.6
8	299	12.6	5	35.4	312	15.5	264	7.8	18	57.6	341	13.0	-13	12.3
10	329	13.0	5	37.4	342	20.4	294	6.7	18	59.4	11	14.2	-13	11.0
12	359	13.3	5	39.3	12	25.3	324	5.7	19	1.3	41	15.4	-13	9.7
14	29	13.7	5	41.2	42	30.2	354	4.7	19	3.1	71	16.6	-13	8.4
16	59	14.0	5	43.1	72	35.2	24	3.6	19	4.9	101	17.9	-13	7.1
18	89	14.4	5	45.0	102	40.1	54	2.6	19	6.7	131	19.1	-13	5.8
20	119	14.8	5	46.9	132	45.0	84	1.5	19	8.6	161	20.3	-13	4.5
22	149	15.1	5	48.8	162	50.0	114	.5	19	10.4	191	21.5	-13	3.2
Δ		2		10				-5		9		6		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 18	18 50	0 44	2 44	21 47	3.8	5 8	.0
55	5 25	18 42	0 37	2 14	21 19	3.3	5 29	.4
50	5 31	18 36	0 33	1 56	20 58	3.0	5 44	.7
45	5 36	18 31	0 30	1 43	20 42	2.8	5 57	.9
40	5 40	18 27	0 27	1 34	20 29	2.6	6 7	1.0
35	5 43	18 23	0 26	1 27	20 18	2.5	6 16	1.2
30	5 46	18 20	0 24	1 21	20 8	2.4	6 24	1.3
20	5 52	18 15	0 22	1 14	19 52	2.2	6 38	1.5
10	5 56	18 11	0 21	1 10	19 37	2.0	6 50	1.6
0	6 0	18 6	0 21	1 9	19 24	1.9	7 2	1.8
10	6 4	18 2	0 21	1 10	19 10	1.7	7 13	2.0
20	6 8	17 58	0 22	1 13	18 56	1.6	7 25	2.1
30	6 12	17 54	0 24	1 19	18 40	1.4	7 40	2.3
35	6 15	17 51	0 25	1 24	18 31	1.3	7 48	2.5
40	6 18	17 48	0 27	1 30	18 20	1.1	7 57	2.6
45	6 21	17 45	0 29	1 37	18 8	1.0	8 8	2.8
50	6 25	17 41	0 32	1 47	17 53	.8	8 22	3.0
55	6 29	17 36	0 36	2 1	17 34	.5	8 39	3.3
60	6 35	17 30	0 41	2 19	17 9	.0	9 2	3.7

UT	MESEC				JUPITER				SATURN													
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄							
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'						
0	347	27.7	158	-13	54.8	-125	292	60.0	-22	19.1	50	41.4	16	34.7	323	4.9	-22	19.1	80	46.5	16	34.7
2	16	37.3	157	-14	19.9	-124	323	4.9	-22	19.1	80	46.5	16	34.7	353	9.7	-22	19.1	110	51.6	16	34.8
4	45	46.7	156	-14	44.8	-123	23	14.6	-22	19.1	140	56.6	16	34.8	53	19.5	-22	19.1	171	1.7	16	34.9
6	74	55.9	155	-15	9.4	-122	83	24.4	-22	19.1	201	6.8	16	34.9	113	29.3	-22	19.1	231	11.8	16	34.9
8	104	4.8	154	-15	33.8	-121	143	34.2	-22	19.1	261	16.9	16	35.0	143	34.2	-22	19.1	291	22.0	16	35.0
10	133	13.6	152	-15	58.0	-120	173	39.1	-22	19												

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	179	15.5	5	50.7	192	54.9	143	59.5	19	12.2	221	22.8	-13	1.9	
2	209	15.9	5	52.6	222	59.8	173	58.4	19	14.0	251	24.0	-13	.6	
4	239	16.2	5	54.5	253	4.7	203	57.4	19	15.8	281	25.2	-12	59.3	
6	269	16.6	5	56.4	283	9.7	233	56.3	19	17.6	311	26.4	-12	58.0	
8	299	17.0	5	58.3	313	14.6	263	55.3	19	19.4	341	27.7	-12	56.7	
10	329	17.3	6	.2	343	19.5	293	54.2	19	21.2	11	28.9	-12	55.4	
12	359	17.7	6	2.1	13	24.5	323	53.2	19	23.0	41	30.1	-12	54.0	
14	29	18.0	6	4.0	43	29.4	353	52.1	19	24.8	71	31.4	-12	52.7	
16	59	18.4	6	5.9	73	34.3	23	51.1	19	26.6	101	32.6	-12	51.4	
18	89	18.8	6	7.8	103	39.2	53	50.0	19	28.4	131	33.8	-12	50.1	
20	119	19.1	6	9.7	133	44.2	83	48.9	19	30.1	161	35.1	-12	48.8	
22	149	19.5	6	11.6	163	49.1	113	47.9	19	31.9	191	36.3	-12	47.5	
Δ		2		9				-5		9		6			7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 15	18 53	0 44	2 46	23 19	4.0	5 8	.1
55	5 23	18 44	0 38	2 15	22 39	3.3	5 38	.6
50	5 29	18 37	0 33	1 56	22 10	3.0	6 0	.9
45	5 34	18 32	0 30	1 43	21 49	2.8	6 18	1.1
40	5 38	18 28	0 28	1 34	21 32	2.6	6 32	1.2
35	5 42	18 24	0 26	1 27	21 18	2.5	6 44	1.4
30	5 45	18 21	0 24	1 22	21 5	2.4	6 55	1.5
20	5 51	18 15	0 22	1 14	20 44	2.3	7 14	1.6
10	5 55	18 10	0 21	1 10	20 26	2.1	7 30	1.8
0	5 60	18 6	0 21	1 9	20 9	2.0	7 45	1.9
10	6 4	18 2	0 21	1 10	19 52	1.9	8 0	2.1
20	6 8	17 57	0 22	1 13	19 34	1.7	8 17	2.2
30	6 13	17 52	0 24	1 19	19 13	1.6	8 36	2.4
35	6 16	17 50	0 25	1 24	19 1	1.5	8 47	2.5
40	6 19	17 46	0 27	1 30	18 47	1.4	8 59	2.6
45	6 22	17 43	0 29	1 37	18 31	1.2	9 14	2.8
50	6 26	17 39	0 32	1 47	18 11	1.0	9 33	3.0
55	6 31	17 33	0 36	2 1	17 45	.7	9 57	3.3
60	6 38	17 27	0 42	2 19	17 10	.2	10 31	3.9
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	337	7.7	143	-18	40.1	-110	293	58.8	-22	19.1	51	42.2	16	35.2	
2	6	14.4	142	-19	2.2	-109	324	3.7	-22	19.1	81	47.3	16	35.2	
4	35	20.8	141	-19	23.9	-107	354	8.6	-22	19.1	111	52.3	16	35.2	
6	64	26.9	139	-19	45.4	-106	24	13.5	-22	19.1	141	57.4	16	35.3	
8	93	32.7	138	-20	6.5	-104	54	18.4	-22	19.1	172	2.5	16	35.3	
10	122	38.3	136	-20	27.3	-102	84	23.3	-22	19.1	202	7.5	16	35.4	
12	151	43.5	135	-20	47.8	-101	114	28.3	-22	19.1	232	12.6	16	35.4	
14	180	48.5	133	-21	7.9	-99	144	33.2	-22	19.0	262	17.6	16	35.4	
16	209	53.1	132	-21	27.7	-97	174	38.1	-22	19.0	292	22.7	16	35.5	
18	238	57.5	130	-21	47.2	-95	204	43.0	-22	19.0	322	27.7	16	35.5	
20	268	1.5	129	-22	6.3	-94	234	48.0	-22	19.0	352	32.8	16	35.5	
22	297	5.3	127	-22	25.0	-92	264	52.9	-22	19.0	22	37.8	16	35.6	
Δ								25		0		25			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	- 2 57.8	.7	16.0	T _m	1 34	1.9	54.1	14.7	
12	- 2 49.1	T _{m☉}	12 h 2.8 min	Starost	16.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	14 25	.1	311	-3.9	♄	4 23	.0	101	-2.1
	9 14	.1	28	1.1	♅	20 30	.0	219	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	179	19.8	6	13.5	193	54.0	143	46.8	19	33.7	221	37.5	-12	46.2	
2	209	20.2	6	15.4	223	59.0	173	45.8	19	35.5	251	38.8	-12	44.9	
4	239	20.6	6	17.3	254	3.9	203	44.7	19	37.2	281	40.0	-12	43.6	
6	269	20.9	6	19.2	284	8.8	233	43.6	19	39.0	311	41.2	-12	42.2	
8	299	21.3	6	21.1	314	13.7	263	42.6	19	40.7	341	42.5	-12	40.9	
10	329	21.6	6	22.9	344	18.7	293	41.5	19	42.5	11	43.7	-12	39.6	
12	359	22.0	6	24.8	14	23.6	323	40.4	19	44.3	41	44.9	-12	38.3	
14	29	22.4	6	26.7	44	28.5	353	39.3	19	46.0	71	46.2	-12	37.0	
16	59	22.7	6	28.6	74	33.5	23	38.3	19	47.7	101	47.4	-12	35.6	
18	89	23.1	6	30.5	104	38.4	53	37.2	19	49.5	131	48.7	-12	34.3	
20	119	23.4	6	32.4	134	43.3	83	36.1	19	51.2	161	49.9	-12	33.0	
22	149	23.8	6	34.3	164	48.2	113	35.1	19	53.0	191	51.1	-12	31.7	
Δ		2		9				-5		9		6			7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 12	18 55	0 44	2 48	. . .	.0	5 9	.2
55	5 20	18 46	0 38	2 16	23 58	3.1	5 52	.9
50	5 27	18 39	0 33	1 57	23 22	2.8	6 21	1.2
45	5 32	18 33	0 30	1 44	22 56	2.7	6 44	1.4
40	5 37	18 29	0 28	1 34	22 35	2.6	7 2	1.5
35	5 41	18 25	0 26	1 27	22 18	2.5	7 17	1.6
30	5 44	18 21	0 24	1 22	22 3	2.4	7 30	1.7
20	5 50	18 16	0 22	1 14	21 38	2.3	7 53	1.8
10	5 55	18 10	0 21	1 11	21 17	2.2	8 13	2.0
0	5 59	18 6	0 21	1 9	20 57	2.1	8 31	2.1
10	6 4	18 1	0 21	1 10	20 37	2.0	8 50	2.2
20	6 8	17 57	0 22	1 13	20 15	2.0	9 10	2.3
30	6 13	17 51	0 24	1 19	19 51	1.8	9 33	2.4
35	6 16	17 48	0 25	1 24	19 36	1.8	9 47	2.5
40	6 20	17 45	0 27	1 30	19 20	1.7	10 3	2.6
45	6 23	17 41	0 29	1 37	19 0	1.6	10 21	2.7
50	6 28	17 37	0 32	1 47	18 35	1.4	10 45	2.9
55	6 33	17 31	0 36	2 1	18 3	1.1	11 17	3.2
60	6 40	17 24	0 42	2 19	17 13	.4	12 5	3.9
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	326	8.7	126	-22	43.4	-90	294	57.8	-22	19.0	52	42.9	16	35.6	
2	355	11.8	124	-23	1.3	-88	325	2.7	-22	19.0	82	47.9	16	35.6	
4	24	14.6	122	-23	18.9	-86	355	7.7	-22	19.0	112	53.0	16	35.7	
6	53	17.1	121	-23	36.1	-84	25	12.6	-22	19.0	142	58.0	16	35.7	
8	82	19.3	119	-23	52.8	-82	55	17.5	-22	19.0	173	3.1	16	35.7	
10	111	21.1	118	-24	9.2	-80	85	22.5	-22	19.0	203	8.1	16	35.8	
12	140	22.7	116	-24	25.1	-78	115	27.4	-22	19.0	233	13.2	16	35.8	
14	169	23.9	115	-24	40.6	-75	145	32.3	-22	19.0	263	18.2	16	35.8	
16	198	24.8	113	-24	55.7	-73	175	37.3	-22	19.0	293	23.3	16	35.9	
18	227	25.4	111	-25	10.3	-71	205	42.2	-22	19.0	323	28.3	16	35.9	
20	256	25.7	110	-25	24.5	-69	235	47.1	-22	19.0	353	33.4	16	35.9	
22	285	25.7	108	-25	38.2	-66	265	52.1	-22	19.0	23	38.4	16	36.0	
Δ								25		0		25			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	'	h min	min	'	'	
00	- 2 40.4	.7	16.0	T _m	2 20	2.0	54.3	14.8
12	- 2 31.9	T _{m☉}	12 h 2.5 min	Starost	17.9 d	Faza		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 24.1	6 36.2	194 53.2	143 34.0	19 54.7	221 52.4	-12 30.4	
2	209 24.5	6 38.0	224 58.1	173 32.9	19 56.4	251 53.6	-12 29.0	
4	239 24.8	6 39.9	255 3.0	203 31.8	19 58.2	281 54.9	-12 27.7	
6	269 25.2	6 41.8	285 8.0	233 30.7	19 59.9	311 56.1	-12 26.4	
8	299 25.6	6 43.7	315 12.9	263 29.6	20 1.6	341 57.3	-12 25.1	
10	329 25.9	6 45.6	345 17.8	293 28.6	20 3.3	11 58.6	-12 23.7	
12	359 26.3	6 47.5	15 22.7	323 27.5	20 5.0	41 59.8	-12 22.4	
14	29 26.6	6 49.3	45 27.7	353 26.4	20 6.7	72 1.1	-12 21.1	
16	59 27.0	6 51.2	75 32.6	23 25.3	20 8.4	102 2.3	-12 19.7	
18	89 27.3	6 53.1	105 37.5	53 24.2	20 10.1	132 3.6	-12 18.4	
20	119 27.7	6 55.0	135 42.4	83 23.1	20 11.8	162 4.8	-12 17.1	
22	149 28.0	6 56.9	165 47.4	113 22.0	20 13.5	192 6.1	-12 15.8	
Δ	2	9		-5	9	6	7	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 9	18 57	0 44	2 51	0 56	3.8	5 14	.7
55	5 18	18 48	0 38	2 17	...	.0	6 12	1.4
50	5 25	18 41	0 33	1 57	...	.0	6 49	1.6
45	5 31	18 35	0 30	1 44	...	.0	7 16	1.8
40	5 35	18 30	0 28	1 34	23 37	2.4	7 38	1.9
35	5 39	18 26	0 26	1 27	23 18	2.4	7 56	1.9
30	5 43	18 22	0 24	1 22	23 1	2.3	8 11	2.0
20	5 49	18 16	0 22	1 15	22 34	2.3	8 37	2.1
10	5 54	18 10	0 21	1 11	22 10	2.3	8 60	2.1
0	5 59	18 6	0 21	1 9	21 48	2.2	9 21	2.2
10	6 4	18 1	0 21	1 10	21 26	2.2	9 42	2.3
20	6 9	17 56	0 22	1 13	21 2	2.2	10 5	2.3
30	6 14	17 50	0 24	1 19	20 35	2.1	10 31	2.4
35	6 17	17 47	0 25	1 24	20 19	2.1	10 47	2.4
40	6 21	17 43	0 27	1 30	20 0	2.1	11 5	2.5
45	6 25	17 39	0 29	1 37	19 38	2.0	11 27	2.6
50	6 29	17 34	0 32	1 47	19 9	1.9	11 55	2.7
55	6 35	17 28	0 36	2 0	18 29	1.8	12 34	2.8
60	6 43	17 21	0 42	2 19	17 24	1.2	13 39	3.4

UT	MESEC				JUPITER			SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ
h	°	'	°	'	°	'	°	'	°	'
0	314 25.4	107 -25	51.4	-64	295 57.0	-22 19.0		53 43.5	16 36.0	
2	343 24.8	105 -26	4.1	-61	326 2.0	-22 19.0		83 48.5	16 36.0	
4	12 23.8	104 -26	16.4	-59	356 6.9	-22 19.0		113 53.6	16 36.1	
6	41 22.6	102 -26	28.2	-56	26 11.9	-22 19.0		143 58.6	16 36.1	
8	70 21.1	101 -26	39.5	-54	56 16.8	-22 19.0		174 3.6	16 36.1	
10	99 19.3	100 -26	50.3	-51	86 21.8	-22 19.0		204 8.7	16 36.2	
12	128 17.2	98 -27	.5	-49	116 26.7	-22 19.0		234 13.7	16 36.2	
14	157 14.8	97 -27	10.3	-46	146 31.7	-22 19.0		264 18.8	16 36.2	
16	186 12.2	95 -27	19.5	-43	176 36.6	-22 19.0		294 23.8	16 36.3	
18	215 9.3	94 -27	28.2	-41	206 41.6	-22 19.0		324 28.8	16 36.3	
20	244 6.1	93 -27	36.3	-38	236 46.5	-22 19.0		354 33.9	16 36.3	
22	273 2.7	92 -27	43.9	-35	266 51.5	-22 19.0		24 38.9	16 36.4	
Δ					25	0		25	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	'	h min	min	'	'
00	- 2 23.3	.7	16.0	T _m	3 9	2.2	54.6 14.9
12	- 2 14.8	T _{m☉}	12 h 2.2 min	Starost 18.9 d Faza ☉			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 26	.1	309	-3.9	♄	4 15	.0	101	-2.2
♂	9 12	.1	27	1.1	♅	20 22	.0	219	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 28.4	6 58.7	195 52.3	143 20.9	20 15.2	222 7.3	-12 14.4	
2	209 28.7	7 .6	225 57.2	173 19.8	20 16.9	252 8.6	-12 13.1	
4	239 29.1	7 2.5	256 2.2	203 18.7	20 18.6	282 9.8	-12 11.8	
6	269 29.4	7 4.4	286 7.1	233 17.6	20 20.3	312 11.0	-12 10.4	
8	299 29.8	7 6.2	316 12.0	263 16.5	20 21.9	342 12.3	-12 9.1	
10	329 30.1	7 8.1	346 16.9	293 15.4	20 23.6	12 13.5	-12 7.7	
12	359 30.5	7 10.0	16 21.9	323 14.3	20 25.3	42 14.8	-12 6.4	
14	29 30.8	7 11.8	46 26.8	353 13.2	20 26.9	72 16.1	-12 5.1	
16	59 31.2	7 13.7	76 31.7	23 12.1	20 28.6	102 17.3	-12 3.7	
18	89 31.5	7 15.6	106 36.7	53 11.0	20 30.3	132 18.6	-12 2.4	
20	119 31.8	7 17.4	136 41.6	83 9.9	20 31.9	162 19.8	-12 1.1	
22	149 32.2	7 19.3	166 46.5	113 8.8	20 33.6	192 21.1	-11 59.7	
Δ	2	9		-6	8	6	7	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 6	18 60	0 44	2 53	2 28	2.8	5 30	1.9
55	5 15	18 50	0 38	2 18	1 13	2.5	6 46	2.1
50	5 23	18 42	0 33	1 58	0 30	2.5	7 28	2.2
45	5 29	18 36	0 30	1 44	0 0	2.4	7 59	2.2
40	5 34	18 31	0 28	1 35	...	.0	8 22	2.2
35	5 38	18 27	0 26	1 27	...	.0	8 42	2.3
30	5 42	18 23	0 24	1 22	23 58	2.2	8 58	2.3
20	5 48	18 16	0 22	1 15	23 29	2.2	9 27	2.3
10	5 54	18 10	0 21	1 11	23 4	2.3	9 51	2.3
0	5 59	18 5	0 21	1 9	22 42	2.3	10 14	2.3
10	6 4	18 0	0 21	1 10	22 19	2.3	10 36	2.3
20	6 9	17 55	0 22	1 13	21 54	2.4	11 0	2.3
30	6 15	17 49	0 24	1 19	21 26	2.4	11 29	2.3
35	6 18	17 46	0 25	1 24	21 9	2.4	11 45	2.3
40	6 22	17 42	0 27	1 30	20 49	2.4	12 5	2.3
45	6 26	17 37	0 29	1 37	20 25	2.5	12 29	2.2
50	6 31	17 32	0 32	1 47	19 55	2.5	12 59	2.2
55	6 37	17 26	0 36	2 0	19 12	2.6	13 42	2.2
60	6 45	17 18	0 42	2 19	17 53	2.8	15 0	2.0

UT	MESEC				JUPITER			SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ
h	°	'	°	'	°	'	°	'	°	'
0	301 59.1	91 -27	51.0	-32	296 56.5	-22 19.0		54 43.9	16 36.4	
2	330 55.2	89 -27	57.4	-30	327 1.4	-22 19.0		84 49.0	16 36.4	
4	359 51.1	88 -28	3.4	-27	357 6.4	-22 18.9		114 54.0	16 36.4	
6	28 46.7	87 -28	8.7	-24	27 11.3	-22 18.9		144 59.0	16 36.5	
8	57 42.2	86 -28	13.5	-21	57 16.3	-22 18.9		175 4.1	16 36.5	
10	86 37.4	85 -28	17.7	-18	87 21.3	-22 18.9		205 9.1	16 36.5	
12	115 32.4	84 -28	21.3	-15	117 26.2	-22 18.9		235 14.1	16 36.6	
14	144 27.3	83 -28	24.3	-12	147 31.2	-22 18.9		265 19.2	16 36.6	
16	173 22.0	83 -28	26.8	-9	177 36.2	-22 18.9		295 24.2	16 36.6	
18	202 16.5	82 -28	28.6	-6	207 41.2	-22 18.9		325 29.2	16 36.6	
20	231 10.9	81 -28	29.8	-3	237 46.1	-22 18.9		355 34.3	16 36.7	
22	260 5.2	81 -28	30.4	0	267 51.1	-22 18.9		25 39.3	16 36.7	
Δ					25	0		25	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	'	h min	min	'	'
00	- 2 6.4	.7	16.0	T _m	4 1	2.2	55.0 15.0
12	- 1 58.0	T _{m☉}	12 h 2.0 min	Starost 19.9 d Faza ☉			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 27	.1	307	-3.9	♄	4 12	.0	101	-2.2
♂	9 11	.1	26	1.1	♅	20 18	.0	219	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 32.5	7 21.2	196 51.4	143 7.7	20 35.2	222 22.3	-11 58.4
2	209 32.9	7 23.0	226 56.4	173 6.5	20 36.9	252 23.6	-11 57.0
4	239 33.2	7 24.9	257 1.3	203 5.4	20 38.5	282 24.8	-11 55.7
6	269 33.6	7 26.8	287 6.2	233 4.3	20 40.1	312 26.1	-11 54.3
8	299 33.9	7 28.6	317 11.2	263 3.2	20 41.8	342 27.3	-11 53.0
10	329 34.3	7 30.5	347 16.1	293 2.1	20 43.4	12 28.6	-11 51.6
12	359 34.6	7 32.4	17 21.0	323 .9	20 45.0	42 29.9	-11 50.3
14	29 34.9	7 34.2	47 25.9	352 59.8	20 46.7	72 31.1	-11 49.0
16	59 35.3	7 36.1	77 30.9	22 58.7	20 48.3	102 32.4	-11 47.6
18	89 35.6	7 37.9	107 35.8	52 57.6	20 49.9	132 33.6	-11 46.3
20	119 36.0	7 39.8	137 40.7	82 56.4	20 51.5	162 34.9	-11 44.9
22	149 36.3	7 41.7	167 45.7	112 55.3	20 53.1	192 36.1	-11 43.6
Δ	2	9		-6	8	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 3	19 2	0 45	2 55	3 35	1.2	6 16	3.6
55	5 13	18 52	0 38	2 19	2 14	1.8	7 37	3.0
50	5 21	18 44	0 34	1 59	1 30	2.0	8 21	2.8
45	5 27	18 37	0 30	1 45	0 59	2.1	8 52	2.7
40	5 32	18 32	0 28	1 35	0 34	2.1	9 16	2.6
35	5 37	18 27	0 26	1 28	0 15	2.2	9 36	2.6
30	5 41	18 23	0 24	1 22	...	.0	9 53	2.5
20	5 47	18 16	0 22	1 15	...	.0	10 21	2.4
10	5 53	18 10	0 21	1 11	23 59	2.2	10 45	2.4
0	5 58	18 5	0 21	1 9	23 37	2.3	11 8	2.3
10	6 4	17 60	0 21	1 10	23 15	2.4	11 31	2.2
20	6 9	17 54	0 22	1 13	22 51	2.5	11 55	2.2
30	6 15	17 48	0 24	1 19	22 23	2.6	12 23	2.1
35	6 19	17 44	0 25	1 24	22 7	2.7	12 40	2.0
40	6 23	17 40	0 27	1 30	21 48	2.8	12 59	2.0
45	6 27	17 36	0 29	1 37	21 25	2.9	13 23	1.9
50	6 32	17 30	0 32	1 47	20 55	3.0	13 53	1.7
55	6 39	17 24	0 36	2 0	20 13	3.3	14 35	1.5
60	6 47	17 15	0 42	2 19	19 0	4.0	15 48	.8

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	288 59.3	80 -28	30.4	3	297 56.1	-22 18.9	55 44.3	16 36.7
2	317 53.3	79 -28	29.8	6	328 1.1	-22 18.9	85 49.3	16 36.7
4	346 47.1	79 -28	28.6	9	358 6.0	-22 18.9	115 54.4	16 36.8
6	15 40.9	78 -28	26.8	12	28 11.0	-22 18.9	145 59.4	16 36.8
8	44 34.6	78 -28	24.3	15	58 16.0	-22 18.9	176 4.4	16 36.8
10	73 28.2	78 -28	21.2	19	88 21.0	-22 18.9	206 9.4	16 36.8
12	102 21.8	78 -28	17.5	22	118 26.0	-22 18.9	236 14.5	16 36.9
14	131 15.3	77 -28	13.1	25	148 31.0	-22 18.9	266 19.5	16 36.9
16	160 8.8	77 -28	8.2	28	178 36.0	-22 18.8	296 24.5	16 36.9
18	189 2.2	77 -28	2.6	31	208 40.9	-22 18.8	326 29.5	16 36.9
20	217 55.6	77 -27	56.3	34	238 45.9	-22 18.8	356 34.5	16 37.0
22	246 49.0	77 -27	49.5	37	268 50.9	-22 18.8	26 39.6	16 37.0
Δ					25	0	25	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	- 1 49.7	.7	16.0	T _m	4 55	2.3	55.6	15.2
12	- 1 41.4	T _{m☉}	12 h 1.7 min	Starost	20.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	'	°		♃	h min	'	°	
♄	14 28	.1	306	-3.9	♄	4 8	.0	101	-2.2
♅	9 10	.1	26	1.1	♅	20 14	.0	219	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 36.6	7 43.5	197 50.6	142 54.2	20 54.7	222 37.4	-11 42.2
2	209 37.0	7 45.4	227 55.5	172 53.1	20 56.3	252 38.7	-11 40.9
4	239 37.3	7 47.2	258 .4	202 51.9	20 57.9	282 39.9	-11 39.5
6	269 37.7	7 49.1	288 5.4	232 50.8	20 59.5	312 41.2	-11 38.2
8	299 38.0	7 50.9	318 10.3	262 49.7	21 1.1	342 42.5	-11 36.8
10	329 38.3	7 52.8	348 15.2	292 48.5	21 2.7	12 43.7	-11 35.4
12	359 38.7	7 54.6	18 20.2	322 47.4	21 4.3	42 45.0	-11 34.1
14	29 39.0	7 56.5	48 25.1	352 46.2	21 5.8	72 46.3	-11 32.7
16	59 39.3	7 58.3	78 30.0	22 45.1	21 7.4	102 47.5	-11 31.4
18	89 39.7	8 .2	108 34.9	52 44.0	21 9.0	132 48.8	-11 30.0
20	119 40.0	8 2.0	138 39.9	82 42.8	21 10.6	162 50.1	-11 28.7
22	149 40.4	8 3.9	168 44.8	112 41.7	21 12.1	192 51.3	-11 27.3
Δ	2	9		-6	8	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 60	19 5	0 45	2 58	4 5	.4	7 42	4.3
55	5 10	18 54	0 38	2 21	2 57	1.2	8 48	3.6
50	5 19	18 45	0 34	1 59	2 17	1.5	9 28	3.2
45	5 25	18 39	0 30	1 45	1 48	1.7	9 56	3.0
40	5 31	18 33	0 28	1 35	1 25	1.8	10 19	2.9
35	5 35	18 28	0 26	1 28	1 6	1.9	10 37	2.8
30	5 39	18 24	0 24	1 22	0 50	2.0	10 53	2.7
20	5 46	18 17	0 22	1 15	0 23	2.1	11 19	2.5
10	5 53	18 10	0 21	1 11	...	.0	11 42	2.4
0	5 58	18 5	0 21	1 9	...	.0	12 3	2.3
10	6 4	17 59	0 21	1 10	...	.0	12 24	2.2
20	6 9	17 53	0 22	1 13	23 51	2.5	12 47	2.0
30	6 16	17 47	0 24	1 20	23 26	2.7	13 13	1.9
35	6 19	17 43	0 25	1 24	23 11	2.8	13 28	1.8
40	6 24	17 39	0 27	1 30	22 54	3.0	13 46	1.6
45	6 28	17 34	0 29	1 37	22 33	3.1	14 7	1.5
50	6 34	17 28	0 32	1 47	22 7	3.4	14 34	1.3
55	6 41	17 21	0 36	2 0	21 32	3.7	15 10	1.0
60	6 50	17 12	0 42	2 19	20 37	4.4	16 6	.3

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	275 42.4	77 -27	42.0	41	298 55.9	-22 18.8	56 44.6	16 37.0
2	304 35.9	77 -27	33.9	44	329 .9	-22 18.8	86 49.6	16 37.0
4	333 29.3	77 -27	25.1	47	359 5.9	-22 18.8	116 54.6	16 37.1
6	2 22.8	78 -27	15.8	50	29 10.9	-22 18.8	146 59.6	16 37.1
8	31 16.3	78 -27	5.8	53	59 15.9	-22 18.8	177 4.6	16 37.1
10	60 9.9	78 -26	55.1	56	89 20.9	-22 18.8	207 9.7	16 37.1
12	89 3.6	79 -26	43.9	59	119 25.9	-22 18.8	237 14.7	16 37.2
14	117 57.3	79 -26	32.0	62	149 30.9	-22 18.8	267 19.7	16 37.2
16	146 51.1	79 -26	19.5	65	179 35.9	-22 18.8	297 24.7	16 37.2
18	175 45.0	80 -26	6.4	69	209 40.9	-22 18.8	327 29.7	16 37.2
20	204 39.0	80 -25	52.7	72	239 45.9	-22 18.8	357 34.7	16 37.2
22	233 33.1	81 -25	38.4	75	269 50.9	-22 18.7	27 39.7	16 37.3
Δ					25	0	25	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	- 1 33.2	.7	16.0	T _m	5 50	2.3	56.3	15.3
12	- 1 25.1	T _{m☉}	12 h 1.4 min	Starost	21.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	'	°		♃	h min	'	°	
♄	14 29	.1	305	-3.9	♄	4 4	.0	101	-2.2
♅	9 9	.1	25	1.1	♅	20 10	.0	219	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	179 40.7	8 5.7	198 49.7	142 40.5	21 13.7	222 52.6	-11 25.9
2	209 41.0	8 7.6	228 54.6	172 39.4	21 15.2	252 53.9	-11 24.6
4	239 41.4	8 9.4	258 59.6	202 38.2	21 16.8	282 55.1	-11 23.2
6	269 41.7	8 11.2	289 4.5	232 37.1	21 18.3	312 56.4	-11 21.9
8	299 42.0	8 13.1	319 9.4	262 35.9	21 19.9	342 57.7	-11 20.5
10	329 42.3	8 14.9	349 14.4	292 34.8	21 21.4	12 58.9	-11 19.1
12	359 42.7	8 16.8	19 19.3	322 33.6	21 23.0	43 .2	-11 17.8
14	29 43.0	8 18.6	49 24.2	352 32.5	21 24.5	73 1.5	-11 16.4
16	59 43.3	8 20.4	79 29.1	22 31.3	21 26.0	103 2.7	-11 15.0
18	89 43.7	8 22.3	109 34.1	52 30.1	21 27.5	133 4.0	-11 13.7
20	119 44.0	8 24.1	139 39.0	82 29.0	21 29.1	163 5.3	-11 12.3
22	149 44.3	8 26.0	169 43.9	112 27.8	21 30.6	193 6.6	-11 10.9
Δ	2	9		-6	8	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 57	19 7	0 45	3 1	4 15	.1	9 26	4.5
55	5 8	18 56	0 38	2 22	3 26	.8	10 14	3.8
50	5 16	18 47	0 34	2 0	2 53	1.1	10 45	3.5
45	5 23	18 40	0 30	1 46	2 28	1.3	11 9	3.2
40	5 29	18 34	0 28	1 36	2 8	1.5	11 28	3.0
35	5 34	18 29	0 26	1 28	1 52	1.6	11 43	2.9
30	5 38	18 24	0 24	1 23	1 37	1.8	11 57	2.8
20	5 46	18 17	0 22	1 15	1 13	1.9	12 20	2.5
10	5 52	18 10	0 21	1 11	0 52	2.1	12 40	2.4
0	5 58	18 4	0 21	1 9	0 32	2.2	12 58	2.2
10	6 4	17 59	0 21	1 10	0 12	2.4	13 16	2.0
20	6 10	17 52	0 22	1 13	...	.0	13 35	1.9
30	6 16	17 46	0 24	1 20	...	.0	13 58	1.7
35	6 20	17 42	0 25	1 24	...	.0	14 11	1.5
40	6 25	17 37	0 27	1 30	...	.0	14 26	1.4
45	6 30	17 32	0 30	1 37	23 49	3.3	14 43	1.2
50	6 35	17 26	0 33	1 47	23 28	3.5	15 5	1.0
55	6 43	17 19	0 37	2 0	23 1	3.9	15 33	.6
60	6 52	17 9	0 42	2 19	22 22	4.4	16 13	.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	'	'	'	'
0	262 27.3	82 -25	23.5	78	299 56.0	-22 18.7	57 44.7	16 37.3
2	291 21.6	82 -25	7.9	81	330 1.0	-22 18.7	87 49.7	16 37.3
4	320 16.1	83 -24	51.8	84	0 6.0	-22 18.7	117 54.7	16 37.3
6	349 10.7	84 -24	35.1	86	30 11.0	-22 18.7	147 59.8	16 37.4
8	18 5.4	84 -24	17.8	89	60 16.0	-22 18.7	178 4.8	16 37.4
10	47 .2	85 -23	59.9	92	90 21.0	-22 18.7	208 9.8	16 37.4
12	75 55.3	86 -23	41.4	95	120 26.0	-22 18.7	238 14.8	16 37.4
14	104 50.4	87 -23	22.4	98	150 31.1	-22 18.7	268 19.8	16 37.4
16	133 45.7	87 -23	2.8	101	180 36.1	-22 18.7	298 24.8	16 37.5
18	162 41.2	88 -22	42.6	104	210 41.1	-22 18.7	328 29.8	16 37.5
20	191 36.8	89 -22	21.9	106	240 46.1	-22 18.7	358 34.8	16 37.5
22	220 32.6	90 -22	.7	109	270 51.2	-22 18.6	28 39.8	16 37.5
Δ					25	0	25	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 1 17.1	.7	16.0	T _m	6 45	2.2	57.1 15.6
12	- 1 9.1	T _{m☉}	12 h 1.2 min	Starost	22.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 30	.1	304	-3.9	♄	3 60	.0	101	-2.2
♂	9 8	.1	24	1.1	♅	20 6	.0	219	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	179 44.7	8 27.8	199 48.9	142 26.7	21 32.1	223 7.8	-11 9.6
2	209 45.0	8 29.6	229 53.8	172 25.5	21 33.6	253 9.1	-11 8.2
4	239 45.3	8 31.5	259 58.7	202 24.3	21 35.1	283 10.4	-11 6.8
6	269 45.6	8 33.3	290 3.6	232 23.2	21 36.6	313 11.7	-11 5.5
8	299 46.0	8 35.1	320 8.6	262 22.0	21 38.1	343 12.9	-11 4.1
10	329 46.3	8 36.9	350 13.5	292 20.8	21 39.6	13 14.2	-11 2.7
12	359 46.6	8 38.8	20 18.4	322 19.7	21 41.1	43 15.5	-11 1.4
14	29 46.9	8 40.6	50 23.4	352 18.5	21 42.6	73 16.8	-10 60.0
16	59 47.3	8 42.4	80 28.3	22 17.3	21 44.1	103 18.1	-10 58.6
18	89 47.6	8 44.2	110 33.2	52 16.1	21 45.6	133 19.3	-10 57.2
20	119 47.9	8 46.1	140 38.1	82 15.0	21 47.0	163 20.6	-10 55.9
22	149 48.2	8 47.9	170 43.1	112 13.8	21 48.5	193 21.9	-10 54.5
Δ	2	9		-6	7	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 54	19 10	0 45	3 4	4 18	.0	11 14	4.4
55	5 5	18 58	0 39	2 23	3 44	.5	11 46	3.9
50	5 14	18 48	0 34	2 1	3 19	.9	12 8	3.6
45	5 22	18 41	0 30	1 46	3 0	1.1	12 26	3.3
40	5 28	18 35	0 28	1 36	2 45	1.3	12 40	3.1
35	5 33	18 30	0 26	1 28	2 31	1.4	12 52	2.9
30	5 37	18 25	0 24	1 23	2 20	1.6	13 3	2.8
20	5 45	18 17	0 22	1 15	1 60	1.8	13 21	2.5
10	5 51	18 10	0 21	1 11	1 42	2.0	13 36	2.3
0	5 58	18 4	0 21	1 9	1 26	2.2	13 51	2.1
10	6 4	17 58	0 21	1 10	1 9	2.4	14 5	1.9
20	6 10	17 52	0 22	1 13	0 52	2.5	14 20	1.7
30	6 17	17 44	0 24	1 20	0 31	2.8	14 37	1.5
35	6 21	17 40	0 25	1 24	0 19	2.9	14 47	1.4
40	6 26	17 36	0 27	1 30	0 5	3.1	14 59	1.2
45	6 31	17 30	0 30	1 37	...	.0	15 12	1.0
50	6 37	17 24	0 33	1 47	...	.0	15 28	.8
55	6 45	17 16	0 37	2 1	...	.0	15 48	.5
60	6 55	17 6	0 42	2 19	...	.0	16 15	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	'	'	'	'
0	249 28.5	91 -21	38.9	112	300 56.2	-22 18.6	58 44.8	16 37.5
2	278 24.7	91 -21	16.5	114	331 1.2	-22 18.6	88 49.8	16 37.5
4	307 20.9	92 -20	53.7	117	1 6.3	-22 18.6	118 54.8	16 37.6
6	336 17.4	93 -20	30.3	119	31 11.3	-22 18.6	148 59.8	16 37.6
8	5 14.0	94 -20	6.4	122	61 16.3	-22 18.6	179 4.8	16 37.6
10	34 10.7	95 -19	42.0	124	91 21.4	-22 18.6	209 9.8	16 37.6
12	63 7.7	95 -19	17.1	127	121 26.4	-22 18.6	239 14.8	16 37.6
14	92 4.7	96 -18	51.7	129	151 31.4	-22 18.6	269 19.8	16 37.6
16	121 2.0	97 -18	25.9	132	181 36.5	-22 18.6	299 24.8	16 37.7
18	149 59.4	98 -17	59.5	134	211 41.5	-22 18.6	329 29.8	16 37.7
20	178 56.9	99 -17	32.8	136	241 46.5	-22 18.5	359 34.8	16 37.7
22	207 54.6	99 -17	5.5	138	271 51.6	-22 18.5	29 39.7	16 37.7
Δ					25	0	25	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 1 1.2	.6	16.0	T _m	7 38	2.2	58.0 15.8
12	- 0 53.4	T _{m☉}	12 h .9 min	Starost	23.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 31	.1	303	-3.9	♄	3 56	.0	101	-2.2
♂	9 7	.1	23	1.1	♅	20 2	.0	219	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 48.5	8 49.7	200 48.0	142 12.6	21 50.0	223 23.2	-10 53.1	
2	209 48.9	8 51.5	230 52.9	172 11.4	21 51.4	253 24.5	-10 51.7	
4	239 49.2	8 53.4	260 57.9	202 10.3	21 52.9	283 25.7	-10 50.4	
6	269 49.5	8 55.2	291 2.8	232 9.1	21 54.4	313 27.0	-10 49.0	
8	299 49.8	8 57.0	321 7.7	262 7.9	21 55.8	343 28.3	-10 47.6	
10	329 50.1	8 58.8	351 12.6	292 6.7	21 57.3	373 29.6	-10 46.2	
12	359 50.5	9 .6	21 17.6	322 5.5	21 58.7	403 30.9	-10 44.8	
14	29 50.8	9 2.4	51 22.5	352 4.3	22 .2	433 32.2	-10 43.5	
16	59 51.1	9 4.3	81 27.4	22 3.1	22 1.6	463 33.4	-10 42.1	
18	89 51.4	9 6.1	111 32.4	52 2.0	22 3.0	493 34.7	-10 40.7	
20	119 51.7	9 7.9	141 37.3	82 .8	22 4.5	523 36.0	-10 39.3	
22	149 52.0	9 9.7	171 42.2	111 59.6	22 5.9	553 37.3	-10 37.9	
Δ	2	9		-6	7	6	7	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 51	19 12	0 46	3 8	4 19	.0	12 60	4.4
55	5 3	18 60	0 39	2 24	3 57	.4	13 19	3.9
50	5 12	18 50	0 34	2 2	3 40	.7	13 34	3.6
45	5 20	18 42	0 31	1 47	3 27	.9	13 45	3.3
40	5 26	18 36	0 28	1 36	3 15	1.1	13 55	3.1
35	5 31	18 31	0 26	1 29	3 6	1.3	14 3	3.0
30	5 36	18 26	0 24	1 23	2 57	1.4	14 10	2.8
20	5 44	18 18	0 22	1 15	2 43	1.7	14 22	2.5
10	5 51	18 10	0 21	1 11	2 30	1.9	14 32	2.3
0	5 57	18 4	0 21	1 10	2 18	2.1	14 42	2.1
10	6 4	17 58	0 21	1 10	2 6	2.3	14 52	1.9
20	6 10	17 51	0 22	1 14	1 53	2.5	15 2	1.7
30	6 18	17 43	0 24	1 20	1 38	2.8	15 13	1.4
35	6 22	17 39	0 26	1 24	1 29	2.9	15 20	1.3
40	6 27	17 34	0 27	1 30	1 19	3.1	15 27	1.1
45	6 32	17 29	0 30	1 38	1 8	3.3	15 36	.9
50	6 39	17 22	0 33	1 47	0 53	3.6	15 46	.7
55	6 47	17 14	0 37	2 1	0 35	3.9	15 59	.4
60	6 57	17 3	0 42	2 19	0 11	4.4	16 16	.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	236 52.5	100 -16	37.8	141	301 56.6	-22 18.5	59 44.7	16 37.7
2	265 50.5	101 -16	9.7	143	332 1.7	-22 18.5	89 49.7	16 37.7
4	294 48.6	101 -15	41.2	145	2 6.7	-22 18.5	119 54.7	16 37.8
6	323 46.9	102 -15	12.2	147	32 11.8	-22 18.5	149 59.7	16 37.8
8	352 45.2	103 -14	42.9	149	62 16.8	-22 18.5	180 4.7	16 37.8
10	21 43.8	103 -14	13.1	151	92 21.9	-22 18.5	210 9.7	16 37.8
12	50 42.4	104 -13	43.0	153	122 26.9	-22 18.5	240 14.7	16 37.8
14	79 41.1	104 -13	12.4	154	152 32.0	-22 18.4	270 19.7	16 37.8
16	108 39.9	105 -12	41.6	156	182 37.0	-22 18.4	300 24.6	16 37.8
18	137 38.9	105 -12	10.3	158	212 42.1	-22 18.4	330 29.6	16 37.9
20	166 37.9	106 -11	38.8	159	242 47.2	-22 18.4	0 34.6	16 37.9
22	195 37.0	106 -11	6.9	161	272 52.2	-22 18.4	30 39.6	16 37.9
Δ					25	0	25	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	- 0 45.7	.6	16.0	T _m	8 30	2.1	58.9	16.1
12	- 0 38.0	T _{m☉}	12 h .6 min	Starost	24.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 32	.1	301	-3.9	♄	3 52	.0	101	-2.2
	9 6	.1	23	1.1	♅	19 58	.0	219	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 52.3	9 11.5	201 47.1	141 58.4	22 7.3	223 38.6	-10 36.6	
2	209 52.7	9 13.3	231 52.1	171 57.2	22 8.7	253 39.9	-10 35.2	
4	239 53.0	9 15.1	261 57.0	201 56.0	22 10.1	283 41.2	-10 33.8	
6	269 53.3	9 16.9	292 1.9	231 54.8	22 11.5	313 42.5	-10 32.4	
8	299 53.6	9 18.7	322 6.9	261 53.6	22 13.0	343 43.7	-10 31.0	
10	329 53.9	9 20.5	352 11.8	291 52.4	22 14.4	373 45.0	-10 29.6	
12	359 54.2	9 22.3	22 16.7	321 51.2	22 15.8	403 46.3	-10 28.2	
14	29 54.5	9 24.1	52 21.6	351 50.0	22 17.2	433 47.6	-10 26.9	
16	59 54.8	9 25.9	82 26.6	21 48.8	22 18.5	463 48.9	-10 25.5	
18	89 55.1	9 27.7	112 31.5	51 47.6	22 19.9	493 50.2	-10 24.1	
20	119 55.5	9 29.5	142 36.4	81 46.4	22 21.3	523 51.5	-10 22.7	
22	149 55.8	9 31.3	172 41.3	111 45.2	22 22.7	553 52.8	-10 21.3	
Δ	2	9		-6	7	6	7	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 48	19 15	0 46	3 12	4 19	.0	14 45	4.4
55	5 0	19 2	0 39	2 26	4 7	.3	14 53	4.0
50	5 10	18 52	0 34	2 2	3 57	.6	15 0	3.6
45	5 18	18 44	0 31	1 47	3 49	.9	15 5	3.4
40	5 24	18 37	0 28	1 37	3 43	1.1	15 10	3.2
35	5 30	18 31	0 26	1 29	3 37	1.2	15 14	3.0
30	5 35	18 26	0 25	1 23	3 32	1.4	15 17	2.8
20	5 43	18 18	0 22	1 15	3 23	1.6	15 23	2.6
10	5 50	18 10	0 21	1 11	3 16	1.9	15 28	2.3
0	5 57	18 4	0 21	1 10	3 9	2.1	15 32	2.1
10	6 4	17 57	0 21	1 10	3 1	2.3	15 37	1.9
20	6 10	17 50	0 22	1 14	2 54	2.5	15 42	1.6
30	6 18	17 42	0 24	1 20	2 45	2.8	15 47	1.4
35	6 23	17 38	0 26	1 24	2 40	3.0	15 50	1.2
40	6 28	17 33	0 27	1 30	2 34	3.2	15 54	1.0
45	6 33	17 27	0 30	1 38	2 27	3.4	15 57	.9
50	6 40	17 20	0 33	1 47	2 19	3.6	16 2	.6
55	6 48	17 11	0 37	2 1	2 9	3.9	16 8	.3
60	6 59	17 0	0 42	2 19	1 56	4.4	16 15	.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	224 36.2	106 -10	34.6	163	302 57.3	-22 18.4	60 44.6	16 37.9
2	253 35.4	107 -10	2.1	164	333 2.3	-22 18.4	90 49.6	16 37.9
4	282 34.7	107 -9	29.3	165	3 7.4	-22 18.4	120 54.5	16 37.9
6	311 34.1	107 -8	56.2	167	33 12.5	-22 18.4	150 59.5	16 37.9
8	340 33.5	107 -8	22.8	168	63 17.5	-22 18.4	181 4.5	16 37.9
10	9 32.9	107 -7	49.2	169	93 22.6	-22 18.3	211 9.5	16 38.0
12	38 32.4	107 -7	15.3	171	123 27.7	-22 18.3	241 14.5	16 38.0
14	67 31.9	107 -6	41.2	172	153 32.7	-22 18.3	271 19.4	16 38.0
16	96 31.3	107 -6	6.9	173	183 37.8	-22 18.3	301 24.4	16 38.0
18	125 30.8	107 -5	32.4	174	213 42.9	-22 18.3	331 29.4	16 38.0
20	154 30.3	107 -4	57.6	175	243 48.0	-22 18.3	1 34.4	16 38.0
22	183 29.7	107 -4	22.7	175	273 53.0	-22 18.3	31 39.3	16 38.0
Δ					25	0	25	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	- 0 30.4	.6	16.0	T _m	9 20	2.1	59.8	16.3
12	- 0 23.0	T _{m☉}	12 h .4 min	Starost	25.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 33	.1	300	-3.9	♄	3 48	.0	101	-2.2
	9 5	.1	22	1.1	♅	19 54	.0	219	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 56.1	9 33.1	202 46.3	141 44.0	22 24.1	223 54.1	-10 19.9	
2	209 56.4	9 34.9	232 51.2	171 42.7	22 25.4	253 55.4	-10 18.5	
4	239 56.7	9 36.7	262 56.1	201 41.5	22 26.8	283 56.7	-10 17.1	
6	269 57.0	9 38.5	293 1.1	231 40.3	22 28.2	313 58.0	-10 15.7	
8	299 57.3	9 40.3	323 6.0	261 39.1	22 29.5	343 59.3	-10 14.3	
10	329 57.6	9 42.1	353 10.9	291 37.9	22 30.9	14 .6	-10 12.9	
12	359 57.9	9 43.9	23 15.8	321 36.7	22 32.2	44 1.9	-10 11.5	
14	29 58.2	9 45.7	53 20.8	351 35.5	22 33.6	74 3.2	-10 10.1	
16	59 58.5	9 47.5	83 25.7	21 34.3	22 34.9	104 4.5	-10 8.8	
18	89 58.8	9 49.3	113 30.6	51 33.0	22 36.3	134 5.8	-10 7.4	
20	119 59.1	9 51.0	143 35.6	81 31.8	22 37.6	164 7.1	-10 6.0	
22	149 59.4	9 52.8	173 40.5	111 30.6	22 38.9	194 8.4	-10 4.6	
Δ	2	9		-6	7	6	7	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 45	19 17	0 46	3 16	4 18	.0	16 29	4.5
55	4 58	19 4	0 39	2 27	4 15	.3	16 28	4.1
50	5 8	18 53	0 34	2 3	4 12	.6	16 27	3.7
45	5 16	18 45	0 31	1 48	4 10	.9	16 27	3.5
40	5 23	18 38	0 28	1 37	4 8	1.1	16 26	3.2
35	5 29	18 32	0 26	1 29	4 7	1.2	16 26	3.1
30	5 34	18 27	0 25	1 23	4 5	1.4	16 25	2.9
20	5 42	18 18	0 22	1 15	4 3	1.7	16 24	2.6
10	5 50	18 11	0 21	1 11	4 1	1.9	16 23	2.4
0	5 57	18 3	0 21	1 10	3 59	2.1	16 23	2.1
10	6 4	17 57	0 21	1 10	3 57	2.3	16 22	1.9
20	6 11	17 49	0 22	1 14	3 55	2.6	16 21	1.7
30	6 19	17 41	0 24	1 20	3 53	2.9	16 20	1.4
35	6 23	17 36	0 26	1 24	3 51	3.0	16 19	1.3
40	6 29	17 31	0 27	1 30	3 50	3.2	16 19	1.1
45	6 35	17 25	0 30	1 38	3 48	3.4	16 18	.9
50	6 42	17 18	0 33	1 48	3 46	3.7	16 17	.6
55	6 50	17 9	0 37	2 1	3 44	4.0	16 16	.3
60	7 2	16 57	0 43	2 19	3 41	4.4	16 14	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	212 29.1	107 - 3	47.7	176	303 58.1	-22 18.3	61 44.3	16 38.0
2	241 28.5	107 - 3	12.4	177	334 3.2	-22 18.2	91 49.3	16 38.0
4	270 27.8	106 - 2	37.1	177	4 8.3	-22 18.2	121 54.3	16 38.1
6	299 27.1	106 - 2	1.6	178	34 13.4	-22 18.2	151 59.2	16 38.1
8	328 26.3	106 - 1	26.0	178	64 18.5	-22 18.2	182 4.2	16 38.1
10	357 25.4	105 - 0	50.3	179	94 23.5	-22 18.2	212 9.2	16 38.1
12	26 24.4	105 - 0	14.6	179	124 28.6	-22 18.2	242 14.1	16 38.1
14	55 23.4	104 0	21.2	179	154 33.7	-22 18.2	272 19.1	16 38.1
16	84 22.2	103 0	57.1	179	184 38.8	-22 18.2	302 24.1	16 38.1
18	113 20.8	103 1	33.0	180	214 43.9	-22 18.1	332 29.1	16 38.1
20	142 19.4	102 2	8.9	180	244 49.0	-22 18.1	2 34.0	16 38.1
22	171 17.8	101 2	44.8	179	274 54.1	-22 18.1	32 39.0	16 38.1
Δ					25	0	25	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	'	h min	min	'	'	
00	- 0 15.5	.6	16.0	T _m	10 11	2.1	60.6	16.5
12	- 0 8.3	T _{m☉}	12 h .1 min	Starost	26.9 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☉	h min	'	°		☉	h min	'	°	
♃	14 34	.1	299	-3.9	♃	3 43	.0	101	-2.2
♄	9 4	.1	21	1.1	♄	19 50	.0	219	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 59.7	9 54.6	203 45.4	141 29.4	22 40.2	224 9.7	-10 3.2	
2	210 .0	9 56.4	233 50.3	171 28.1	22 41.6	254 11.0	-10 1.8	
4	240 .3	9 58.2	263 55.3	201 26.9	22 42.9	284 12.3	-10 .4	
6	270 .6	9 59.9	294 .2	231 25.7	22 44.2	314 13.6	-9 59.0	
8	300 .9	10 1.7	324 5.1	261 24.5	22 45.5	344 14.9	-9 57.6	
10	330 1.2	10 3.5	354 10.1	291 23.2	22 46.8	14 16.2	-9 56.2	
12	0 1.5	10 5.3	24 15.0	321 22.0	22 48.1	44 17.5	-9 54.8	
14	30 1.8	10 7.1	54 19.9	351 20.8	22 49.4	74 18.8	-9 53.4	
16	60 2.1	10 8.8	84 24.8	21 19.6	22 50.7	104 20.1	-9 52.0	
18	90 2.4	10 10.6	114 29.8	51 18.3	22 52.0	134 21.4	-9 50.5	
20	120 2.7	10 12.4	144 34.7	81 17.1	22 53.3	164 22.7	-9 49.1	
22	150 3.0	10 14.1	174 39.6	111 15.9	22 54.6	194 24.0	-9 47.7	
Δ	1	9		-6	7	7	7	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 42	19 20	0 47	3 21	4 18	.0	18 17	4.7
55	4 56	19 5	0 39	2 29	4 23	.4	18 6	4.2
50	5 6	18 55	0 34	2 4	4 27	.7	17 57	3.8
45	5 15	18 46	0 31	1 48	4 31	.9	17 50	3.6
40	5 21	18 39	0 28	1 37	4 34	1.1	17 44	3.3
35	5 27	18 33	0 26	1 29	4 36	1.3	17 39	3.2
30	5 33	18 28	0 25	1 23	4 38	1.5	17 35	3.0
20	5 42	18 18	0 23	1 16	4 42	1.7	17 27	2.7
10	5 49	18 11	0 21	1 11	4 46	2.0	17 20	2.5
0	5 57	18 3	0 21	1 10	4 50	2.2	17 14	2.3
10	6 4	17 56	0 21	1 11	4 53	2.4	17 8	2.0
20	6 11	17 48	0 22	1 14	4 57	2.7	17 1	1.8
30	6 19	17 40	0 24	1 20	5 1	3.0	16 54	1.5
35	6 24	17 35	0 26	1 24	5 4	3.1	16 50	1.4
40	6 30	17 30	0 27	1 30	5 7	3.3	16 45	1.2
45	6 36	17 23	0 30	1 38	5 10	3.5	16 39	1.0
50	6 43	17 16	0 33	1 48	5 15	3.8	16 32	.7
55	6 52	17 7	0 37	2 1	5 20	4.1	16 24	.4
60	7 4	16 55	0 43	2 19	5 27	4.6	16 14	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	200 16.1	100	3 20.7	179	304 59.2	-22 18.1	62 43.9	16 38.1
2	229 14.2	100	3 56.6	179	335 4.3	-22 18.1	92 48.9	16 38.1
4	258 12.1	99	4 32.4	179	5 9.4	-22 18.1	122 53.9	16 38.1
6	287 9.8	98	5 8.1	178	35 14.5	-22 18.1	152 58.8	16 38.2
8	316 7.4	97	5 43.8	178	65 19.6	-22 18.0	183 3.8	16 38.2
10	345 4.8	96	6 19.3	177	95 24.7	-22 18.0	213 8.8	16 38.2
12	14 1.9	95	6 54.8	177	125 29.8	-22 18.0	243 13.7	16 38.2
14	42 58.8	93	7 30.1	176	155 34.9	-22 18.0	273 18.7	16 38.2
16	71 55.5	92	8 5.2	175	185 40.0	-22 18.0	303 23.6	16 38.2
18	100 52.0	91	8 40.2	174	215 45.1	-22 18.0	333 28.6	16 38.2
20	129 48.2	90	9 15.0	173	245 50.2	-22 18.0	3 33.6	16 38.2
22	158 44.1	88	9 49.6	172	275 55.3	-22 17.9	33 38.5	16 38.2
Δ					26	0	25	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	'	h min	min	'	'	
00	- 0 1.0	.6	16.0	T _m	11 2	2.2	61.1	16.7
12	0 6.1	T _{m☉}	11 h 59.9 min	Starost	27.9 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☉	h min	'	°		☉	h min	'	°	
♃	14 35	.1	298	-3.9	♃	3 39	.0	101	-2.2
♄	9 3	.1	20	1.1	♄	19 46	.0	219	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	3.2	10	15.9	204	44.6	141	14.6	22	55.9	224	25.3	-9	46.3
2	210	3.5	10	17.7	234	49.5	171	13.4	22	57.1	254	26.6	-9	44.9
4	240	3.8	10	19.5	264	54.4	201	12.1	22	58.4	284	27.9	-9	43.5
6	270	4.1	10	21.2	294	59.3	231	10.9	22	59.7	314	29.2	-9	42.1
8	300	4.4	10	23.0	325	4.3	261	9.7	23	.9	344	30.5	-9	40.7
10	330	4.7	10	24.7	355	9.2	291	8.4	23	2.2	14	31.9	-9	39.3
12	0	5.0	10	26.5	25	14.1	321	7.2	23	3.4	44	33.2	-9	37.9
14	30	5.3	10	28.3	55	19.1	351	5.9	23	4.7	74	34.5	-9	36.5
16	60	5.5	10	30.0	85	24.0	21	4.7	23	5.9	104	35.8	-9	35.1
18	90	5.8	10	31.8	115	28.9	51	3.4	23	7.2	134	37.1	-9	33.7
20	120	6.1	10	33.5	145	33.8	81	2.2	23	8.4	164	38.4	-9	32.3
22	150	6.4	10	35.3	175	38.8	111	1.0	23	9.6	194	39.7	-9	30.8
Δ		1		9				-6		6		7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 39	19 22	0 47	3 27	4 17	.0	20 10	4.9
55	4 53	19 7	0 40	2 30	4 32	.5	19 46	4.3
50	5 4	18 56	0 34	2 5	4 44	.8	19 29	3.9
45	5 13	18 47	0 31	1 49	4 53	1.1	19 16	3.6
40	5 20	18 40	0 28	1 38	5 1	1.3	19 4	3.4
35	5 26	18 34	0 26	1 30	5 8	1.5	18 55	3.2
30	5 32	18 28	0 25	1 24	5 14	1.6	18 47	3.1
20	5 41	18 19	0 23	1 16	5 24	1.9	18 32	2.8
10	5 49	18 11	0 21	1 11	5 34	2.1	18 20	2.6
0	5 56	18 3	0 21	1 10	5 42	2.3	18 8	2.4
10	6 4	17 56	0 21	1 11	5 51	2.5	17 57	2.2
20	6 11	17 48	0 22	1 14	6 1	2.8	17 45	2.0
30	6 20	17 39	0 24	1 20	6 12	3.0	17 31	1.7
35	6 25	17 34	0 26	1 24	6 19	3.2	17 23	1.6
40	6 31	17 28	0 27	1 30	6 26	3.4	17 14	1.4
45	6 37	17 22	0 30	1 38	6 35	3.6	17 3	1.2
50	6 45	17 14	0 33	1 48	6 46	3.9	16 50	.9
55	6 54	17 4	0 37	2 1	6 59	4.3	16 34	.6
60	7 7	16 52	0 43	2 19	7 17	4.8	16 13	.0

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	187	39.8	87	10	24.0	171	306	.4	-22	17.9	63	43.5	16	38.2
2	216	35.2	86	10	58.1	169	336	5.5	-22	17.9	93	48.4	16	38.2
4	245	30.3	84	11	32.0	168	6	10.6	-22	17.9	123	53.4	16	38.2
6	274	25.2	83	12	5.6	167	36	15.8	-22	17.9	153	58.3	16	38.2
8	303	19.7	81	12	38.9	165	66	20.9	-22	17.9	184	3.3	16	38.2
10	332	14.0	80	13	11.9	163	96	26.0	-22	17.9	214	8.2	16	38.2
12	1	7.9	78	13	44.5	162	126	31.1	-22	17.8	244	13.2	16	38.2
14	30	1.5	77	14	16.8	160	156	36.2	-22	17.8	274	18.1	16	38.2
16	58	54.9	75	14	48.8	158	186	41.4	-22	17.8	304	23.1	16	38.2
18	87	47.8	73	15	20.3	156	216	46.5	-22	17.8	334	28.0	16	38.2
20	116	40.5	72	15	51.5	154	246	51.6	-22	17.8	4	33.0	16	38.2
22	145	32.8	70	16	22.2	152	276	56.7	-22	17.8	34	37.9	16	38.2
Δ								26		0		25		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	0 13.1	.6	16.0	T _m	11 55	2.4	61.4	16.7
12	0 20.0	T _{m☉}	11 h 59.7 min	Starost	28.9 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 36	.1	296	-4.0	♄	3 35	.0	101	-2.2
	9 2	.1	20	1.1	♅	19 42	.0	219	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	6.7	10	37.1	205	43.7	140	59.7	23	10.9	224	41.0	-9	29.4
2	210	7.0	10	38.8	235	48.6	170	58.5	23	12.1	254	42.3	-9	28.0
4	240	7.3	10	40.6	265	53.5	200	57.2	23	13.3	284	43.7	-9	26.6
6	270	7.5	10	42.3	295	58.5	230	56.0	23	14.5	314	45.0	-9	25.2
8	300	7.8	10	44.1	326	3.4	260	54.7	23	15.7	344	46.3	-9	23.8
10	330	8.1	10	45.8	356	8.3	290	53.5	23	16.9	14	47.6	-9	22.4
12	0	8.4	10	47.6	26	13.3	320	52.2	23	18.1	44	48.9	-9	20.9
14	30	8.7	10	49.3	56	18.2	350	50.9	23	19.3	74	50.2	-9	19.5
16	60	8.9	10	51.1	86	23.1	20	49.7	23	20.5	104	51.6	-9	18.1
18	90	9.2	10	52.8	116	28.0	50	48.4	23	21.7	134	52.9	-9	16.7
20	120	9.5	10	54.5	146	33.0	80	47.2	23	22.9	164	54.2	-9	15.3
22	150	9.8	10	56.3	176	37.9	110	45.9	23	24.1	194	55.5	-9	13.9
Δ		1		9				-6		6		7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 36	19 25	0 47	3 34	4 18	.1	22 7	5.0
55	4 51	19 9	0 40	2 32	4 44	.7	21 29	4.2
50	5 2	18 58	0 35	2 6	5 4	1.1	21 3	3.8
45	5 11	18 49	0 31	1 49	5 19	1.4	20 43	3.5
40	5 19	18 41	0 28	1 38	5 32	1.6	20 26	3.4
35	5 25	18 35	0 26	1 30	5 43	1.7	20 12	3.2
30	5 31	18 29	0 25	1 24	5 53	1.9	20 0	3.1
20	5 40	18 19	0 23	1 16	6 9	2.1	19 40	2.9
10	5 48	18 11	0 21	1 12	6 24	2.3	19 22	2.7
0	5 56	18 3	0 21	1 10	6 38	2.5	19 6	2.5
10	6 4	17 55	0 21	1 11	6 52	2.7	18 50	2.4
20	6 12	17 47	0 22	1 14	7 8	2.9	18 32	2.2
30	6 21	17 38	0 24	1 20	7 25	3.1	18 12	2.0
35	6 26	17 33	0 26	1 24	7 36	3.2	18 1	1.9
40	6 32	17 27	0 27	1 30	7 48	3.4	17 47	1.7
45	6 38	17 20	0 30	1 38	8 2	3.6	17 32	1.5
50	6 46	17 12	0 33	1 48	8 19	3.9	17 13	1.3
55	6 56	17 2	0 37	2 1	8 42	4.3	16 48	.9
60	7 9	16 49	0 43	2 19	9 13	5.0	16 14	.2

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	174	24.8	68	16	52.5	149	307	1.9	-22	17.8	64	42.9	16	38.2
2	203	16.5	67	17	22.3	147	337	7.0	-22	17.7	94	47.8	16	38.2
4	232	7.8	65	17	51.7	144	7	12.1	-22	17.7	124	52.8	16	38.2
6	260	58.8	63	18	20.6	142	37	17.2	-22	17.7	154	57.7	16	38.2
8	289	49.5	62	18	49.0	139	67	22.4	-22	17.7	185	2.7	16	38.2
10	318	39.8	60	19	16.8	137	97	27.5	-22	17.7	215	7.6	16	38.2
12	347	29.7	58	19	44.1	134	127	32.7	-22	17.7	245	12.6	16	38.2
14	16	19.4	57	20	10.9	131	157	37.8	-22	17.6	275	17.5	16	38.2
16	45	8.7	55	20	37.1	128	187	42.9	-22	17.6	305	22.4	16	38.2
18	73	57.7	53	21	2.7	125	217	48.1	-22	17.6	335	27.4	16	38.2
20	102	46.3	52	21	27.7	122	247	53.2	-22	17.6	5	32.3	16	38.2
22	131	34.7	50	21	52.1	119	277	58.4	-22	17.6	35	37.3	16	38.2
Δ								26		0		25		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	0 26.9	.6	16.0	T _m	12 52	2.5	61.3	16.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS										
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂									
h	°	'	°	'	°	'	°	'								
0	180	10.0	10	58.0	206	42.8	140	44.7	23	25.3	224	56.8	-9	12.4		
2	210	10.3	10	59.8	236	47.8	170	43.4	23	26.4	254	58.2	-9	11.0		
4	240	10.6	11	1.5	266	52.7	200	42.1	23	27.6	284	59.5	-9	9.6		
6	270	10.9	11	3.2	296	57.6	230	40.9	23	28.8	315	.8	-9	8.2		
8	300	11.1	11	5.0	327	2.5	260	39.6	23	29.9	345	2.1	-9	6.8		
10	330	11.4	11	6.7	357	7.5	290	38.3	23	31.1	15	3.4	-9	5.3		
12	0	11.7	11	8.4	27	12.4	320	37.1	23	32.2	45	4.8	-9	3.9		
14	30	11.9	11	10.2	57	17.3	350	35.8	23	33.4	75	6.1	-9	2.5		
16	60	12.2	11	11.9	87	22.3	20	34.5	23	34.5	105	7.4	-9	1.1		
18	90	12.5	11	13.6	117	27.2	50	33.3	23	35.7	135	8.7	-8	59.6		
20	120	12.7	11	15.4	147	32.1	80	32.0	23	36.8	165	10.1	-8	58.2		
22	150	13.0	11	17.1	177	37.0	110	30.7	23	37.9	195	11.4	-8	56.8		
Δ		1		9				-6		6				7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 33	19 27	0 48	3 42	4 21	.4	. . . .	.0
55	4 48	19 11	0 40	2 34	5 2	1.1	23 10	3.6
50	5 0	18 59	0 35	2 7	5 30	1.5	22 34	3.4
45	5 9	18 50	0 31	1 50	5 52	1.7	22 8	3.2
40	5 17	18 42	0 28	1 38	6 9	1.9	21 47	3.1
35	5 24	18 35	0 26	1 30	6 24	2.0	21 29	3.0
30	5 29	18 29	0 25	1 24	6 37	2.1	21 14	2.9
20	5 39	18 19	0 23	1 16	6 60	2.3	20 49	2.8
10	5 48	18 11	0 21	1 12	7 19	2.5	20 27	2.7
0	5 56	18 3	0 21	1 10	7 38	2.6	20 7	2.6
10	6 4	17 55	0 21	1 11	7 56	2.7	19 47	2.5
20	6 12	17 46	0 22	1 14	8 16	2.9	19 25	2.4
30	6 21	17 37	0 24	1 20	8 40	3.0	19 0	2.3
35	6 27	17 31	0 26	1 25	8 53	3.1	18 46	2.2
40	6 33	17 25	0 28	1 30	9 9	3.2	18 29	2.1
45	6 39	17 18	0 30	1 38	9 28	3.4	18 9	2.0
50	6 48	17 10	0 33	1 48	9 52	3.6	17 43	1.8
55	6 58	16 60	0 37	2 1	10 25	4.0	17 10	1.5
60	7 11	16 46	0 43	2 20	11 14	4.9	16 19	1.6
S								

UT	MESEC				JUPITER		SATURN									
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄								
h	°	'	°	'	°	'	°	'								
0	160	22.7	49	22	15.8	116	308	3.5	-22	17.6	65	42.2	16	38.2		
2	189	10.4	47	22	38.9	112	338	8.6	-22	17.5	95	47.1	16	38.2		
4	217	57.8	46	23	1.4	109	8	13.8	-22	17.5	125	52.1	16	38.2		
6	246	45.0	44	23	23.2	106	38	18.9	-22	17.5	155	57.0	16	38.2		
8	275	31.8	43	23	44.3	102	68	24.1	-22	17.5	186	1.9	16	38.2		
10	304	18.4	42	24	4.7	98	98	29.2	-22	17.5	216	6.9	16	38.2		
12	333	4.7	40	24	24.3	95	128	34.4	-22	17.5	246	11.8	16	38.2		
14	1	50.8	39	24	43.3	91	158	39.5	-22	17.4	276	16.7	16	38.2		
16	30	36.6	38	25	1.6	88	188	44.7	-22	17.4	306	21.7	16	38.2		
18	59	22.3	37	25	19.1	84	218	49.9	-22	17.4	336	26.6	16	38.2		
20	88	7.7	36	25	35.8	80	248	55.0	-22	17.4	6	31.5	16	38.2		
22	116	52.9	35	25	51.8	76	279	.2	-22	17.4	36	36.5	16	38.2		
Δ								26		0				25		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	0 40.3	.5	16.0	T _m	13 52	2.6	60.9	16.6	
12	0 46.8	T _{m☉}	11 h 59.2 min	Starost	1.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 38	.1	294	-4.0	♄	3 27	.0	101	-2.2
	8 60	.1	18	1.0	♅	19 34	.0	219	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS										
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂									
h	°	'	°	'	°	'	°	'								
0	180	13.3	11	18.8	207	42.0	140	29.5	23	39.1	225	12.7	-8	55.4		
2	210	13.5	11	20.5	237	46.9	170	28.2	23	40.2	255	14.0	-8	53.9		
4	240	13.8	11	22.3	267	51.8	200	26.9	23	41.3	285	15.4	-8	52.5		
6	270	14.1	11	24.0	297	56.8	230	25.7	23	42.4	315	16.7	-8	51.1		
8	300	14.3	11	25.7	328	1.7	260	24.4	23	43.5	345	18.0	-8	49.7		
10	330	14.6	11	27.4	358	6.6	290	23.1	23	44.6	15	19.4	-8	48.2		
12	0	14.9	11	29.1	28	11.5	320	21.8	23	45.7	45	20.7	-8	46.8		
14	30	15.1	11	30.8	58	16.5	350	20.6	23	46.8	75	22.0	-8	45.4		
16	60	15.4	11	32.6	88	21.4	20	19.3	23	47.9	105	23.3	-8	44.0		
18	90	15.7	11	34.3	118	26.3	50	18.0	23	49.0	135	24.7	-8	42.5		
20	120	15.9	11	36.0	148	31.3	80	16.7	23	50.1	165	26.0	-8	41.1		
22	150	16.2	11	37.7	178	36.2	110	15.5	23	51.2	195	27.3	-8	39.7		
Δ		1		9				-6		5				7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 30	19 30	0 48	3 54	4 31	1.1	0 9	4.3
55	4 46	19 13	0 40	2 36	5 29	1.9	. . . .	.0
50	4 58	19 1	0 35	2 7	6 6	2.1	23 54	2.6
45	5 8	18 51	0 31	1 50	6 33	2.2	23 24	2.6
40	5 16	18 43	0 28	1 39	6 55	2.3	23 1	2.6
35	5 22	18 36	0 26	1 31	7 13	2.4	22 41	2.6
30	5 28	18 30	0 25	1 24	7 29	2.4	22 25	2.6
20	5 39	18 20	0 23	1 16	7 55	2.5	21 57	2.6
10	5 47	18 11	0 21	1 12	8 18	2.6	21 32	2.6
0	5 56	18 2	0 21	1 10	8 40	2.6	21 10	2.6
10	6 4	17 54	0 21	1 11	9 2	2.7	20 48	2.6
20	6 12	17 45	0 22	1 14	9 25	2.7	20 23	2.6
30	6 22	17 36	0 24	1 20	9 52	2.8	19 55	2.5
35	6 27	17 30	0 26	1 25	10 8	2.8	19 39	2.5
40	6 34	17 24	0 28	1 31	10 27	2.9	19 19	2.5
45	6 41	17 17	0 30	1 38	10 50	2.9	18 56	2.5
50	6 49	17 8	0 33	1 48	11 19	3.0	18 26	2.4
55	6 60	16 57	0 37	2 1	12 0	3.1	17 45	2.3
60	7 14	16 43	0 43	2 20	13 11	3.6	16 33	1.9
S								

UT	MESEC				JUPITER		SATURN									
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄								
h	°	'	°	'	°	'	°	'								
0	145	38.0	35	26	7.1	72	309	5.3	-22	17.4	66	41.4	16	38.2		
2	174	22.9	34	26	21.6	69	339	10.5	-22	17.3	96	46.3	16	38.2		
4	203	7.7	33	26	35.3	65	9	15.7	-22	17.3	126	51.2	16	38.2		
6	231	52.3	33	26	48.2	61	39	20.8	-22	17.3	156	56.2	16	38.2		
8	260	36.9	32	27	.3	57	69	26.0	-22	17.3	187	1.1	16	38.2		
10	289	21.4	32	27	11.6	53	99	31.2	-22	17.3	217	6.0	16	38.2		
12	318	5.8	32	27	22.2	49	129	36.3	-22	17.2	247	11.0	16	38.2		
14	346	50.2	32	27	31.9	45	159	41.5	-22	17.2	277	15.9	16	38.1		
16	15	34.5	32	27	40.9	41	189	46.7	-22	17.2	307	20.8	16	38.1		
18	44	18.9	32	27	49.0	37	219	51.8	-22	17.2	337	25.7	16	38.1		
20	73	3.2	32	27	56.4	33	249	57.0	-22	17.2	7	30.6	16	38.1		
22	101	47.7	32	28	2.9	29	280	2.2	-22	17.1	37	35.6	16	38.1		
Δ								26		0				25		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	0 53.3	.5	15.9	T _m	14 55	2.6	60.2	16.4
12	0 59.6	T _{m☉}	11 h 59					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 16.4	11 39.4	208 41.1	140 14.2	23 52.3	225 28.7	- 8 38.2
2	210 16.7	11 41.1	238 46.0	170 12.9	23 53.3	255 30.0	- 8 36.8
4	240 16.9	11 42.8	268 51.0	200 11.6	23 54.4	285 31.3	- 8 35.4
6	270 17.2	11 44.5	298 55.9	230 10.3	23 55.5	315 32.7	- 8 33.9
8	300 17.5	11 46.2	329 .8	260 9.0	23 56.5	345 34.0	- 8 32.5
10	330 17.7	11 47.9	359 5.8	290 7.8	23 57.6	15 35.3	- 8 31.1
12	0 18.0	11 49.6	29 10.7	320 6.5	23 58.6	45 36.7	- 8 29.6
14	30 18.2	11 51.3	59 15.6	350 5.2	23 59.7	75 38.0	- 8 28.2
16	60 18.5	11 53.0	89 20.5	20 3.9	24 .7	105 39.3	- 8 26.8
18	90 18.7	11 54.7	119 25.5	50 2.6	24 1.8	135 40.7	- 8 25.3
20	120 19.0	11 56.4	149 30.4	80 1.3	24 2.8	165 42.0	- 8 23.9
22	150 19.2	11 58.1	179 35.3	110 .1	24 3.8	195 43.4	- 8 22.5
Δ	1	9		-6	5	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 27	19 32	0 49	4 22	4 58	2.9	1 52	2.5
55	4 44	19 15	0 40	2 38	6 14	2.8	0 37	2.6
50	4 56	19 3	0 35	2 8	6 56	2.7	...	.0
45	5 6	18 52	0 31	1 51	7 27	2.7	...	.0
40	5 14	18 44	0 29	1 39	7 51	2.7	...	.0
35	5 21	18 37	0 26	1 31	8 10	2.6	23 44	2.2
30	5 27	18 31	0 25	1 25	8 27	2.6	23 28	2.2
20	5 38	18 20	0 23	1 16	8 56	2.6	22 59	2.3
10	5 47	18 11	0 22	1 12	9 20	2.6	22 35	2.4
0	5 55	18 2	0 21	1 10	9 43	2.5	22 12	2.5
10	6 4	17 54	0 21	1 11	10 6	2.5	21 50	2.5
20	6 13	17 45	0 22	1 14	10 30	2.5	21 25	2.6
30	6 22	17 35	0 24	1 20	10 59	2.4	20 56	2.7
35	6 28	17 29	0 26	1 25	11 16	2.4	20 39	2.7
40	6 35	17 23	0 28	1 31	11 36	2.4	20 20	2.8
45	6 42	17 15	0 30	1 38	12 0	2.3	19 55	2.9
50	6 51	17 6	0 33	1 48	12 31	2.2	19 24	3.0
55	7 2	16 55	0 37	2 1	13 16	2.1	18 40	3.1
60	7 16	16 40	0 43	2 20	14 38	1.5	17 18	3.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	130 32.2	33 28 8.6	25	310 7.4	-22 17.1	67 40.5	16 38.1	
2	159 16.7	33 28 13.6	21	340 12.5	-22 17.1	97 45.4	16 38.1	
4	188 1.4	34 28 17.7	17	10 17.7	-22 17.1	127 50.3	16 38.1	
6	216 46.2	35 28 21.1	13	40 22.9	-22 17.1	157 55.2	16 38.1	
8	245 31.1	36 28 23.7	9	70 28.1	-22 17.1	188 .2	16 38.1	
10	274 16.3	37 28 25.5	5	100 33.3	-22 17.0	218 5.1	16 38.1	
12	303 1.6	38 28 26.5	1	130 38.4	-22 17.0	248 10.0	16 38.1	
14	331 47.1	39 28 26.7	-3	160 43.6	-22 17.0	278 14.9	16 38.1	
16	0 32.8	40 28 26.2	-6	190 48.8	-22 17.0	308 19.8	16 38.0	
18	29 18.8	41 28 24.9	-10	220 54.0	-22 17.0	338 24.7	16 38.0	
20	58 5.1	43 28 22.9	-14	250 59.2	-22 16.9	8 29.6	16 38.0	
22	86 51.6	44 28 20.1	-18	281 4.4	-22 16.9	38 34.6	16 38.0	
Δ				26	0	25	0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s	'	h min	min	'	'	
00	1 5.9	.5	15.9	T _m	15 58	2.5	59.3	16.2
12	1 12.0	T _{m☉}	11 h 58.8 min	Starost	3.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 40	.1	292	-4.0	♄	3 19	.0	101	-2.3
♂	8 58	.1	17	1.0	♅	19 26	.0	219	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 19.5	11 59.8	209 40.2	139 58.8	24 4.8	225 44.7	- 8 21.0
2	210 19.7	12 1.5	239 45.2	169 57.5	24 5.9	255 46.0	- 8 19.6
4	240 20.0	12 3.2	269 50.1	199 56.2	24 6.9	285 47.4	- 8 18.2
6	270 20.2	12 4.9	299 55.0	229 54.9	24 7.9	315 48.7	- 8 16.7
8	300 20.5	12 6.6	330 .0	259 53.6	24 8.9	345 50.1	- 8 15.3
10	330 20.7	12 8.2	0 4.9	289 52.3	24 9.9	15 51.4	- 8 13.8
12	0 21.0	12 9.9	30 9.8	319 51.0	24 10.9	45 52.7	- 8 12.4
14	30 21.2	12 11.6	60 14.7	349 49.7	24 11.9	75 54.1	- 8 11.0
16	60 21.4	12 13.3	90 19.7	19 48.4	24 12.9	105 55.4	- 8 9.5
18	90 21.7	12 15.0	120 24.6	49 47.1	24 13.9	135 56.8	- 8 8.1
20	120 21.9	12 16.7	150 29.5	79 45.9	24 14.8	165 58.1	- 8 6.6
22	150 22.2	12 18.3	180 34.5	109 44.6	24 15.8	195 59.4	- 8 5.2
Δ	1	8		-6	5	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 24	19 34	0 49	4 22	6 7	4.1	2 53	.9
55	4 41	19 17	0 41	2 40	7 20	3.4	1 40	1.6
50	4 54	19 4	0 35	2 9	8 1	3.1	0 58	1.9
45	5 4	18 54	0 31	1 52	8 31	3.0	0 28	2.0
40	5 13	18 45	0 29	1 40	8 54	2.8	0 4	2.1
35	5 20	18 38	0 26	1 31	9 14	2.8	...	.0
30	5 26	18 31	0 25	1 25	9 30	2.7	...	.0
20	5 37	18 20	0 23	1 16	9 58	2.6	23 55	2.0
10	5 47	18 11	0 22	1 12	10 22	2.5	23 33	2.1
0	5 55	18 2	0 21	1 10	10 44	2.4	23 12	2.3
10	6 4	17 53	0 21	1 11	11 6	2.3	22 50	2.4
20	6 13	17 44	0 22	1 14	11 30	2.2	22 27	2.5
30	6 23	17 34	0 24	1 20	11 57	2.0	22 1	2.7
35	6 29	17 28	0 26	1 25	12 14	2.0	21 45	2.8
40	6 36	17 21	0 28	1 31	12 33	1.9	21 26	2.9
45	6 43	17 13	0 30	1 38	12 56	1.7	21 4	3.0
50	6 52	17 4	0 33	1 48	13 25	1.5	20 35	3.2
55	7 4	16 53	0 38	2 2	14 5	1.2	19 56	3.6
60	7 19	16 38	0 44	2 20	15 13	.4	18 48	4.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	115 38.5	46 28 16.6	-21	311 9.6	-22 16.9	68 39.5	16 38.0	
2	144 25.7	47 28 12.3	-25	341 14.8	-22 16.9	98 44.4	16 38.0	
4	173 13.2	49 28 7.4	-28	11 20.0	-22 16.9	128 49.3	16 38.0	
6	202 1.0	51 28 1.7	-32	41 25.2	-22 16.8	158 54.2	16 38.0	
8	230 49.2	53 27 55.3	-35	71 30.4	-22 16.8	188 59.1	16 38.0	
10	259 37.8	55 27 48.3	-39	101 35.6	-22 16.8	219 4.0	16 38.0	
12	288 26.8	57 27 40.5	-42	131 40.8	-22 16.8	249 8.9	16 37.9	
14	317 16.2	59 27 32.1	-45	161 46.0	-22 16.8	279 13.8	16 37.9	
16	346 6.0	61 27 23.1	-48	191 51.2	-22 16.7	309 18.7	16 37.9	
18	14 56.2	63 27 13.4	-52	221 56.4	-22 16.7	339 23.6	16 37.9	
20	43 46.8	65 27 3.1	-55	252 1.6	-22 16.7	9 28.5	16 37.9	
22	72 37.9	68 26 52.2	-58	282 6.8	-22 16.7	39 33.4	16 37.9	
Δ				26	0	25	0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s	'	h min	min	'	'	
00	1 18.1	.5	15.9	T _m	16 58	2.3	58.4	15.9
12	1 23.9	T _{m☉}	11 h 58.6 min	Starost	4.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 41	.1	290	-4.0	♄	3 15	.0	101	-2.3
♂	8 57	.1	16	1.0	♅	19 22	.0	219	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS										
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂									
h	°	'	°	'	°	'	°	'								
0	180	22.4	12	20.0	210	39.4	139	43.3	24	16.8	226	.8	-8	3.8		
2	210	22.6	12	21.7	240	44.3	169	42.0	24	17.7	256	2.1	-8	2.3		
4	240	22.9	12	23.4	270	49.2	199	40.7	24	18.7	286	3.5	-8	.9		
6	270	23.1	12	25.0	300	54.2	229	39.4	24	19.7	316	4.8	-7	59.4		
8	300	23.4	12	26.7	330	59.1	259	38.1	24	20.6	346	6.2	-7	58.0		
10	330	23.6	12	28.4	1	4.0	289	36.8	24	21.6	16	7.5	-7	56.6		
12	0	23.8	12	30.0	31	9.0	319	35.5	24	22.5	46	8.9	-7	55.1		
14	30	24.1	12	31.7	61	13.9	349	34.2	24	23.5	76	10.2	-7	53.7		
16	60	24.3	12	33.4	91	18.8	19	32.9	24	24.4	106	11.6	-7	52.2		
18	90	24.5	12	35.0	121	23.7	49	31.6	24	25.3	136	12.9	-7	50.8		
20	120	24.8	12	36.7	151	28.7	79	30.3	24	26.2	166	14.3	-7	49.3		
22	150	25.0	12	38.3	181	33.6	109	29.0	24	27.2	196	15.6	-7	47.9		
Δ		1		8				-6		5				7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 22	19 37	0 49	:	7 46	4.3	3 16	.3
55	4 39	19 19	0 41	2 42	8 41	3.6	2 19	1.0
50	4 52	19 6	0 35	2 10	9 16	3.2	1 43	1.3
45	5 3	18 55	0 31	1 52	9 42	3.0	1 16	1.5
40	5 11	18 46	0 29	1 40	10 3	2.9	0 55	1.6
35	5 19	18 39	0 27	1 31	10 20	2.7	0 37	1.8
30	5 25	18 32	0 25	1 25	10 34	2.6	0 22	1.9
20	5 36	18 21	0 23	1 17	10 59	2.4	...	.0
10	5 46	18 11	0 22	1 12	11 21	2.3	...	.0
0	5 55	18 2	0 21	1 10	11 41	2.2	...	.0
10	6 4	17 53	0 21	1 11	12 1	2.0	23 48	2.2
20	6 13	17 43	0 22	1 14	12 22	1.9	23 28	2.4
30	6 24	17 33	0 24	1 20	12 46	1.7	23 5	2.6
35	6 30	17 27	0 26	1 25	13 1	1.6	22 51	2.7
40	6 37	17 20	0 28	1 31	13 17	1.5	22 35	2.8
45	6 44	17 12	0 30	1 38	13 37	1.3	22 16	3.0
50	6 54	17 2	0 33	1 48	14 2	1.1	21 53	3.2
55	7 6	16 50	0 38	2 2	14 35	.7	21 21	3.6
60	7 21	16 35	0 44	2 20	15 24	.1	20 33	4.2

UT	MESEC				JUPITER		SATURN									
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄								
h	°	'	°	'	°	'	°	'								
0	101	29.5	70	26	40.6	-61	312	12.0	-22	16.7	69	38.3	16	37.9		
2	130	21.4	72	26	28.5	-64	342	17.2	-22	16.6	99	43.3	16	37.9		
4	159	13.9	75	26	15.8	-66	12	22.4	-22	16.6	129	48.2	16	37.8		
6	188	6.8	77	26	2.5	-69	42	27.6	-22	16.6	159	53.1	16	37.8		
8	217	.2	79	25	48.7	-72	72	32.8	-22	16.6	189	58.0	16	37.8		
10	245	54.1	82	25	34.3	-74	102	38.1	-22	16.5	220	2.8	16	37.8		
12	274	48.4	84	25	19.4	-77	132	43.3	-22	16.5	250	7.7	16	37.8		
14	303	43.2	87	25	4.0	-80	162	48.5	-22	16.5	280	12.6	16	37.8		
16	332	38.5	89	24	48.1	-82	192	53.7	-22	16.5	310	17.5	16	37.8		
18	1	34.3	91	24	31.7	-84	222	58.9	-22	16.5	340	22.4	16	37.7		
20	30	30.6	94	24	14.8	-87	253	4.1	-22	16.4	10	27.3	16	37.7		
22	59	27.3	96	23	57.4	-89	283	9.4	-22	16.4	40	32.2	16	37.7		
Δ								26		0				24		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	1 29.8	.5	15.9	T _m	17 53	2.1	57.5	15.7
12	1 35.5	T _{m☉}	11 h 58.4 min	Starost	5.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°
♀	14 42	.1	289	-4.0	♃	3 11	.0	102	-2.3
♂	8 56	.1	15	1.0	♄	19 18	.0	219	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS										
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂									
h	°	'	°	'	°	'	°	'								
0	180	25.2	12	40.0	211	38.5	139	27.7	24	28.1	226	17.0	-7	46.4		
2	210	25.5	12	41.7	241	43.5	169	26.4	24	29.0	256	18.3	-7	45.0		
4	240	25.7	12	43.3	271	48.4	199	25.1	24	29.9	286	19.7	-7	43.5		
6	270	25.9	12	45.0	301	53.3	229	23.8	24	30.8	316	21.0	-7	42.1		
8	300	26.2	12	46.6	331	58.2	259	22.5	24	31.7	346	22.4	-7	40.6		
10	330	26.4	12	48.3	2	3.2	289	21.2	24	32.6	16	23.7	-7	39.2		
12	0	26.6	12	49.9	32	8.1	319	19.9	24	33.5	46	25.1	-7	37.7		
14	30	26.8	12	51.6	62	13.0	349	18.6	24	34.4	76	26.4	-7	36.3		
16	60	27.1	12	53.2	92	18.0	19	17.3	24	35.3	106	27.8	-7	34.8		
18	90	27.3	12	54.9	122	22.9	49	16.0	24	36.2	136	29.1	-7	33.4		
20	120	27.5	12	56.5	152	27.8	79	14.7	24	37.0	166	30.5	-7	31.9		
22	150	27.7	12	58.2	182	32.7	109	13.3	24	37.9	196	31.8	-7	30.5		
Δ		1		8				-7		4				7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 19	19 39	0 50	:	9 28	4.0	3 23	.1
55	4 37	19 21	0 41	2 45	10 7	3.5	2 42	.6
50	4 50	19 7	0 36	2 11	10 34	3.2	2 14	.9
45	5 1	18 56	0 32	1 53	10 55	2.9	1 52	1.1
40	5 10	18 47	0 29	1 40	11 11	2.8	1 34	1.3
35	5 18	18 39	0 27	1 32	11 25	2.6	1 19	1.4
30	5 24	18 33	0 25	1 25	11 37	2.5	1 6	1.6
20	5 36	18 21	0 23	1 17	11 58	2.3	0 44	1.7
10	5 46	18 11	0 22	1 12	12 16	2.1	0 24	1.9
0	5 55	18 2	0 21	1 11	12 32	2.0	0 6	2.1
10	6 4	17 52	0 21	1 11	12 49	1.8	...	.0
20	6 14	17 43	0 23	1 14	13 7	1.6	...	.0
30	6 24	17 32	0 24	1 20	13 27	1.4	...	.0
35	6 31	17 25	0 26	1 25	13 39	1.3	23 56	2.6
40	6 38	17 18	0 28	1 31	13 52	1.2	23 43	2.7
45	6 46	17 10	0 30	1 39	14 8	1.0	23 28	2.9
50	6 55	17 0	0 33	1 49	14 27	.8	23 10	3.1
55	7 8	16 48	0 38	2 2	14 52	.5	22 47	3.4
60	7 23	16 32	0 44	2 21	15 27	.0	22 13	3.9

UT	MESEC				JUPITER		SATURN									
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄								
h	°	'	°	'	°	'	°	'								
0	88	24.6	99	23	39.6	-91	313	14.6	-22	16.4	70	37.1	16	37.7		
2	117	22.3	101	23	21.3	-93	343	19.8	-22	16.4	100	42.0	16	37.7		
4	146	20.4	103	23	2.6	-96	13	25.0	-22	16.4	130	46.9	16	37.7		
6	175	19.1	106	22	43.5	-98	43	30.3	-22	16.3	160	51.8	16	37.6		
8	204	18.2	108	22	24.0	-100	73	35.5	-22	16.3	190	56.7	16	37.6		
10	233	17.8	110	22	4.1	-101	103	40.7	-22	16.3	221	1.6	16	37.6		
12	262	17.8	112	21	43.8	-103	133	46.0	-22	16.3	251	6.5	16	37.6		
14	291	18.3	115	21	23.2	-105	163	51.2	-22	16.2	281	11.4	16	37.6		
16	320	19.3	117	21	2.2	-107	193	56.4	-22	16.2	311	16.2	16	37.6		
18	349	20.6	119	20	40.8	-109	224	1.7	-22	16.2	341	21.1	16	37.5		
20	18	22.5	121	20	19.1	-110	254	6.9	-22	16.2	11	26.0	16	37.5		
22	47	24.7	123	19	57.0	-112	284	12.1	-22	16.1	41	30.9	16	37.5		
Δ								26		0				24		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	1 41.1	.5	15.9	T _m	18 44	1.9	56.6	15.4
12	1 46.6	T _{m☉}	11 h 58.2 min	Starost	6.5 d	Faza	☉	

PLANETE							
Pl.	T _m	π	360				

UT	SUNCE			PROLEĆ. TAČKA S _γ	VENERA			MARS				
	S _☉	δ _☉			S _♀	δ _♀		S _♂	δ _♂			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	180	27.9	12 59.8	212	37.7		139	12.0	24 38.8	226	33.2	- 7 29.0
2	210	28.2	13 1.4	242	42.6		169	10.7	24 39.6	256	34.6	- 7 27.6
4	240	28.4	13 3.1	272	47.5		199	9.4	24 40.5	286	35.9	- 7 26.1
6	270	28.6	13 4.7	302	52.4		229	8.1	24 41.3	316	37.3	- 7 24.7
8	300	28.8	13 6.3	332	57.4		259	6.8	24 42.2	346	38.6	- 7 23.2
10	330	29.0	13 8.0	3	2.3		289	5.5	24 43.0	16	40.0	- 7 21.8
12	0	29.3	13 9.6	33	7.2		319	4.2	24 43.9	46	41.3	- 7 20.3
14	30	29.5	13 11.2	63	12.2		349	2.9	24 44.7	76	42.7	- 7 18.9
16	60	29.7	13 12.9	93	17.1		19	1.6	24 45.5	106	44.1	- 7 17.4
18	90	29.9	13 14.5	123	22.0		49	.3	24 46.3	136	45.4	- 7 16.0
20	120	30.1	13 16.1	153	26.9		78	59.0	24 47.2	166	46.8	- 7 14.5
22	150	30.3	13 17.7	183	31.9		108	57.7	24 48.0	196	48.1	- 7 13.0
Δ		1	8					-7	4		7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 16	19 42	0 50	:	11 4	3.7	3 26	.0
55	4 34	19 23	0 41	2 47	11 31	3.3	2 57	.4
50	4 48	19 9	0 36	2 13	11 50	3.0	2 36	.7
45	4 59	18 57	0 32	1 53	12 5	2.8	2 19	.9
40	5 9	18 48	0 29	1 41	12 18	2.6	2 5	1.1
35	5 16	18 40	0 27	1 32	12 28	2.5	1 54	1.2
30	5 23	18 33	0 25	1 25	12 37	2.4	1 43	1.3
20	5 35	18 21	0 23	1 17	12 53	2.2	1 26	1.5
10	5 45	18 11	0 22	1 12	13 7	2.0	1 10	1.7
0	5 55	18 1	0 21	1 11	13 19	1.8	0 55	1.9
10	6 4	17 52	0 22	1 11	13 32	1.6	0 41	2.0
20	6 14	17 42	0 23	1 14	13 46	1.4	0 25	2.2
30	6 25	17 31	0 25	1 21	14 1	1.2	0 7	2.4
35	6 31	17 24	0 26	1 25	14 10	1.1	...	.0
40	6 39	17 17	0 28	1 31	14 20	1.0	...	.0
45	6 47	17 9	0 30	1 39	14 32	.8	...	.0
50	6 57	16 58	0 34	1 49	14 46	.6	...	.0
55	7 9	16 46	0 38	2 2	15 4	.3	...	.0
60	7 26	16 29	0 44	2 21	15 27	.0	23 47	3.6

UT	MESEC				JUPITER		SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄		
h	°	'	''	°	'	''	°	'	''	
0	76	27.4	125	19 34.7	-113	314	17.4	-22 16.1	71 35.8	16 37.5
2	105	30.5	128	19 12.0	-115	344	22.6	-22 16.1	101 40.7	16 37.5
4	134	34.0	130	18 49.1	-116	14	27.9	-22 16.1	131 45.6	16 37.4
6	163	37.9	132	18 25.8	-118	44	33.1	-22 16.1	161 50.4	16 37.4
8	192	42.2	133	18 2.3	-119	74	38.3	-22 16.0	191 55.3	16 37.4
10	221	46.9	135	17 38.5	-120	104	43.6	-22 16.0	222 .2	16 37.4
12	250	52.0	137	17 14.5	-121	134	48.8	-22 16.0	252 5.1	16 37.4
14	279	57.4	139	16 50.2	-123	164	54.1	-22 16.0	282 10.0	16 37.3
16	309	3.2	141	16 25.7	-124	194	59.3	-22 15.9	312 14.8	16 37.3
18	338	9.4	142	16 .9	-125	225	4.6	-22 15.9	342 19.7	16 37.3
20	7	15.9	144	15 35.9	-126	255	9.8	-22 15.9	12 24.6	16 37.3
22	36	22.7	146	15 10.7	-127	285	15.1	-22 15.9	42 29.5	16 37.3
Δ						26	0		24	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	1 52.0	.4	15.9	T _m	19 30	1.8	55.8	15.2
12	1 57.2			T _{m☉}	11 h 58.0 min	Starost	7.5 d	Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	14 44	.1	287	-4.0	♃	3 2	.0	102	-2.3
♂	8 53	.1	14	1.0	♄	19 10	.0	219	.3

UT	SUNCE			PROLEĆ. TAČKA S _γ	VENERA			MARS				
	S _☉	δ _☉			S _♀	δ _♀		S _♂	δ _♂			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	180	30.6	13 19.4	213	36.8		138	56.3	24 48.8	226	49.5	- 7 11.6
2	210	30.8	13 21.0	243	41.7		168	55.0	24 49.6	256	50.9	- 7 10.1
4	240	31.0	13 22.6	273	46.7		198	53.7	24 50.4	286	52.2	- 7 8.7
6	270	31.2	13 24.2	303	51.6		228	52.4	24 51.2	316	53.6	- 7 7.2
8	300	31.4	13 25.8	333	56.5		258	51.1	24 52.0	346	54.9	- 7 5.8
10	330	31.6	13 27.5	4	1.4		288	49.8	24 52.8	16	56.3	- 7 4.3
12	0	31.8	13 29.1	34	6.4		318	48.5	24 53.6	46	57.7	- 7 2.8
14	30	32.0	13 30.7	64	11.3		348	47.2	24 54.3	76	59.0	- 7 1.4
16	60	32.2	13 32.3	94	16.2		18	45.9	24 55.1	107	.4	- 6 59.9
18	90	32.4	13 33.9	124	21.2		48	44.5	24 55.9	137	1.8	- 6 58.5
20	120	32.6	13 35.5	154	26.1		78	43.2	24 56.6	167	3.1	- 6 57.0
22	150	32.8	13 37.1	184	31.0		108	41.9	24 57.4	197	4.5	- 6 55.6
Δ		1	8					-7	4		7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 13	19 44	0 51	:	12 34	3.5	3 26	.0
55	4 32	19 25	0 42	2 50	12 50	3.2	3 7	.3
50	4 46	19 10	0 36	2 14	13 3	2.9	2 52	.6
45	4 58	18 59	0 32	1 54	13 13	2.7	2 41	.8
40	5 7	18 49	0 29	1 41	13 21	2.5	2 31	.9
35	5 15	18 41	0 27	1 32	13 28	2.4	2 23	1.1
30	5 22	18 34	0 25	1 26	13 34	2.3	2 15	1.2
20	5 34	18 22	0 23	1 17	13 45	2.1	2 2	1.4
10	5 45	18 11	0 22	1 12	13 54	1.9	1 51	1.6
0	5 54	18 1	0 21	1 11	14 3	1.7	1 41	1.7
10	6 4	17 52	0 22	1 11	14 11	1.5	1 30	1.9
20	6 14	17 41	0 23	1 14	14 20	1.3	1 18	2.1
30	6 26	17 30	0 25	1 21	14 31	1.1	1 5	2.3
35	6 32	17 23	0 26	1 25	14 37	1.0	0 57	2.4
40	6 40	17 16	0 28	1 31	14 43	.9	0 49	2.6
45	6 48	17 7	0 30	1 39	14 51	.7	0 38	2.8
50	6 58	16 57	0 34	1 49	15 0	.5	0 26	3.0
55	7 11	16 44	0 38	2 3	15 12	.3	0 10	3.3
60	7 28	16 27	0 44	2 21	15 27	.0	...	.0

UT	MESEC				JUPITER		SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄		
h	°	'	''	°	'	''	°	'	''	
0	65	29.8	147	14 45.3	-128	315	20.3	-22 15.8	72 34.3	16 37.2
2	94	37.3	149	14 19.7	-129	345	25.6	-22 15.8	102 39.2	16 37.2
4	123	45.1	150	13 53.9	-130	15	30.9	-22 15.8	132 44.1	16 37.2
6	152	53.2	152	13 28.0	-131	45	36.1	-22 15.8	162 49.0	16 37.2
8	182	1.6	153	13 1.8	-132	75	41.4	-22 15.7	192 53.8	16 37.2
10	211	10.2	155	12 35.5	-132	105	46.6	-22 15.7	222 58.7	16 37.1
12	240	19.1	156	12 9.1	-133	135	51.9	-22 15.7	253 3.6	16 37.1
14	269	28.3	157	11 42.5	-134	165	57.2	-22 15.7	283 8.5	16 37.1
16	298	37.8	158	11 15.7	-134	196	2.4	-22 15.6	313 13.3	16 37.1
18	327	47.5	160	10 48.8	-135	226	7.7	-22 15.6	343 18.2	16 37.0
20	356	57.4	161	10 21.8	-136	256	13.0	-22 15.6	13 23.1	16 37.0
22	26	7.5	162	9 54.7	-136	286	18.2	-22 15.6	43 27.9	16 37.0
Δ						26	0		24	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	2 2.4	.4	15.9	T _m	20 13	1.7	55.2	15.0
12	2 7.4			T _{m☉}	11 h 57.9 min	Starost	8.5 d	Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	14 45	.1	285	-4.0	♃	2 58	.0	102	-2.3
♂	8 52	.1	13	1.0	♄	19 7	.0	219	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 33.0	13 38.7	214 35.9	138 40.6	24 58.2	227 5.9	- 6 54.1
2	210 33.2	13 40.3	244 40.9	168 39.3	24 58.9	257 7.2	- 6 52.6
4	240 33.4	13 41.9	274 45.8	198 38.0	24 59.7	287 8.6	- 6 51.2
6	270 33.6	13 43.5	304 50.7	228 36.7	25 .4	317 10.0	- 6 49.7
8	300 33.8	13 45.1	334 55.7	258 35.4	25 1.1	347 11.3	- 6 48.2
10	330 34.0	13 46.7	5 .6	288 34.1	25 1.9	17 12.7	- 6 46.8
12	0 34.2	13 48.3	35 5.5	318 32.7	25 2.6	47 14.1	- 6 45.3
14	30 34.4	13 49.9	65 10.4	348 31.4	25 3.3	77 15.4	- 6 43.9
16	60 34.6	13 51.5	95 15.4	18 30.1	25 4.1	107 16.8	- 6 42.4
18	90 34.8	13 53.1	125 20.3	48 28.8	25 4.8	137 18.2	- 6 40.9
20	120 35.0	13 54.7	155 25.2	78 27.5	25 5.5	167 19.6	- 6 39.5
22	150 35.2	13 56.3	185 30.2	108 26.2	25 6.2	197 20.9	- 6 38.0
Δ	1	8		-7	4	7	7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	55 17.9	163	9 27.4	-137	316 23.5	-22 15.5	73 32.8	16 37.0
2	84 28.4	164	9 .0	-137	346 28.8	-22 15.5	103 37.7	16 36.9
4	113 39.2	165	8 32.6	-138	16 34.0	-22 15.5	133 42.5	16 36.9
6	142 50.1	166	8 5.0	-138	46 39.3	-22 15.5	163 47.4	16 36.9
8	172 1.3	166	7 37.4	-139	76 44.6	-22 15.4	193 52.3	16 36.9
10	201 12.6	167	7 9.7	-139	106 49.9	-22 15.4	223 57.1	16 36.8
12	230 24.0	168	6 41.8	-139	136 55.1	-22 15.4	254 2.0	16 36.8
14	259 35.6	169	6 14.0	-140	167 .4	-22 15.4	284 6.8	16 36.8
16	288 47.4	169	5 46.0	-140	197 5.7	-22 15.3	314 11.7	16 36.8
18	317 59.2	170	5 18.0	-140	227 11.0	-22 15.3	344 16.6	16 36.7
20	347 11.2	171	4 50.0	-140	257 16.3	-22 15.3	14 21.4	16 36.7
22	16 23.4	171	4 21.9	-141	287 21.5	-22 15.3	44 26.3	16 36.7
Δ					26	0	24	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 10	19 47	0 51	:::	13 59	3.4	3 25	.0
55	4 30	19 27	0 42	2 53	14 7	3.1	3 14	.3
50	4 45	19 12	0 36	2 15	14 13	2.8	3 6	.5
45	4 56	18 60	0 32	1 55	14 18	2.6	2 59	.7
40	5 6	18 50	0 29	1 42	14 22	2.5	2 53	.8
35	5 14	18 42	0 27	1 33	14 26	2.3	2 48	1.0
30	5 21	18 35	0 25	1 26	14 29	2.2	2 43	1.1
20	5 34	18 22	0 23	1 17	14 34	2.0	2 36	1.3
10	5 44	18 11	0 22	1 13	14 39	1.8	2 29	1.5
0	5 54	18 1	0 21	1 11	14 43	1.6	2 22	1.7
10	6 4	17 51	0 22	1 11	14 48	1.5	2 16	1.8
20	6 14	17 41	0 23	1 15	14 52	1.3	2 9	2.0
30	6 26	17 29	0 25	1 21	14 58	1.1	2 1	2.2
35	6 33	17 22	0 26	1 25	15 1	.9	1 56	2.4
40	6 41	17 14	0 28	1 31	15 4	.8	1 51	2.5
45	6 49	17 5	0 30	1 39	15 8	.6	1 45	2.7
50	6 60	16 55	0 34	1 49	15 13	.5	1 37	2.9
55	7 13	16 41	0 38	2 3	15 18	.2	1 28	3.1
60	7 31	16 24	0 45	2 22	15 26	.0	1 16	3.5
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	2 12.3	.4	15.9	T _m	20 53	1.6	54.7 14.9
12	2 17.1	T _{m☉}	11 h 57.7 min	Starost	9.5 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 46	.1	284	-4.0	♄	2 54	.0	102	-2.3
♂	8 51	.1	12	1.0	♅	19 3	.0	219	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 35.4	13 57.8	215 35.1	138 24.9	25 6.9	227 22.3	- 6 36.5
2	210 35.6	13 59.4	245 40.0	168 23.5	25 7.6	257 23.7	- 6 35.1
4	240 35.8	14 1.0	275 44.9	198 22.2	25 8.3	287 25.0	- 6 33.6
6	270 36.0	14 2.6	305 49.9	228 20.9	25 9.0	317 26.4	- 6 32.1
8	300 36.2	14 4.2	335 54.8	258 19.6	25 9.7	347 27.8	- 6 30.7
10	330 36.4	14 5.7	5 59.7	288 18.3	25 10.3	17 29.2	- 6 29.2
12	0 36.5	14 7.3	36 4.7	318 17.0	25 11.0	47 30.5	- 6 27.7
14	30 36.7	14 8.9	66 9.6	348 15.7	25 11.7	77 31.9	- 6 26.3
16	60 36.9	14 10.5	96 14.5	18 14.4	25 12.3	107 33.3	- 6 24.8
18	90 37.1	14 12.0	126 19.4	48 13.0	25 13.0	137 34.7	- 6 23.3
20	120 37.3	14 13.6	156 24.4	78 11.7	25 13.7	167 36.0	- 6 21.9
22	150 37.5	14 15.2	186 29.3	108 10.4	25 14.3	197 37.4	- 6 20.4
Δ	1	8		-7	3	7	7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	45 35.6	172	3 53.8	-141	317 26.8	-22 15.2	74 31.1	16 36.7
2	74 47.9	172	3 25.6	-141	347 32.1	-22 15.2	104 36.0	16 36.6
4	104 .3	172	2 57.4	-141	17 37.4	-22 15.2	134 40.9	16 36.6
6	133 12.8	173	2 29.2	-141	47 42.7	-22 15.2	164 45.7	16 36.6
8	162 25.3	173	2 .9	-141	77 48.0	-22 15.1	194 50.6	16 36.5
10	191 37.9	173	1 32.7	-141	107 53.3	-22 15.1	224 55.4	16 36.5
12	220 50.6	173	1 4.5	-141	137 58.6	-22 15.1	255 .3	16 36.5
14	250 3.3	174	0 36.2	-141	168 3.9	-22 15.0	285 5.1	16 36.5
16	279 16.0	174	0 8.0	-141	198 9.1	-22 15.0	315 10.0	16 36.4
18	308 28.7	174	- 0 20.3	-141	228 14.4	-22 15.0	345 14.8	16 36.4
20	337 41.5	174	- 0 48.5	-141	258 19.7	-22 15.0	15 19.7	16 36.4
22	6 54.3	174	- 1 16.7	-141	288 25.0	-22 14.9	45 24.5	16 36.3
Δ					26	0	24	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 7	19 49	0 52	:::	15 20	3.4	3 24	.0
55	4 28	19 29	0 42	2 56	15 21	3.1	3 20	.2
50	4 43	19 13	0 36	2 16	15 21	2.8	3 17	.5
45	4 55	19 1	0 32	1 55	15 21	2.6	3 15	.6
40	5 5	18 51	0 29	1 42	15 21	2.5	3 13	.8
35	5 13	18 43	0 27	1 33	15 22	2.3	3 11	.9
30	5 20	18 35	0 25	1 26	15 22	2.2	3 10	1.1
20	5 33	18 22	0 23	1 17	15 22	2.0	3 7	1.3
10	5 44	18 11	0 22	1 13	15 22	1.8	3 4	1.4
0	5 54	18 1	0 21	1 11	15 22	1.6	3 2	1.6
10	6 4	17 51	0 22	1 12	15 23	1.4	2 60	1.8
20	6 15	17 40	0 23	1 15	15 23	1.3	2 57	2.0
30	6 27	17 28	0 25	1 21	15 23	1.1	2 54	2.2
35	6 34	17 21	0 26	1 25	15 23	.9	2 53	2.3
40	6 42	17 13	0 28	1 31	15 23	.8	2 51	2.5
45	6 51	17 4	0 30	1 39	15 24	.6	2 49	2.6
50	7 1	16 53	0 34	1 49	15 24	.5	2 46	2.8
55	7 15	16 39	0 38	2 3	15 24	.2	2 43	3.1
60	7 33	16 21	0 45	2 22	15 24	.0	2 39	3.4
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	2 21.8	.4	15.9	T _m	21 32	1.6	54.3 14.8
12	2 26.3	T _{m☉}	11 h 57.6 min	Starost	10.5 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 47	.1	283	-4.0	♄	2 50	.0	102	-2.3
♂	8 50	.1	12	1.0	♅	18 59	.0	219	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	37.6	14	16.7	216	34.2	138	9.1	25	15.0	227	38.8	-6	18.9	
2	210	37.8	14	18.3	246	39.1	168	7.8	25	15.6	257	40.2	-6	17.5	
4	240	38.0	14	19.9	276	44.1	198	6.5	25	16.2	287	41.5	-6	16.0	
6	270	38.2	14	21.4	306	49.0	228	5.2	25	16.9	317	42.9	-6	14.5	
8	300	38.4	14	23.0	336	53.9	258	3.9	25	17.5	347	44.3	-6	13.1	
10	330	38.5	14	24.5	6	58.9	288	2.5	25	18.1	17	45.7	-6	11.6	
12	0	38.7	14	26.1	37	3.8	318	1.2	25	18.7	47	47.1	-6	10.1	
14	30	38.9	14	27.6	67	8.7	347	59.9	25	19.4	77	48.4	-6	8.6	
16	60	39.1	14	29.2	97	13.6	17	58.6	25	20.0	107	49.8	-6	7.2	
18	90	39.2	14	30.8	127	18.6	47	57.3	25	20.6	137	51.2	-6	5.7	
20	120	39.4	14	32.3	157	23.5	77	56.0	25	21.2	167	52.6	-6	4.2	
22	150	39.6	14	33.8	187	28.4	107	54.7	25	21.8	197	54.0	-6	2.8	
Δ		1		8				-7		3			7		7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	36	7.1	174	-1	44.8	-141	318	30.3	-22	14.9	75	29.4	16	36.3		
2	65	19.8	174	-2	13.0	-140	348	35.6	-22	14.9	105	34.2	16	36.3		
4	94	32.6	174	-2	41.1	-140	18	40.9	-22	14.9	135	39.1	16	36.3		
6	123	45.3	173	-3	9.1	-140	48	46.2	-22	14.8	165	43.9	16	36.2		
8	152	58.0	173	-3	37.1	-140	78	51.5	-22	14.8	195	48.8	16	36.2		
10	182	10.6	173	-4	5.0	-139	108	56.8	-22	14.8	225	53.6	16	36.2		
12	211	23.2	173	-4	32.9	-139	139	2.2	-22	14.7	255	58.5	16	36.1		
14	240	35.8	172	-5	.7	-139	169	7.5	-22	14.7	286	3.3	16	36.1		
16	269	48.2	172	-5	28.4	-138	199	12.8	-22	14.7	316	8.1	16	36.1		
18	299	.6	172	-5	56.1	-138	229	18.1	-22	14.7	346	13.0	16	36.0		
20	328	12.9	171	-6	23.7	-137	259	23.4	-22	14.6	16	17.8	16	36.0		
22	357	25.1	171	-6	51.1	-137	289	28.7	-22	14.6	46	22.7	16	36.0		
Δ								27		0			24		0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 5	19 52	0 52	:::	16 42	3.4	3 23	.0
55	4 25	19 31	0 42	2 59	16 34	3.1	3 26	.2
50	4 41	19 15	0 36	2 17	16 29	2.9	3 28	.5
45	4 53	19 2	0 32	1 56	16 24	2.7	3 30	.7
40	5 3	18 52	0 29	1 43	16 20	2.5	3 32	.8
35	5 12	18 43	0 27	1 33	16 17	2.3	3 34	.9
30	5 19	18 36	0 25	1 26	16 14	2.2	3 35	1.1
20	5 32	18 23	0 23	1 18	16 9	2.0	3 37	1.3
10	5 44	18 11	0 22	1 13	16 5	1.8	3 39	1.5
0	5 54	18 1	0 21	1 11	16 1	1.7	3 41	1.6
10	6 4	17 50	0 22	1 12	15 57	1.5	3 43	1.8
20	6 15	17 39	0 23	1 15	15 53	1.3	3 45	2.0
30	6 27	17 27	0 25	1 21	15 48	1.1	3 47	2.2
35	6 35	17 20	0 26	1 26	15 46	1.0	3 49	2.3
40	6 43	17 12	0 28	1 32	15 43	.8	3 50	2.5
45	6 52	17 2	0 31	1 39	15 39	.7	3 52	2.6
50	7 3	16 51	0 34	1 49	15 35	.5	3 54	2.8
55	7 17	16 37	0 38	2 3	15 30	.3	3 57	3.1
60	7 35	16 19	0 45	2 22	15 23	.0	4 0	3.4
S								

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	2 30.8	.4	15.9	T _m	22 11	1.7	54.1	14.7
12	2 35.0			T _{m☉}	11 h 57.4 min	Starost	11.5 d	Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	°	h	min	'	°	°
♀	14 48	.1	282	-4.0	♃	2 45	.0	102	-2.3
♂	8 49	.1	11	1.0	♄	18 55	.0	219	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	39.8	14	35.4	217	33.4	137	53.4	25	22.4	227	55.3	-6	1.3	
2	210	39.9	14	36.9	247	38.3	167	52.1	25	23.0	257	56.7	-5	59.8	
4	240	40.1	14	38.5	277	43.2	197	50.7	25	23.5	287	58.1	-5	58.3	
6	270	40.3	14	40.0	307	48.1	227	49.4	25	24.1	317	59.5	-5	56.9	
8	300	40.4	14	41.6	337	53.1	257	48.1	25	24.7	348	.9	-5	55.4	
10	330	40.6	14	43.1	7	58.0	287	46.8	25	25.3	18	2.2	-5	53.9	
12	0	40.8	14	44.6	38	2.9	317	45.5	25	25.8	48	3.6	-5	52.4	
14	30	40.9	14	46.2	68	7.9	347	44.2	25	26.4	78	5.0	-5	51.0	
16	60	41.1	14	47.7	98	12.8	17	42.9	25	26.9	108	6.4	-5	49.5	
18	90	41.3	14	49.2	128	17.7	47	41.6	25	27.5	138	7.8	-5	48.0	
20	120	41.4	14	50.8	158	22.6	77	40.3	25	28.0	168	9.2	-5	46.5	
22	150	41.6	14	52.3	188	27.6	107	39.0	25	28.6	198	10.6	-5	45.1	
Δ		1		8				-7		3			7		7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	26	37.2	170	-7	18.5	-136	319	34.0	-22	14.6	76	27.5	16	35.9		
2	55	49.2	169	-7	45.8	-136	349	39.3	-22	14.5	106	32.4	16	35.9		
4	85	1.1	169	-8	12.9	-135	19	44.6	-22	14.5	136	37.2	16	35.9		
6	114	12.9	168	-8	40.0	-135	49	50.0	-22	14.5	166	42.0	16	35.8		
8	143	24.5	167	-9	6.9	-134	79	55.3	-22	14.5	196	46.9	16	35.8		
10	172	36.0	167	-9	33.7	-133	110	.6	-22	14.4	226	51.7	16	35.8		
12	201	47.4	166	-10	.3	-133	140	5.9	-22	14.4	256	56.5	16	35.7		
14	230	58.6	165	-10	26.9	-132	170	11.2	-22	14.4	287	1.4	16	35.7		
16	260	9.6	164	-10	53.2	-131	200	16.6	-22	14.3	317	6.2	16	35.7		
18	289	20.5	163	-11	19.4	-130	230	21.9	-22	14.3	347	11.0	16	35.6		
20	318	31.1	163	-11	45.5	-129	260	27.2	-22	14.3	17	15.9	16	35.6		
22	347	41.6	162	-12	11.4	-129	290	32.5	-22	14.2	47	20.7	16	35.6		
Δ								27		0			24		0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 2	19 54	0 53	:::	18 5	3.6	3 22	.0
55	4 23	19 33	0 43	3 3	17 49	3.2	3 32	.3
50	4 39	19 17	0 37	2 19	17 37	2.9	3 40	.5
45	4 52	19 4	0 32	1 57	17 28	2.7	3 46	.7
40	5 2	18 53	0 29	1 43	17 20	2.5	3 52	.9
35	5 11	18 44	0 27	1 34	17 14	2.4	3 56	1.0
30	5 19	18 36	0 25	1 27	17 8	2.3	4 0	1.1
20	5 32	18 23	0 23	1 18	16 58	2.1	4 8	1.3
10	5 43	18 11	0 22	1 13	16 49	1.9	4 14	1.5
0	5 54	18 1	0 21	1 11	16 41	1.7	4 20	1.7
10	6 4	17 50	0 22	1 12	16 33	1.6	4 26	1.9
20	6 16	17 39	0 23	1 15	16 24	1.4	4 33	2.0
30	6 28	17 26	0 25	1 21	16 15	1.2	4 40	2.2
35	6 35	17 19	0 26	1 26	16 9	1.1	4 44	2.4
40	6 43	17 11	0 28	1 32	16 3	.9	4 49	2.5
45	6 53	17 1	0 31	1 39	15 55	.8	4 55	2.7
50	7 4	16 49	0 34	1 50	15 47	.6	5 2	2.9
55	7 19	16 35	0 39	2 4	15 36	.3	5 11	3.1
60	7 38	16 16	0 45	2 23	15 22	.0	5 22	3.5
S								

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 41.7 14 53.8		218 32.5	137 37.6 25 29.1	228 11.9 - 5 43.6		
2	210 41.9 14 55.3		248 37.4	167 36.3 25 29.6	258 13.3 - 5 42.1		
4	240 42.1 14 56.9		278 42.4	197 35.0 25 30.2	288 14.7 - 5 40.6		
6	270 42.2 14 58.4		308 47.3	227 33.7 25 30.7	318 16.1 - 5 39.2		
8	300 42.4 14 59.9		338 52.2	257 32.4 25 31.2	348 17.5 - 5 37.7		
10	330 42.5 15 1.4		8 57.1	287 31.1 25 31.7	18 18.9 - 5 36.2		
12	0 42.7 15 2.9		39 2.1	317 29.8 25 32.2	48 20.3 - 5 34.7		
14	30 42.8 15 4.4		69 7.0	347 28.5 25 32.7	78 21.7 - 5 33.3		
16	60 43.0 15 6.0		99 11.9	17 27.2 25 33.2	108 23.0 - 5 31.8		
18	90 43.1 15 7.5		129 16.9	47 25.9 25 33.7	138 24.4 - 5 30.3		
20	120 43.3 15 9.0		159 21.8	77 24.6 25 34.2	168 25.8 - 5 28.8		
22	150 43.5 15 10.5		189 26.7	107 23.3 25 34.7	198 27.2 - 5 27.3		
Δ	1	8		-7 3	7 7		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 59	19 57	0 53	:::	19 31	3.8	3 21	.0
55	4 21	19 35	0 43	3 7	19 6	3.3	3 39	.4
50	4 37	19 18	0 37	2 20	18 47	3.0	3 52	.6
45	4 50	19 5	0 32	1 58	18 33	2.8	4 3	.8
40	5 1	18 54	0 29	1 44	18 21	2.6	4 13	1.0
35	5 10	18 45	0 27	1 34	18 11	2.5	4 21	1.1
30	5 18	18 37	0 25	1 27	18 2	2.4	4 28	1.2
20	5 31	18 23	0 23	1 18	17 47	2.2	4 40	1.4
10	5 43	18 12	0 22	1 13	17 34	2.0	4 50	1.6
0	5 54	18 1	0 21	1 11	17 22	1.8	5 1	1.8
10	6 4	17 50	0 22	1 12	17 10	1.7	5 11	1.9
20	6 16	17 38	0 23	1 15	16 57	1.5	5 22	2.1
30	6 29	17 25	0 25	1 21	16 43	1.3	5 34	2.3
35	6 36	17 18	0 26	1 26	16 34	1.2	5 41	2.4
40	6 44	17 9	0 28	1 32	16 25	1.1	5 50	2.6
45	6 54	16 60	0 31	1 40	16 14	.9	5 59	2.7
50	7 6	16 48	0 34	1 50	16 1	.7	6 11	3.0
55	7 21	16 33	0 39	2 4	15 44	.4	6 26	3.2
60	7 40	16 13	0 46	2 23	15 22	.0	6 46	3.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	16 52.0 161 -12 37.1 -128				320 37.9 -22 14.2	77 25.5 16 35.5		
2	46 2.1 160 -13 2.6 -127				350 43.2 -22 14.2	107 30.4 16 35.5		
4	75 12.0 159 -13 28.0 -126				20 48.5 -22 14.2	137 35.2 16 35.5		
6	104 21.7 157 -13 53.1 -125				50 53.9 -22 14.1	167 40.0 16 35.4		
8	133 31.2 156 -14 18.1 -124				80 59.2 -22 14.1	197 44.9 16 35.4		
10	162 40.4 155 -14 42.8 -123				111 4.5 -22 14.1	227 49.7 16 35.4		
12	191 49.5 154 -15 7.4 -122				141 9.9 -22 14.0	257 54.5 16 35.3		
14	220 58.3 153 -15 31.7 -120				171 15.2 -22 14.0	287 59.3 16 35.3		
16	250 6.8 152 -15 55.7 -119				201 20.5 -22 14.0	318 4.2 16 35.2		
18	279 15.1 150 -16 19.6 -118				231 25.9 -22 13.9	348 9.0 16 35.2		
20	308 23.2 149 -16 43.2 -117				261 31.2 -22 13.9	18 13.8 16 35.2		
22	337 31.0 148 -17 6.5 -115				291 36.6 -22 13.9	48 18.6 16 35.1		
Δ					27 0	24 0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	2 47.2	.3	15.9	T _m 23 33	1.8	54.0	14.7		
12	2 50.9	T _{m☉} 11 h 57.2 min	Starost 13.5 d	Faza ☉					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 50	.1	279	-4.0	♄	2 37	.0	102	-2.3
	8 47	.1	10	1.0	♅	18 47	.0	219	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 43.6 15 12.0		219 31.6	137 22.0 25 35.2	228 28.6 - 5 25.9		
2	210 43.7 15 13.5		249 36.6	167 20.7 25 35.7	258 30.0 - 5 24.4		
4	240 43.9 15 15.0		279 41.5	197 19.4 25 36.2	288 31.4 - 5 22.9		
6	270 44.0 15 16.5		309 46.4	227 18.1 25 36.6	318 32.8 - 5 21.4		
8	300 44.2 15 18.0		339 51.3	257 16.8 25 37.1	348 34.2 - 5 19.9		
10	330 44.3 15 19.5		9 56.3	287 15.5 25 37.5	18 35.6 - 5 18.5		
12	0 44.5 15 21.0		40 1.2	317 14.2 25 38.0	48 37.0 - 5 17.0		
14	30 44.6 15 22.5		70 6.1	347 12.9 25 38.4	78 38.3 - 5 15.5		
16	60 44.8 15 24.0		100 11.1	17 11.6 25 38.9	108 39.7 - 5 14.0		
18	90 44.9 15 25.4		130 16.0	47 10.3 25 39.3	138 41.1 - 5 12.5		
20	120 45.0 15 26.9		160 20.9	77 9.0 25 39.8	168 42.5 - 5 11.1		
22	150 45.2 15 28.4		190 25.8	107 7.7 25 40.2	198 43.9 - 5 9.6		
Δ	1	7		-7 2	7 7		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 56	19 59	0 54	:::	21 1	3.9	3 21	.1
55	4 19	19 37	0 43	3 11	20 25	3.3	3 48	.5
50	4 35	19 20	0 37	2 21	19 59	3.0	4 8	.8
45	4 49	19 6	0 33	1 58	19 40	2.8	4 23	1.0
40	4 59	18 55	0 29	1 44	19 24	2.6	4 36	1.2
35	5 9	18 46	0 27	1 34	19 11	2.5	4 48	1.3
30	5 17	18 38	0 25	1 27	18 59	2.4	4 57	1.4
20	5 31	18 24	0 23	1 18	18 39	2.2	5 14	1.6
10	5 43	18 12	0 22	1 13	18 22	2.1	5 29	1.8
0	5 54	18 0	0 21	1 11	18 6	2.0	5 43	1.9
10	6 5	17 49	0 22	1 12	17 51	1.8	5 57	2.0
20	6 16	17 38	0 23	1 15	17 34	1.7	6 12	2.2
30	6 29	17 24	0 25	1 21	17 15	1.5	6 30	2.4
35	6 37	17 17	0 26	1 26	17 4	1.4	6 40	2.5
40	6 45	17 8	0 28	1 32	16 51	1.3	6 51	2.6
45	6 55	16 58	0 31	1 40	16 36	1.1	7 5	2.8
50	7 7	16 46	0 34	1 50	16 18	.9	7 22	3.0
55	7 22	16 31	0 39	2 4	15 54	.6	7 44	3.3
60	7 42	16 11	0 46	2 24	15 22	.1	8 14	3.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	6 38.5 146 -17 29.6 -114				321 41.9 -22 13.9	78 23.5 16 35.1		
2	35 45.8 145 -17 52.4 -113				351 47.2 -22 13.8	108 28.3 16 35.1		
4	64 52.8 144 -18 14.9 -111				21 52.6 -22 13.8	138 33.1 16 35.0		
6	93 59.5 142 -18 37.2 -110				51 57.9 -22 13.8	168 37.9 16 35.0		
8	123 5.9 141 -18 59.2 -108				82 3.3 -22 13.7	198 42.8 16 34.9		
10	152 12.0 139 -19 20.9 -107				112 8.6 -22 13.7	228 47.6 16 34.9		
12	181 17.9 138 -19 42.2 -105				142 14.0 -22 13.7	258 52.4 16 34.9		
14	210 23.4 136 -20 3.3 -104				172 19.3 -22 13.6	288 57.2 16 34.8		
16	239 28.7 135 -20 24.0 -102				202 24.7 -22 13.6	319 2.0 16 34.8		
18	268 33.6 133 -20 44.4 -100				232 30.0 -22 13.6	349 6.8 16 34.7		
20	297 38.3 132 -21 4.5 -99				262 35.4 -22 13.5	19 11.7 16 34.7		
22	326 42.6 130 -21 24.2 -97				292 40.7 -22 13.5	49 16.5 16 34.7		
Δ					27 0	24 0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	2 54.6	.3	15.9	T _m ...	1.0	54.1	14.7		
12	2 58.0	T _{m☉} 11 h 57.0 min	Starost 14.5 d	Faza ☉					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 51	.1	278	-4.0	♄	2 33	.0	102	-2.3
	8 46	.1	9	1.0	♅	18 43	.0	219	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 45.3	15 29.9	220 30.8	137 6.4	25 40.6	228 45.3	- 5 8.1
2	210 45.5	15 31.4	250 35.7	167 5.1	25 41.0	258 46.7	- 5 6.6
4	240 45.6	15 32.9	280 40.6	197 3.8	25 41.5	288 48.1	- 5 5.1
6	270 45.7	15 34.3	310 45.6	227 2.5	25 41.9	318 49.5	- 5 3.7
8	300 45.9	15 35.8	340 50.5	257 1.2	25 42.3	348 50.9	- 5 2.2
10	330 46.0	15 37.3	10 55.4	286 59.9	25 42.7	18 52.3	- 5 .7
12	0 46.1	15 38.8	41 .3	316 58.6	25 43.1	48 53.7	- 4 59.2
14	30 46.3	15 40.2	71 5.3	346 57.3	25 43.5	78 55.1	- 4 57.7
16	60 46.4	15 41.7	101 10.2	16 56.0	25 43.9	108 56.5	- 4 56.2
18	90 46.5	15 43.2	131 15.1	46 54.7	25 44.3	138 57.9	- 4 54.8
20	120 46.6	15 44.6	161 20.1	76 53.4	25 44.6	168 59.3	- 4 53.3
22	150 46.8	15 46.1	191 25.0	106 52.1	25 45.0	199 .7	- 4 51.8
Δ	1	7		-6	2	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 54	20 2	0 55	:::	22 36	3.9	3 22	.2
55	4 17	19 38	0 44	3 16	21 45	3.2	3 60	.8
50	4 34	19 21	0 37	2 23	21 12	2.9	4 27	1.1
45	4 47	19 7	0 33	1 59	20 47	2.7	4 48	1.3
40	4 58	18 56	0 30	1 45	20 27	2.6	5 5	1.4
35	5 8	18 47	0 27	1 35	20 11	2.5	5 19	1.5
30	5 16	18 38	0 25	1 27	19 57	2.4	5 31	1.6
20	5 30	18 24	0 23	1 18	19 33	2.3	5 53	1.8
10	5 42	18 12	0 22	1 13	19 13	2.2	6 11	1.9
0	5 53	18 0	0 21	1 11	18 54	2.1	6 29	2.0
10	6 5	17 49	0 22	1 12	18 35	2.0	6 46	2.2
20	6 17	17 37	0 23	1 15	18 14	1.9	7 5	2.3
30	6 30	17 24	0 25	1 21	17 51	1.8	7 27	2.4
35	6 38	17 16	0 26	1 26	17 37	1.7	7 40	2.5
40	6 46	17 7	0 28	1 32	17 22	1.6	7 55	2.6
45	6 57	16 57	0 31	1 40	17 3	1.5	8 12	2.8
50	7 9	16 44	0 34	1 50	16 40	1.3	8 34	3.0
55	7 24	16 29	0 39	2 4	16 10	1.0	9 3	3.3
60	7 45	16 8	0 46	2 24	15 26	.4	9 46	3.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	355 46.7	129 -21	43.6 -95	322 46.1	-22 13.5	79 21.3	16 34.6	
2	24 50.4	127 -22	2.6 -93	352 51.4	-22 13.4	109 26.1	16 34.6	
4	53 53.8	125 -22	21.2 -91	22 56.8	-22 13.4	139 30.9	16 34.5	
6	82 56.9	124 -22	39.4 -89	53 2.2	-22 13.4	169 35.7	16 34.5	
8	111 59.6	122 -22	57.3 -87	83 7.5	-22 13.3	199 40.5	16 34.5	
10	141 2.1	121 -23	14.8 -85	113 12.9	-22 13.3	229 45.4	16 34.4	
12	170 4.2	119 -23	31.9 -83	143 18.2	-22 13.3	259 50.2	16 34.4	
14	199 6.1	118 -23	48.5 -81	173 23.6	-22 13.2	289 55.0	16 34.3	
16	228 7.6	116 -24	4.8 -79	203 29.0	-22 13.2	319 59.8	16 34.3	
18	257 8.8	114 -24	20.6 -77	233 34.3	-22 13.2	350 4.6	16 34.2	
20	286 9.7	113 -24	35.9 -75	263 39.7	-22 13.2	20 9.4	16 34.2	
22	315 10.2	111 -24	50.9 -72	293 45.1	-22 13.1	50 14.2	16 34.2	
Δ				27	0	24	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	3 1.5	.3	15.9	T _m	0 17	2.0	54.3 14.8
12	3 4.6	T _{m☉}	11 h 56.9 min	Starost	15.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 52	.1	277	-4.0	♃	2 28	.0	102	-2.3
♂	8 45	.1	8	1.0	♄	18 40	.0	219	.3

4. MAJ

PETAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 46.9	15 47.6	221 29.9	136 50.8	25 45.4	229 2.1	- 4 50.3
2	210 47.0	15 49.0	251 34.8	166 49.5	25 45.7	259 3.5	- 4 48.8
4	240 47.1	15 50.5	281 39.8	196 48.2	25 46.1	289 4.9	- 4 47.3
6	270 47.3	15 51.9	311 44.7	226 47.0	25 46.5	319 6.3	- 4 45.8
8	300 47.4	15 53.4	341 49.6	256 45.7	25 46.8	349 7.7	- 4 44.4
10	330 47.5	15 54.8	11 54.6	286 44.4	25 47.2	19 9.1	- 4 42.9
12	0 47.6	15 56.3	41 59.5	316 43.1	25 47.5	49 10.5	- 4 41.4
14	30 47.8	15 57.7	72 4.4	346 41.8	25 47.8	79 11.9	- 4 39.9
16	60 47.9	15 59.2	102 9.3	16 40.5	25 48.2	109 13.3	- 4 38.4
18	90 48.0	16 .6	132 14.3	46 39.2	25 48.5	139 14.7	- 4 36.9
20	120 48.1	16 2.1	162 19.2	76 38.0	25 48.8	169 16.1	- 4 35.4
22	150 48.2	16 3.5	192 24.1	106 36.7	25 49.2	199 17.5	- 4 34.0
Δ	1	7		-6	2	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 51	20 4	0 55	:::	. . . .	0	3 27	.5
55	4 15	19 40	0 44	3 22	23 1	2.7	4 19	1.2
50	4 32	19 23	0 37	2 24	22 21	2.6	4 53	1.5
45	4 46	19 9	0 33	1 60	21 53	2.5	5 18	1.6
40	4 57	18 57	0 30	1 45	21 30	2.5	5 39	1.7
35	5 7	18 48	0 27	1 35	21 11	2.4	5 56	1.8
30	5 15	18 39	0 26	1 28	20 55	2.4	6 10	1.9
20	5 29	18 24	0 23	1 18	20 29	2.3	6 36	2.0
10	5 42	18 12	0 22	1 13	20 6	2.3	6 57	2.1
0	5 53	18 0	0 22	1 12	19 44	2.2	7 18	2.2
10	6 5	17 49	0 22	1 12	19 23	2.2	7 38	2.2
20	6 17	17 37	0 23	1 15	18 60	2.1	7 60	2.3
30	6 31	17 23	0 25	1 21	18 33	2.0	8 25	2.4
35	6 38	17 15	0 26	1 26	18 18	2.0	8 40	2.5
40	6 47	17 6	0 28	1 32	17 60	1.9	8 58	2.5
45	6 58	16 55	0 31	1 40	17 38	1.9	9 19	2.6
50	7 10	16 43	0 34	1 51	17 11	1.8	9 46	2.8
55	7 26	16 27	0 39	2 5	16 34	1.6	10 22	3.0
60	7 47	16 6	0 46	2 25	15 34	1.0	11 20	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	344 10.5	110 -25	5.4 -70	323 50.4	-22 13.1	80 19.0	16 34.1	
2	13 10.5	108 -25	19.4 -68	353 55.8	-22 13.1	110 23.8	16 34.1	
4	42 10.1	107 -25	33.0 -65	24 1.2	-22 13.0	140 28.6	16 34.0	
6	71 9.5	105 -25	46.0 -63	54 6.5	-22 13.0	170 33.4	16 34.0	
8	100 8.5	104 -25	58.6 -61	84 11.9	-22 13.0	200 38.2	16 33.9	
10	129 7.3	102 -26	10.8 -58	114 17.3	-22 12.9	230 43.0	16 33.9	
12	158 5.8	101 -26	22.4 -56	144 22.7	-22 12.9	260 47.8	16 33.8	
14	187 4.0	100 -26	33.5 -53	174 28.0	-22 12.9	290 52.6	16 33.8	
16	216 2.0	98 -26	44.1 -50	204 33.4	-22 12.8	320 57.4	16 33.8	
18	244 59.6	97 -26	54.2 -48	234 38.8	-22 12.8	351 2.2	16 33.7	
20	273 57.0	96 -27	3.7 -45	264 44.2	-22 12.7	21 7.0	16 33.7	
22	302 54.2	95 -27	12.8 -42	294 49.6	-22 12.7	51 11.8	16 33.6	
Δ				27	0	24	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	3 7.8	.2	15.9	T _m	1 5	2.2	54.5 14.9
12	3 10.7	T _{m☉}	11 h 56.8 min	Starost	16.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 53	.1	275	-4.0	♃	2 24	.0	102	-2.3
♂	8 43	.1	8	1.0	♄	18 36	.0	219	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	48.3	16	5.0	222	29.1	136	35.4	25	49.5	229	18.9	-4	32.5
2	210	48.5	16	6.4	252	34.0	166	34.1	25	49.8	259	20.3	-4	31.0
4	240	48.6	16	7.8	282	38.9	196	32.8	25	50.1	289	21.7	-4	29.5
6	270	48.7	16	9.3	312	43.8	226	31.6	25	50.4	319	23.1	-4	28.0
8	300	48.8	16	10.7	342	48.8	256	30.3	25	50.7	349	24.5	-4	26.5
10	330	48.9	16	12.1	12	53.7	286	29.0	25	51.0	19	25.9	-4	25.0
12	0	49.0	16	13.6	42	58.6	316	27.7	25	51.3	49	27.3	-4	23.5
14	30	49.1	16	15.0	73	63.6	346	26.4	25	51.5	79	28.7	-4	22.0
16	60	49.2	16	16.4	103	68.5	16	25.2	25	51.8	109	30.1	-4	20.6
18	90	49.3	16	17.8	133	73.4	46	23.9	25	52.1	139	31.6	-4	19.1
20	120	49.4	16	19.3	163	78.3	76	22.6	25	52.4	169	33.0	-4	17.6
22	150	49.5	16	20.7	193	83.3	106	21.3	25	52.6	199	34.4	-4	16.1
Δ		1	7				-6	1			7	7		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 48	20 7	0 56	:::	0 10	3.2	3 39	1.5
55	4 12	19 42	0 44	3 29	..	.0	4 48	1.9
50	4 30	19 24	0 37	2 26	23 23	2.1	5 28	2.0
45	4 44	19 10	0 33	2 1	22 53	2.2	5 58	2.1
40	4 56	18 58	0 30	1 46	22 29	2.2	6 21	2.1
35	5 6	18 48	0 27	1 35	22 9	2.2	6 40	2.2
30	5 14	18 40	0 26	1 28	21 52	2.2	6 56	2.2
20	5 29	18 25	0 23	1 19	21 24	2.2	7 24	2.2
10	5 42	18 12	0 22	1 14	20 60	2.3	7 47	2.2
0	5 53	18 0	0 22	1 12	20 37	2.3	8 9	2.3
10	6 5	17 48	0 22	1 12	20 15	2.3	8 32	2.3
20	6 17	17 36	0 23	1 15	19 50	2.3	8 55	2.3
30	6 31	17 22	0 25	1 22	19 22	2.3	9 23	2.3
35	6 39	17 14	0 26	1 26	19 6	2.3	9 40	2.3
40	6 48	17 5	0 28	1 32	18 46	2.3	9 59	2.3
45	6 59	16 54	0 31	1 40	18 23	2.3	10 22	2.3
50	7 12	16 41	0 35	1 51	17 53	2.3	10 52	2.4
55	7 28	16 25	0 39	2 5	17 11	2.3	11 34	2.4
60	7 49	16 3	0 47	2 25	15 57	2.3	12 47	2.4
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	331	51.1	93	-27	21.2	-40	324	54.9	-22	12.7	81	16.6	16	33.6		
2	0	47.7	92	-27	29.2	-37	355	.3	-22	12.6	111	21.4	16	33.5		
4	29	44.2	91	-27	36.6	-34	25	5.7	-22	12.6	141	26.2	16	33.5		
6	58	40.4	90	-27	43.4	-31	55	11.1	-22	12.6	171	31.0	16	33.4		
8	87	36.4	89	-27	49.7	-29	85	16.5	-22	12.5	201	35.8	16	33.4		
10	116	32.2	88	-27	55.4	-26	115	21.9	-22	12.5	231	40.6	16	33.3		
12	145	27.8	87	-28	.5	-23	145	27.3	-22	12.5	261	45.4	16	33.3		
14	174	23.2	86	-28	5.1	-20	175	32.6	-22	12.4	291	50.2	16	33.2		
16	203	18.5	85	-28	9.1	-17	205	38.0	-22	12.4	321	55.0	16	33.2		
18	232	13.6	85	-28	12.5	-14	235	43.4	-22	12.4	351	59.8	16	33.1		
20	261	8.5	84	-28	15.3	-11	265	48.8	-22	12.3	22	4.6	16	33.1		
22	290	3.3	83	-28	17.5	-8	295	54.2	-22	12.3	52	9.4	16	33.1		
Δ							27	0			24	0				

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	3 13.5	.2	15.9	T _m	1 57	2.2	54.9	15.0
12	3 16.1	T _{m☉}	11 h 56.7 min	Starost	17.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	14 54	.1	274	-4.0	♃	2 20	.0	102	-2.3
♂	8 42	.1	7	1.0	♄	18 32	.0	219	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	49.6	16	22.1	223	28.2	136	20.1	25	52.9	229	35.8	-4	14.6
2	210	49.7	16	23.5	253	33.1	166	18.8	25	53.1	259	37.2	-4	13.1
4	240	49.8	16	24.9	283	38.0	196	17.5	25	53.4	289	38.6	-4	11.6
6	270	49.9	16	26.3	313	43.0	226	16.3	25	53.6	319	40.0	-4	10.1
8	300	50.0	16	27.8	343	47.9	256	15.0	25	53.9	349	41.4	-4	8.6
10	330	50.1	16	29.2	13	52.8	286	13.7	25	54.1	19	42.8	-4	7.2
12	0	50.2	16	30.6	43	57.8	316	12.5	25	54.4	49	44.2	-4	5.7
14	30	50.3	16	32.0	74	62.7	346	11.2	25	54.6	79	45.6	-4	4.2
16	60	50.4	16	33.4	104	67.6	16	9.9	25	54.8	109	47.0	-4	2.7
18	90	50.5	16	34.8	134	72.5	46	8.7	25	55.0	139	48.5	-4	1.2
20	120	50.6	16	36.2	164	77.5	76	7.4	25	55.2	169	49.9	-3	59.7
22	150	50.7	16	37.6	194	82.4	106	6.1	25	55.4	199	51.3	-3	58.2
Δ		0	7				-6	1			7	7		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 46	20 9	0 57	:::	1 26	1.7	4 14	3.1
55	4 10	19 44	0 45	3 39	0 7	2.0	5 33	2.7
50	4 29	19 26	0 38	2 27	..	.0	6 17	2.6
45	4 43	19 11	0 33	2 1	23 45	1.8	6 48	2.5
40	4 55	18 59	0 30	1 46	23 21	1.9	7 12	2.5
35	5 5	18 49	0 27	1 36	23 2	1.9	7 31	2.4
30	5 13	18 40	0 26	1 28	22 46	2.0	7 48	2.4
20	5 28	18 25	0 23	1 19	22 18	2.1	8 16	2.4
10	5 41	18 12	0 22	1 14	21 54	2.2	8 41	2.3
0	5 53	18 0	0 22	1 12	21 32	2.3	9 3	2.3
10	6 5	17 48	0 22	1 12	21 10	2.3	9 26	2.2
20	6 18	17 35	0 23	1 15	20 46	2.4	9 50	2.2
30	6 32	17 21	0 25	1 22	20 18	2.5	10 19	2.1
35	6 40	17 13	0 26	1 26	20 1	2.6	10 35	2.1
40	6 49	17 3	0 28	1 33	19 42	2.6	10 55	2.0
45	7 0	16 53	0 31	1 40	19 18	2.7	11 18	2.0
50	7 13	16 39	0 35	1 51	18 48	2.8	11 48	1.9
55	7 30	16 23	0 40	2 5	18 6	3.0	12 31	1.7
60	7 52	16 1	0 47	2 26	16 52	3.7	13 45	1.1
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	318	58.0	83	-28	19.1	-5	325	59.6	-22	12.3	82	14.1	16	33.0		
2	347	52.6	82	-28	20.1	-2	356	5.0	-22	12.2	112	18.9	16	33.0		
4	16	47.0	82	-28	20.5	1	26	10.4	-22	12.2	142	23.7	16	32.9		
6	45	41.4	81	-28	20.3	4	56	15.8	-22	12.2	172	28.5	16	32.9		
8	74	35.6	81	-28	19.5	7	86	21.2	-22	12.1	202	33.3	16	32.8		
10	103	29.9	81	-28	18.1	10	116	26.6	-22	12.1	232	38.1	16	32.8		
12	132	24.0	81	-28	16.1	13	146	32.0	-22	12.0	262	42.9	16	32.7		
14	161	18.1	80	-28	13.4	16	176	37.4	-22	12.0	292	47.6	16	32.7		
16	190	12.2	80	-28	10.2	19	206	42.8	-22	12.0	322	52.4	16	32.6		
18	219	6.2	80	-28	6.3	22	236	48.2	-22	11.9	352	57.2	16	32.6		
20	248	.3	80	-28	1.9	25	266	53.6	-22	11.9	23	2.0	16	32.5		
22	276	54.3	80	-27	56.8	29	296	59.0	-22	11.9	53	6.8	16	32.5		
Δ							27	0			24	0				

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r

UT	SUNCE		PROLEĆ. TAČKA S _T	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 50.8	16 39.0	224 27.3	136 4.9	25 55.7	229 52.7	- 3 56.7
2	210 50.9	16 40.4	254 32.3	166 3.6	25 55.9	259 54.1	- 3 55.2
4	240 51.0	16 41.8	284 37.2	196 2.4	25 56.0	289 55.5	- 3 53.7
6	270 51.1	16 43.1	314 42.1	226 1.1	25 56.2	319 56.9	- 3 52.2
8	300 51.2	16 44.5	344 47.0	255 59.8	25 56.4	349 58.3	- 3 50.8
10	330 51.2	16 45.9	14 52.0	285 58.6	25 56.6	19 59.7	- 3 49.3
12	0 51.3	16 47.3	44 56.9	315 57.3	25 56.8	50 1.2	- 3 47.8
14	30 51.4	16 48.7	75 1.8	345 56.1	25 57.0	80 2.6	- 3 46.3
16	60 51.5	16 50.1	105 6.8	15 54.8	25 57.1	110 4.0	- 3 44.8
18	90 51.6	16 51.4	135 11.7	45 53.6	25 57.3	140 5.4	- 3 43.3
20	120 51.7	16 52.8	165 16.6	75 52.3	25 57.4	170 6.8	- 3 41.8
22	150 51.7	16 54.2	195 21.5	105 51.1	25 57.6	200 8.2	- 3 40.3
Δ	0	7		-6	1	7	7

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 43	20 12	0 57	:::	2 7	.6	5 28	4.1
55	4 8	19 46	0 45	3 55	0 56	1.4	6 38	3.3
50	4 27	19 27	0 38	2 29	0 14	1.6	7 19	3.1
45	4 42	19 12	0 33	2 2	...	.0	7 48	2.9
40	4 54	19 0	0 30	1 47	...	.0	8 11	2.8
35	5 4	18 50	0 28	1 36	23 49	1.7	8 30	2.7
30	5 13	18 41	0 26	1 29	23 34	1.8	8 46	2.6
20	5 28	18 26	0 23	1 19	23 9	2.0	9 13	2.5
10	5 41	18 12	0 22	1 14	22 47	2.1	9 37	2.3
0	5 53	18 0	0 22	1 12	22 26	2.2	9 58	2.2
10	6 5	17 48	0 22	1 12	22 6	2.3	10 20	2.1
20	6 18	17 35	0 23	1 16	21 44	2.5	10 43	2.0
30	6 32	17 20	0 25	1 22	21 18	2.6	11 9	1.9
35	6 41	17 12	0 27	1 27	21 3	2.7	11 25	1.8
40	6 50	17 2	0 29	1 33	20 45	2.8	11 43	1.7
45	7 1	16 51	0 31	1 41	20 24	3.0	12 5	1.6
50	7 15	16 38	0 35	1 51	19 57	3.2	12 33	1.4
55	7 32	16 21	0 40	2 6	19 19	3.5	13 11	1.1
60	7 54	15 58	0 47	2 26	18 20	4.2	14 11	.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	305 48.4	80 -27	51.1	32	327 4.4	-22 11.8	83 11.6	16 32.4
2	334 42.5	81 -27	44.7	35	357 9.8	-22 11.8	113 16.3	16 32.3
4	3 36.6	81 -27	37.8	38	27 15.3	-22 11.8	143 21.1	16 32.3
6	32 30.8	81 -27	30.3	41	57 20.7	-22 11.7	173 25.9	16 32.2
8	61 25.0	81 -27	22.1	44	87 26.1	-22 11.7	203 30.7	16 32.2
10	90 19.3	82 -27	13.3	47	117 31.5	-22 11.7	233 35.4	16 32.1
12	119 13.6	82 -27	4.0	50	147 36.9	-22 11.6	263 40.2	16 32.1
14	148 8.1	83 -26	54.0	53	177 42.3	-22 11.6	293 45.0	16 32.0
16	177 2.7	83 -26	43.4	56	207 47.7	-22 11.5	323 49.8	16 32.0
18	205 57.3	84 -26	32.3	59	237 53.2	-22 11.5	353 54.5	16 31.9
20	234 52.1	85 -26	20.5	62	267 58.6	-22 11.5	23 59.3	16 31.9
22	263 47.0	85 -26	8.2	65	298 4.0	-22 11.4	54 4.1	16 31.8
Δ					27	0	24	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	3 23.4	.2	15.9	T _m	3 45	2.3	55.8	15.2	
12	3 25.4	T _{m☉}	11 h 56.6 min	Starost	19.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	14 56	.2	272	-4.0	♃	2 11	.0	103	-2.3
♂	8 40	.1	5	1.0	♄	18 24	.0	219	.3

UT	SUNCE		PROLEĆ. TAČKA S _T	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 51.8	16 55.6	225 26.5	135 49.8	25 57.7	230 9.6	- 3 38.8
2	210 51.9	16 56.9	255 31.4	165 48.6	25 57.9	260 11.1	- 3 37.3
4	240 52.0	16 58.3	285 36.3	195 47.3	25 58.0	290 12.5	- 3 35.8
6	270 52.0	16 59.7	315 41.3	225 46.1	25 58.2	320 13.9	- 3 34.3
8	300 52.1	17 1.0	345 46.2	255 44.9	25 58.3	350 15.3	- 3 32.8
10	330 52.2	17 2.4	15 51.1	285 43.6	25 58.4	20 16.7	- 3 31.3
12	0 52.3	17 3.8	45 56.0	315 42.4	25 58.5	50 18.1	- 3 29.9
14	30 52.3	17 5.1	76 1.0	345 41.1	25 58.7	80 19.6	- 3 28.4
16	60 52.4	17 6.5	106 5.9	15 39.9	25 58.8	110 21.0	- 3 26.9
18	90 52.5	17 7.8	136 10.8	45 38.7	25 58.9	140 22.4	- 3 25.4
20	120 52.5	17 9.2	166 15.8	75 37.4	25 59.0	170 23.8	- 3 23.9
22	150 52.6	17 10.5	196 20.7	105 36.2	25 59.1	200 25.2	- 3 22.4
Δ	0	7		-6	1	7	7

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 41	20 14	0 58	:::	2 22	.2	7 6	4.3
55	4 6	19 48	0 45	:::	1 28	.9	7 59	3.7
50	4 25	19 29	0 38	2 30	0 53	1.2	8 32	3.3
45	4 40	19 14	0 33	2 3	0 27	1.4	8 57	3.1
40	4 52	19 1	0 30	1 47	0 6	1.6	9 17	2.9
35	5 3	18 51	0 28	1 36	...	.0	9 34	2.8
30	5 12	18 42	0 26	1 29	...	.0	9 48	2.7
20	5 27	18 26	0 23	1 19	23 56	1.8	10 12	2.5
10	5 41	18 13	0 23	1 14	23 37	2.0	10 33	2.3
0	5 53	17 60	0 22	1 12	23 19	2.1	10 52	2.2
10	6 5	17 48	0 22	1 13	23 2	2.3	11 11	2.0
20	6 18	17 34	0 23	1 16	22 43	2.5	11 32	1.9
30	6 33	17 20	0 25	1 22	22 21	2.7	11 55	1.7
35	6 42	17 11	0 27	1 27	22 8	2.8	12 9	1.6
40	6 51	17 1	0 29	1 33	21 53	3.0	12 24	1.4
45	7 3	16 50	0 31	1 41	21 36	3.1	12 43	1.3
50	7 16	16 36	0 35	1 51	21 13	3.4	13 6	1.0
55	7 33	16 19	0 40	2 6	20 44	3.7	13 37	.7
60	7 56	15 56	0 47	2 27	20 1	4.3	14 21	.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	292 42.0	86 -25	55.2	68	328 9.4	-22 11.4	84 8.9	16 31.8
2	321 37.2	87 -25	41.7	70	358 14.8	-22 11.4	114 13.6	16 31.7
4	350 32.5	87 -25	27.6	73	28 20.3	-22 11.3	144 18.4	16 31.7
6	19 28.0	88 -25	13.0	76	58 25.7	-22 11.3	174 23.2	16 31.6
8	48 23.6	89 -24	57.7	79	88 31.1	-22 11.2	204 27.9	16 31.5
10	77 19.4	90 -24	41.9	82	118 36.5	-22 11.2	234 32.7	16 31.5
12	106 15.3	91 -24	25.6	84	148 42.0	-22 11.2	264 37.5	16 31.4
14	135 11.5	92 -24	8.7	87	178 47.4	-22 11.1	294 42.2	16 31.4
16	164 7.8	92 -23	51.2	90	208 52.8	-22 11.1	324 47.0	16 31.3
18	193 4.3	93 -23	33.2	93	238 58.2	-22 11.0	354 51.8	16 31.3
20	222 .9	94 -23	14.7	95	269 3.7	-22 11.0	24 56.5	16 31.2
22	250 57.8	95 -22	55.7	98	299 9.1	-22 11.0	55 1.3	16 31.2
Δ					27	0	24	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	3 27.4	.1	15.9	T _m	4 39	2.2	56.4	15.4	
12	3 29.2	T _{m☉}	11 h 56.5 min	Starost	20.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	14 57	.2	270	-4.0	♃	2 7	.0	103	-2.4
♂	8 39	.1	5	1.0	♄	18 20	.0	219	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	52.7	17	11.9	226	25.6	135	35.0	25	59.2	230	26.7	-3	20.9
2	210	52.7	17	13.2	256	30.5	165	33.7	25	59.3	260	28.1	-3	19.4
4	240	52.8	17	14.6	286	35.5	195	32.5	25	59.3	290	29.5	-3	17.9
6	270	52.9	17	15.9	316	40.4	225	31.3	25	59.4	320	30.9	-3	16.4
8	300	52.9	17	17.2	346	45.3	255	30.0	25	59.5	350	32.3	-3	14.9
10	330	53.0	17	18.6	16	50.2	285	28.8	25	59.6	20	33.7	-3	13.4
12	0	53.1	17	19.9	46	55.2	315	27.6	25	59.6	50	35.2	-3	11.9
14	30	53.1	17	21.3	77	.1	345	26.4	25	59.7	80	36.6	-3	10.4
16	60	53.2	17	22.6	107	5.0	15	25.1	25	59.8	110	38.0	-3	8.9
18	90	53.2	17	23.9	137	10.0	45	23.9	25	59.8	140	39.4	-3	7.4
20	120	53.3	17	25.2	167	14.9	75	22.7	25	59.9	170	40.9	-3	5.9
22	150	53.3	17	26.6	197	19.8	105	21.5	25	59.9	200	42.3	-3	4.4
Δ	0		7				-6		0		7			7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 38	20 17	0 59	:	2 27	.1	8 50	4.3
55	4 4	19 50	0 46	:	1 49	.6	9 26	3.8
50	4 24	19 30	0 38	2 32	1 22	.9	9 52	3.4
45	4 39	19 15	0 33	2 4	1 1	1.1	10 11	3.2
40	4 51	19 2	0 30	1 48	0 44	1.3	10 27	3.0
35	5 2	18 52	0 28	1 37	0 30	1.5	10 40	2.8
30	5 11	18 42	0 26	1 29	0 17	1.6	10 52	2.7
20	5 27	18 26	0 23	1 19	...	.0	11 12	2.5
10	5 40	18 13	0 22	1 14	...	.0	11 28	2.3
0	5 53	17 60	0 22	1 12	...	.0	11 44	2.1
10	6 5	17 47	0 22	1 13	23 57	2.2	11 60	1.9
20	6 19	17 34	0 23	1 16	23 42	2.5	12 16	1.7
30	6 34	17 19	0 25	1 22	23 25	2.7	12 35	1.5
35	6 42	17 10	0 27	1 27	23 16	2.8	12 46	1.4
40	6 52	17 0	0 29	1 33	23 4	3.0	12 59	1.2
45	7 4	16 49	0 31	1 41	22 51	3.2	13 13	1.0
50	7 18	16 35	0 35	1 52	22 34	3.4	13 31	.8
55	7 35	16 17	0 40	2 6	22 13	3.8	13 54	.5
60	7 59	15 53	0 48	2 27	21 44	4.2	14 25	.0
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	279	54.8	96	-22	36.1	100	329	14.5	-22	10.9	85	6.1	16	31.1
2	308	52.0	97	-22	16.0	103	359	20.0	-22	10.9	115	10.8	16	31.0
4	337	49.5	98	-21	55.4	105	29	25.4	-22	10.9	145	15.6	16	31.0
6	6	47.1	99	-21	34.3	108	59	30.8	-22	10.8	175	20.4	16	30.9
8	35	44.9	100	-21	12.7	110	89	36.3	-22	10.8	205	25.1	16	30.9
10	64	42.8	101	-20	50.6	113	119	41.7	-22	10.7	235	29.9	16	30.8
12	93	41.0	102	-20	28.1	115	149	47.2	-22	10.7	265	34.6	16	30.8
14	122	39.4	103	-20	5.0	117	179	52.6	-22	10.7	295	39.4	16	30.7
16	151	37.9	104	-19	41.6	120	209	58.0	-22	10.6	325	44.2	16	30.6
18	180	36.7	105	-19	17.6	122	240	3.5	-22	10.6	355	48.9	16	30.6
20	209	35.6	105	-18	53.2	124	270	8.9	-22	10.5	25	53.7	16	30.5
22	238	34.7	106	-18	28.4	126	300	14.4	-22	10.5	55	58.4	16	30.5
Δ							27		0		24			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	3 30.9	.1	15.9	T _m	5 32	2.1	57.1	15.6
12	3 32.3	T _{m☉}	11 h 56.5 min	Starost	21.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 58	.2	269	-4.0	♃	2 3	.0	103	-2.4
♂	8 38	.1	4	1.0	♄	18 17	.0	219	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	53.4	17	27.9	227	24.7	135	20.3	25	59.9	230	43.7	-3	2.9
2	210	53.4	17	29.2	257	29.7	165	19.0	25	60.0	260	45.1	-3	1.5
4	240	53.5	17	30.5	287	34.6	195	17.8	26	.0	290	46.5	-2	60.0
6	270	53.6	17	31.9	317	39.5	225	16.6	26	.0	320	48.0	-2	58.5
8	300	53.6	17	33.2	347	44.5	255	15.4	26	.1	350	49.4	-2	57.0
10	330	53.7	17	34.5	17	49.4	285	14.2	26	.1	20	50.8	-2	55.5
12	0	53.7	17	35.8	47	54.3	315	13.0	26	.1	50	52.2	-2	54.0
14	30	53.7	17	37.1	77	59.2	345	11.8	26	.1	80	53.7	-2	52.5
16	60	53.8	17	38.4	108	4.2	15	10.6	26	.1	110	55.1	-2	51.0
18	90	53.8	17	39.7	138	9.1	45	9.4	26	.1	140	56.5	-2	49.5
20	120	53.9	17	41.0	168	14.0	75	8.2	26	.1	170	57.9	-2	48.0
22	150	53.9	17	42.3	198	19.0	105	7.0	26	.1	200	59.4	-2	46.5
Δ	0		7				-6		0		7			7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 36	20 19	0 60	:	2 29	.0	10 33	4.2
55	4 2	19 52	0 46	:	2 3	.4	10 56	3.8
50	4 22	19 32	0 38	2 34	1 44	.7	11 14	3.4
45	4 38	19 16	0 34	2 5	1 28	1.0	11 27	3.2
40	4 50	19 3	0 30	1 48	1 16	1.1	11 39	3.0
35	5 1	18 52	0 28	1 37	1 5	1.3	11 48	2.8
30	5 10	18 43	0 26	1 29	0 55	1.4	11 56	2.7
20	5 26	18 27	0 23	1 19	0 39	1.7	12 11	2.4
10	5 40	18 13	0 22	1 14	0 24	1.9	12 23	2.2
0	5 53	17 60	0 22	1 12	0 11	2.1	12 34	2.0
10	6 6	17 47	0 22	1 13	...	.0	12 46	1.8
20	6 19	17 34	0 23	1 16	...	.0	12 58	1.6
30	6 34	17 18	0 25	1 22	...	.0	13 11	1.4
35	6 43	17 9	0 27	1 27	...	.0	13 19	1.2
40	6 53	16 59	0 29	1 33	...	.0	13 28	1.1
45	7 5	16 47	0 31	1 41	...	.0	13 38	.9
50	7 19	16 33	0 35	1 52	23 57	3.5	13 51	.7
55	7 37	16 15	0 40	2 7	23 43	3.8	14 6	.4
60	8 1	15 51	0 48	2 28	23 26	4.2	14 26	.0
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	267	34.0	107	-18	3.1	128	330	19.8	-22	10.5	86	3.2	16	30.4
2	296	33.4	108	-17	37.4	131	0	25.2	-22	10.4	116	7.9	16	30.3
4	325	33.0	109	-17	11.3	133	30	30.7	-22	10.4	146	12.7	16	30.3
6	354	32.8	110	-16	44.7	135	60	36.1	-22	10.3	176	17.4	16	30.2
8	23	32.8	110	-16	17.8	137	90	41.6	-22	10.3	206	22.2	16	30.2
10	52	32.8	111	-15	50.5	138	120	47.0	-22	10.3	236	26.9	16	30.1
12	81	33.1	112	-15	22.8	140	150	52.5	-22	10.2	266	31.7	16	30.0
14	110	33.5	113	-14	54.7	142	180	57.9	-22	10.2	296	36.5	16	30.0
16	139	34.0	113	-14	26.3	144	211	3.4	-22	10.1	326	41.2	16	29.9
18	168	34.6	114	-13	57.5	146	241	8.8	-22	10.1	356	45.9	16	29.9
20	197	35.4	114	-13	28.4	147	271	14.3	-22	10.1	26	50.7	16	29.8
22	226	36.3	115	-12	58.9	149	301	19.8	-22	10.0	56	55.4	16	29.7
Δ							27		0		24			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	3 33.8	.1	15.9	T _m	6 23	2.0	57.8	15.8
12								

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.0	17 43.6	228 23.9	135 5.8	26 .1	231 .8	- 2 45.0
2	210 54.0	17 44.9	258 28.8	165 4.6	26 .0	261 2.2	- 2 43.5
4	240 54.1	17 46.2	288 33.7	195 3.4	26 .0	291 3.6	- 2 42.0
6	270 54.1	17 47.5	318 38.7	225 2.2	25 60.0	321 5.1	- 2 40.5
8	300 54.1	17 48.8	348 43.6	255 1.0	25 59.9	351 6.5	- 2 39.0
10	330 54.2	17 50.1	18 48.5	284 59.8	25 59.9	21 7.9	- 2 37.5
12	0 54.2	17 51.4	48 53.5	314 58.6	25 59.9	51 9.3	- 2 36.0
14	30 54.2	17 52.7	78 58.4	344 57.4	25 59.8	81 10.8	- 2 34.5
16	60 54.3	17 54.0	109 3.3	14 56.2	25 59.8	111 12.2	- 2 33.0
18	90 54.3	17 55.2	139 8.2	44 55.0	25 59.7	141 13.6	- 2 31.5
20	120 54.3	17 56.5	169 13.2	74 53.9	25 59.6	171 15.1	- 2 30.0
22	150 54.4	17 57.8	199 18.1	104 52.7	25 59.6	201 16.5	- 2 28.5
Δ	0	6		-6	0	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 33	20 21	1 0	:::	2 30	.0	12 14	4.2
55	4 1	19 53	0 46	:::	2 14	.4	12 27	3.8
50	4 21	19 33	0 39	2 36	2 1	.6	12 37	3.5
45	4 36	19 17	0 34	2 6	1 51	.9	12 44	3.2
40	4 49	19 4	0 30	1 49	1 43	1.0	12 51	3.0
35	5 0	18 53	0 28	1 37	1 36	1.2	12 56	2.9
30	5 10	18 44	0 26	1 30	1 30	1.4	13 1	2.7
20	5 26	18 27	0 23	1 20	1 19	1.6	13 9	2.5
10	5 40	18 13	0 22	1 14	1 9	1.8	13 16	2.2
0	5 53	17 60	0 22	1 12	1 0	2.0	13 23	2.0
10	6 6	17 47	0 22	1 13	0 51	2.2	13 30	1.8
20	6 19	17 33	0 23	1 16	0 41	2.4	13 37	1.6
30	6 35	17 17	0 25	1 22	0 30	2.7	13 45	1.3
35	6 44	17 8	0 27	1 27	0 24	2.8	13 49	1.2
40	6 54	16 58	0 29	1 33	0 16	3.0	13 54	1.0
45	7 6	16 46	0 32	1 41	0 8	3.2	13 60	.8
50	7 21	16 32	0 35	1 52	...	.0	14 7	.6
55	7 39	16 13	0 40	2 7	...	.0	14 15	.3
60	8 3	15 49	0 48	2 28	...	.0	14 26	.0
S								

UT	MESEC				JUPITER			SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	255 37.3	115 -12	29.1	151	331 25.2	-22	10.0	87 .2	16 29.7	
2	284 38.3	116 -11	59.0	152	1 30.7	-22	9.9	117 4.9	16 29.6	
4	313 39.5	116 -11	28.5	154	31 36.1	-22	9.9	147 9.7	16 29.5	
6	342 40.8	117 -10	57.8	155	61 41.6	-22	9.9	177 14.4	16 29.5	
8	11 42.1	117 -10	26.8	157	91 47.0	-22	9.8	207 19.2	16 29.4	
10	40 43.5	117 -9	55.5	158	121 52.5	-22	9.8	237 23.9	16 29.4	
12	69 45.0	118 -9	23.9	159	151 58.0	-22	9.7	267 28.7	16 29.3	
14	98 46.5	118 -8	52.1	160	182 3.4	-22	9.7	297 33.4	16 29.2	
16	127 48.1	118 -8	20.0	162	212 8.9	-22	9.7	327 38.1	16 29.2	
18	156 49.7	118 -7	47.7	163	242 14.4	-22	9.6	357 42.9	16 29.1	
20	185 51.3	118 -7	15.1	164	272 19.8	-22	9.6	27 47.6	16 29.0	
22	214 52.9	118 -6	42.3	165	302 25.3	-22	9.5	57 52.4	16 29.0	
Δ					27	0		24	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	3 36.1	.1	15.9	T _m	7 12	2.0	58.6	16.0	
12	3 36.9	T _{m☉}	11 h 56.4 min	Starost	23.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	15 0	.2	267	-4.0	♃	1 54	.0	103	-2.4
♂	8 36	.1	3	.9	♄	18 9	.0	219	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.4	17 59.1	229 23.0	134 51.5	25 59.5	231 17.9	- 2 27.0
2	210 54.4	18 .3	259 28.0	164 50.3	25 59.4	261 19.3	- 2 25.5
4	240 54.5	18 1.6	289 32.9	194 49.1	25 59.4	291 20.8	- 2 24.0
6	270 54.5	18 2.9	319 37.8	224 48.0	25 59.3	321 22.2	- 2 22.5
8	300 54.5	18 4.2	349 42.7	254 46.8	25 59.2	351 23.6	- 2 21.0
10	330 54.5	18 5.4	19 47.7	284 45.6	25 59.1	21 25.1	- 2 19.5
12	0 54.6	18 6.7	49 52.6	314 44.5	25 59.0	51 26.5	- 2 18.1
14	30 54.6	18 7.9	79 57.5	344 43.3	25 58.9	81 27.9	- 2 16.6
16	60 54.6	18 9.2	110 2.5	14 42.1	25 58.8	111 29.4	- 2 15.1
18	90 54.6	18 10.5	140 7.4	44 41.0	25 58.7	141 30.8	- 2 13.6
20	120 54.6	18 11.7	170 12.3	74 39.8	25 58.6	171 32.2	- 2 12.1
22	150 54.7	18 13.0	200 17.2	104 38.6	25 58.4	201 33.7	- 2 10.6
Δ	0	6		-6	0	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 31	20 24	1 1	:::	2 29	.0	13 54	4.3
55	3 59	19 55	0 47	:::	2 22	.3	13 58	3.9
50	4 19	19 35	0 39	2 38	2 17	.6	14 0	3.6
45	4 35	19 18	0 34	2 6	2 12	.8	14 2	3.3
40	4 48	19 5	0 30	1 49	2 8	1.0	14 4	3.1
35	4 59	18 54	0 28	1 38	2 5	1.2	14 5	2.9
30	5 9	18 44	0 26	1 30	2 2	1.3	14 6	2.8
20	5 25	18 28	0 24	1 20	1 57	1.6	14 8	2.5
10	5 40	18 13	0 22	1 15	1 53	1.8	14 10	2.3
0	5 53	17 60	0 22	1 12	1 49	2.0	14 11	2.0
10	6 6	17 47	0 22	1 13	1 44	2.2	14 13	1.8
20	6 20	17 33	0 23	1 16	1 40	2.5	14 15	1.6
30	6 36	17 17	0 25	1 22	1 35	2.7	14 16	1.3
35	6 45	17 8	0 27	1 27	1 32	2.9	14 17	1.2
40	6 55	16 57	0 29	1 33	1 29	3.1	14 19	1.0
45	7 7	16 45	0 32	1 42	1 25	3.3	14 20	.8
50	7 22	16 30	0 35	1 52	1 21	3.5	14 21	.6
55	7 41	16 12	0 41	2 7	1 15	3.8	14 23	.3
60	8 6	15 46	0 48	2 29	1 8	4.2	14 26	.0
S								

UT	MESEC				JUPITER			SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	243 54.5	118 -6	9.4	166	332 30.8	-22	9.5	87 57.1	16 28.9	
2	272 56.1	118 -5	36.2	167	2 36.2	-22	9.4	118 1.8	16 28.8	
4	301 57.7	118 -5	2.8	168	32 41.7	-22	9.4	148 6.6	16 28.8	
6	330 59.3	118 -4	29.3	168	62 47.2	-22	9.4	178 11.3	16 28.7	
8	0 .8	117 -3	55.6	169	92 52.6	-22	9.3	208 16.0	16 28.7	
10	29 2.3	117 -3	21.8	170	122 58.1	-22	9.3	238 20.8	16 28.6	
12	58 3.7	117 -2	47.8	171	153 3.6	-22	9.2	268 25.5	16 28.5	
14	87 5.1	116 -2	13.7	171	183 9.1	-22	9.2	298 30.3	16 28.5	
16	116 6.4	116 -1	39.4	172	213 14.5	-22	9.2	328 35.0	16 28.4	
18	145 7.5	115 -1	5.1	172	243 20.0	-22	9.1	358 39.7	16 28.3	
20	174 8.6	115 -0	30.7	172	273 25.5	-22	9.1	28 44.5	16 28.3	
22	203 9.6	114 0	3.8	173	303 31.0	-22	9.0	58 49.2	16 28.2	
Δ					27	0		24	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	3 37.8	.0	15.9	T _m	7 60	2.0	59.4	16.2	
12	3 38.3	T _{m☉}	11 h 56.4 min	Starost	24.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	15 1	.2	265	-4.0	♃	1 50	.0	103	-2.4
♂	8 34	.1	2	.9	♄	18 5	.0	219	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.7	18 14.2	230 22.2	134 37.5	25 58.3	231 35.1	- 2 9.1
2	210 54.7	18 15.5	260 27.1	164 36.3	25 58.2	261 36.5	- 2 7.6
4	240 54.7	18 16.7	290 32.0	194 35.2	25 58.1	291 38.0	- 2 6.1
6	270 54.7	18 17.9	320 36.9	224 34.0	25 57.9	321 39.4	- 2 4.6
8	300 54.7	18 19.2	350 41.9	254 32.8	25 57.8	351 40.8	- 2 3.1
10	330 54.7	18 20.4	20 46.8	284 31.7	25 57.6	21 42.3	- 2 1.6
12	0 54.8	18 21.7	50 51.7	314 30.5	25 57.5	51 43.7	- 2 .1
14	30 54.8	18 22.9	80 56.7	344 29.4	25 57.3	81 45.1	- 1 58.6
16	60 54.8	18 24.1	111 1.6	14 28.3	25 57.2	111 46.6	- 1 57.1
18	90 54.8	18 25.4	141 6.5	44 27.1	25 57.0	141 48.0	- 1 55.6
20	120 54.8	18 26.6	171 11.4	74 26.0	25 56.8	171 49.4	- 1 54.1
22	150 54.8	18 27.8	201 16.4	104 24.8	25 56.6	201 50.9	- 1 52.6
Δ	0	6		-6	-1	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 28	20 26	1 2	:::	2 29	.0	15 37	4.5
55	3 57	19 57	0 47	:::	2 30	.4	15 30	4.0
50	4 18	19 36	0 39	2 40	2 31	.6	15 25	3.7
45	4 34	19 20	0 34	2 7	2 32	.9	15 21	3.4
40	4 47	19 6	0 30	1 50	2 33	1.1	15 18	3.2
35	4 58	18 55	0 28	1 38	2 33	1.2	15 15	3.0
30	5 8	18 45	0 26	1 30	2 34	1.4	15 13	2.9
20	5 25	18 28	0 24	1 20	2 35	1.6	15 8	2.6
10	5 39	18 13	0 22	1 15	2 36	1.9	15 4	2.4
0	5 53	17 60	0 22	1 13	2 37	2.1	15 1	2.1
10	6 6	17 46	0 22	1 13	2 38	2.3	14 57	1.9
20	6 20	17 32	0 23	1 16	2 39	2.5	14 53	1.7
30	6 36	17 16	0 25	1 23	2 41	2.8	14 49	1.4
35	6 46	17 7	0 27	1 27	2 41	3.0	14 46	1.3
40	6 56	16 56	0 29	1 34	2 42	3.2	14 43	1.1
45	7 8	16 44	0 32	1 42	2 44	3.4	14 40	.9
50	7 23	16 29	0 35	1 53	2 45	3.6	14 36	.7
55	7 42	16 10	0 41	2 8	2 47	3.9	14 31	.4
60	8 8	15 44	0 49	2 29	2 49	4.4	14 25	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	232 10.4	113	0 38.4	173	333 36.4	-22 9.0	88 53.9	16 28.1
2	261 11.1	113	1 13.0	173	3 41.9	-22 8.9	118 58.6	16 28.1
4	290 11.6	112	1 47.6	173	33 47.4	-22 8.9	149 3.4	16 28.0
6	319 12.0	111	2 22.3	173	63 52.9	-22 8.9	179 8.1	16 27.9
8	348 12.2	110	2 57.0	173	93 58.4	-22 8.8	209 12.8	16 27.9
10	17 12.3	109	3 31.7	173	124 3.8	-22 8.8	239 17.6	16 27.8
12	46 12.1	108	4 6.3	173	154 9.3	-22 8.7	269 22.3	16 27.7
14	75 11.8	107	4 41.0	173	184 14.8	-22 8.7	299 27.0	16 27.6
16	104 11.2	106	5 15.6	173	214 20.3	-22 8.6	329 31.7	16 27.6
18	133 10.4	105	5 50.1	172	244 25.8	-22 8.6	359 36.5	16 27.5
20	162 9.4	104	6 24.5	172	274 31.3	-22 8.5	29 41.2	16 27.4
22	191 8.1	102	6 58.9	171	304 36.8	-22 8.5	59 45.9	16 27.4
Δ					27	0	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	3 38.9	.0	15.9	T _m	8 49	2.1	60.1 16.4
12	3 39.1	T _{m☉}	11 h 56.3 min	Starost	25.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 2	.2	264	-4.0	♄	1 45	.0	103	-2.4
♂	8 33	.1	1	.9	♂	18 2	.0	219	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.8	18 29.0	231 21.3	134 23.7	25 56.5	231 52.3	- 1 51.1
2	210 54.8	18 30.3	261 26.2	164 22.6	25 56.3	261 53.7	- 1 49.6
4	240 54.8	18 31.5	291 31.2	194 21.4	25 56.1	291 55.2	- 1 48.1
6	270 54.8	18 32.7	321 36.1	224 20.3	25 55.9	321 56.6	- 1 46.6
8	300 54.8	18 33.9	351 41.0	254 19.2	25 55.7	351 58.0	- 1 45.1
10	330 54.8	18 35.1	21 45.9	284 18.0	25 55.5	21 59.5	- 1 43.6
12	0 54.8	18 36.3	51 50.9	314 16.9	25 55.3	52 .9	- 1 42.1
14	30 54.8	18 37.5	81 55.8	344 15.8	25 55.1	82 2.4	- 1 40.6
16	60 54.8	18 38.8	112 .7	14 14.7	25 54.9	112 3.8	- 1 39.1
18	90 54.8	18 40.0	142 5.7	44 13.5	25 54.7	142 5.2	- 1 37.6
20	120 54.8	18 41.2	172 10.6	74 12.4	25 54.4	172 6.7	- 1 36.1
22	150 54.8	18 42.4	202 15.5	104 11.3	25 54.2	202 8.1	- 1 34.6
Δ	0	6		-6	-1	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 26	20 29	1 3	:::	2 29	.0	17 24	4.7
55	3 55	19 59	0 47	:::	2 39	.4	17 7	4.2
50	4 16	19 37	0 39	2 42	2 46	.7	16 54	3.8
45	4 33	19 21	0 34	2 8	2 53	1.0	16 44	3.6
40	4 46	19 7	0 31	1 50	2 58	1.2	16 35	3.3
35	4 58	18 56	0 28	1 39	3 3	1.4	16 28	3.2
30	5 8	18 46	0 26	1 30	3 7	1.5	16 21	3.0
20	5 25	18 28	0 24	1 20	3 15	1.8	16 11	2.7
10	5 39	18 14	0 22	1 15	3 21	2.0	16 1	2.5
0	5 53	17 60	0 22	1 13	3 27	2.2	15 52	2.3
10	6 6	17 46	0 22	1 13	3 34	2.4	15 43	2.1
20	6 21	17 32	0 23	1 16	3 41	2.7	15 34	1.9
30	6 37	17 16	0 25	1 23	3 48	2.9	15 23	1.6
35	6 46	17 6	0 27	1 27	3 53	3.1	15 17	1.5
40	6 57	16 55	0 29	1 34	3 58	3.3	15 10	1.3
45	7 10	16 43	0 32	1 42	4 4	3.5	15 2	1.1
50	7 25	16 27	0 36	1 53	4 12	3.8	14 52	.8
55	7 44	16 8	0 41	2 8	4 21	4.1	14 40	.5
60	8 10	15 42	0 49	2 30	4 33	4.6	14 25	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	220 6.6	101	7 33.1	171	334 42.2	-22 8.5	89 50.6	16 27.3
2	249 4.8	100	8 7.2	170	4 47.7	-22 8.4	119 55.3	16 27.2
4	278 2.8	98	8 41.2	169	34 53.2	-22 8.4	150 .1	16 27.2
6	307 .4	97	9 15.1	168	64 58.7	-22 8.3	180 4.8	16 27.1
8	335 57.8	95	9 48.7	167	95 4.2	-22 8.3	210 9.5	16 27.0
10	4 54.8	94	10 22.2	166	125 9.7	-22 8.2	240 14.2	16 26.9
12	33 51.5	92	10 55.5	165	155 15.2	-22 8.2	270 18.9	16 26.9
14	62 47.9	90	11 28.5	164	185 20.7	-22 8.1	300 23.7	16 26.8
16	91 44.0	89	12 1.3	163	215 26.2	-22 8.1	330 28.4	16 26.7
18	120 39.8	87	12 33.9	161	245 31.7	-22 8.1	0 33.1	16 26.7
20	149 35.1	85	13 6.1	160	275 37.2	-22 8.0	30 37.8	16 26.6
22	178 30.2	83	13 38.1	158	305 42.7	-22 8.0	60 42.5	16 26.5
Δ					27	0	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	3 39.4	.0	15.9	T _m	9 40	2.2	60.6 16.5
12	3 39.4	T _{m☉}	11 h 56.3 min	Starost	26.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 3	.2	263	-4.0	♄	1 41	.0	103	-2.4
♂	8 32	.1	1	.9	♂	17 58	.0	218	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.8	18 43.6	232 20.4	134 10.2	25 54.0	232 9.5	- 1 33.1
2	210 54.8	18 44.8	262 25.4	164 9.1	25 53.7	262 11.0	- 1 31.6
4	240 54.8	18 45.9	292 30.3	194 8.0	25 53.5	292 12.4	- 1 30.1
6	270 54.8	18 47.1	322 35.2	224 6.9	25 53.3	322 13.9	- 1 28.6
8	300 54.7	18 48.3	352 40.2	254 5.8	25 53.0	352 15.3	- 1 27.1
10	330 54.7	18 49.5	22 45.1	284 4.7	25 52.8	22 16.7	- 1 25.6
12	0 54.7	18 50.7	52 50.0	314 3.6	25 52.5	52 18.2	- 1 24.2
14	30 54.7	18 51.9	82 54.9	344 2.5	25 52.2	82 19.6	- 1 22.7
16	60 54.7	18 53.1	112 59.9	14 1.4	25 52.0	112 21.1	- 1 21.2
18	90 54.7	18 54.2	143 4.8	44 .3	25 51.7	142 22.5	- 1 19.7
20	120 54.7	18 55.4	173 9.7	73 59.2	25 51.4	172 23.9	- 1 18.2
22	150 54.6	18 56.6	203 14.7	103 58.1	25 51.1	202 25.4	- 1 16.7
Δ	0	6		-6	-1	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 23	20 31	1 4	:::	2 29	.1	19 17	5.0
55	3 53	20 1	0 48	:::	2 49	.6	18 47	4.3
50	4 15	19 39	0 39	2 44	3 4	.9	18 26	3.9
45	4 32	19 22	0 34	2 9	3 17	1.2	18 9	3.6
40	4 45	19 8	0 31	1 51	3 27	1.4	17 55	3.4
35	4 57	18 56	0 28	1 39	3 36	1.6	17 44	3.2
30	5 7	18 46	0 26	1 31	3 43	1.7	17 33	3.1
20	5 24	18 29	0 24	1 20	3 57	2.0	17 16	2.9
10	5 39	18 14	0 22	1 15	4 9	2.2	17 1	2.7
0	5 53	17 60	0 22	1 13	4 21	2.4	16 47	2.5
10	6 7	17 46	0 22	1 13	4 32	2.6	16 33	2.3
20	6 21	17 31	0 23	1 16	4 45	2.8	16 18	2.1
30	6 38	17 15	0 25	1 23	4 59	3.1	16 2	1.9
35	6 47	17 5	0 27	1 28	5 7	3.2	15 52	1.7
40	6 58	16 54	0 29	1 34	5 17	3.4	15 41	1.6
45	7 11	16 42	0 32	1 42	5 28	3.6	15 28	1.4
50	7 26	16 26	0 36	1 53	5 42	3.9	15 12	1.1
55	7 46	16 6	0 41	2 8	5 60	4.3	14 52	.7
60	8 12	15 40	0 49	2 30	6 24	4.9	14 25	.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	207 24.8	81 14 9.8	157	335 48.2	-22 7.9	90 47.2	16 26.4	
2	236 19.1	80 14 41.2	155	5 53.7	-22 7.9	120 52.0	16 26.4	
4	265 13.1	78 15 12.2	153	35 59.2	-22 7.8	150 56.7	16 26.3	
6	294 6.6	76 15 42.8	151	66 4.7	-22 7.8	181 1.4	16 26.2	
8	322 59.7	74 16 13.1	149	96 10.2	-22 7.7	211 6.1	16 26.2	
10	351 52.5	72 16 43.0	147	126 15.7	-22 7.7	241 10.8	16 26.1	
12	20 44.9	70 17 12.5	145	156 21.2	-22 7.7	271 15.5	16 26.0	
14	49 36.8	68 17 41.5	143	186 26.7	-22 7.6	301 20.2	16 25.9	
16	78 28.4	66 18 10.1	141	216 32.2	-22 7.6	331 24.9	16 25.9	
18	107 19.6	64 18 38.2	138	246 37.7	-22 7.5	1 29.6	16 25.8	
20	136 10.4	62 19 5.9	136	276 43.2	-22 7.5	31 34.3	16 25.7	
22	165 .7	60 19 33.0	133	306 48.7	-22 7.4	61 39.0	16 25.6	
Δ				28	0	24	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	3 39.3	.0	15.8	T _m	10 34	2.4	60.9	16.6	
12	3 39.0	T _{m☉}	11 h 56.4 min	Starost	27.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	15 4	.2	262	-4.1	♃	1 36	.0	103	-2.4
♂	8 31	.1	360	.9	♄	17 54	.0	218	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.6	18 57.8	233 19.6	133 57.0	25 50.8	232 26.8	- 1 15.2
2	210 54.6	18 58.9	263 24.5	163 55.9	25 50.6	262 28.3	- 1 13.7
4	240 54.6	19 .1	293 29.4	193 54.8	25 50.3	292 29.7	- 1 12.2
6	270 54.6	19 1.3	323 34.4	223 53.7	25 50.0	322 31.2	- 1 10.7
8	300 54.5	19 2.4	353 39.3	253 52.7	25 49.7	352 32.6	- 1 9.2
10	330 54.5	19 3.6	23 44.2	283 51.6	25 49.4	22 34.0	- 1 7.7
12	0 54.5	19 4.7	53 49.1	313 50.5	25 49.0	52 35.5	- 1 6.2
14	30 54.5	19 5.9	83 54.1	343 49.4	25 48.7	82 36.9	- 1 4.7
16	60 54.4	19 7.1	113 59.0	13 48.4	25 48.4	112 38.4	- 1 3.2
18	90 54.4	19 8.2	144 3.9	43 47.3	25 48.1	142 39.8	- 1 1.7
20	120 54.4	19 9.4	174 8.9	73 46.2	25 47.8	172 41.3	- 1 .2
22	150 54.3	19 10.5	204 13.8	103 45.2	25 47.4	202 42.7	- 0 58.7
Δ	0	6		-5	-2	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 21	20 33	1 5	:::	2 31	.3	21 16	4.8
55	3 51	20 2	0 48	:::	3 3	.9	20 30	4.0
50	4 13	19 40	0 40	2 46	3 27	1.3	19 59	3.7
45	4 30	19 23	0 34	2 10	3 45	1.5	19 35	3.4
40	4 44	19 9	0 31	1 51	4 1	1.7	19 17	3.3
35	4 56	18 57	0 28	1 39	4 14	1.9	19 1	3.2
30	5 6	18 47	0 26	1 31	4 25	2.0	18 48	3.1
20	5 24	18 29	0 24	1 21	4 44	2.2	18 25	2.9
10	5 39	18 14	0 22	1 15	5 2	2.4	18 5	2.8
0	5 53	17 60	0 22	1 13	5 18	2.6	17 47	2.6
10	6 7	17 46	0 22	1 13	5 34	2.7	17 28	2.5
20	6 21	17 31	0 23	1 16	5 52	2.9	17 9	2.3
30	6 38	17 14	0 25	1 23	6 12	3.1	16 46	2.2
35	6 48	17 5	0 27	1 28	6 24	3.2	16 33	2.1
40	6 59	16 54	0 29	1 34	6 38	3.4	16 18	1.9
45	7 12	16 41	0 32	1 42	6 55	3.6	16 0	1.8
50	7 28	16 25	0 36	1 53	7 15	3.8	15 38	1.5
55	7 47	16 5	0 41	2 9	7 43	4.2	15 9	1.2
60	8 15	15 38	0 50	2 31	8 22	5.0	14 28	.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	193 50.7	58 19 59.6	130	336 54.2	-22 7.4	91 43.8	16 25.6	
2	222 40.2	56 20 25.7	128	6 59.7	-22 7.3	121 48.5	16 25.5	
4	251 29.4	54 20 51.2	125	37 5.2	-22 7.3	151 53.2	16 25.4	
6	280 18.2	52 21 16.2	122	67 10.8	-22 7.2	181 57.9	16 25.3	
8	309 6.5	50 21 40.6	119	97 16.3	-22 7.2	212 2.6	16 25.3	
10	337 54.5	48 22 4.3	116	127 21.8	-22 7.1	242 7.3	16 25.2	
12	6 42.1	46 22 27.5	113	157 27.3	-22 7.1	272 12.0	16 25.1	
14	35 29.4	44 22 50.0	109	187 32.8	-22 7.1	302 16.7	16 25.0	
16	64 16.3	43 23 11.9	106	217 38.3	-22 7.0	332 21.4	16 25.0	
18	93 2.8	41 23 33.1	103	247 43.8	-22 7.0	2 26.1	16 24.9	
20	121 48.9	39 23 53.6	99	277 49.4	-22 6.9	32 30.8	16 24.8	
22	150 34.8	38 24 13.4	96	307 54.9	-22 6.9	62 35.5	16 24.7	
Δ				28	0	24	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	3 38.7	-.1	15.8	T _m	11 32	2.6	61.0	16.6	
12	3 38.0	T _{m☉}	11 h 56.4 min	Starost	28.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	15 5	.2	261	-4.1	♃	1 32	.0	104	-2.4
♂	8 30	.1	359	.9	♄	17 50	.0	218	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.3	19 11.6	234 18.7	133 44.1	25 47.1	232 44.2	- 0 57.2
2	210 54.3	19 12.8	264 23.6	163 43.0	25 46.7	262 45.6	- 0 55.7
4	240 54.2	19 13.9	294 28.6	193 42.0	25 46.4	292 47.0	- 0 54.2
6	270 54.2	19 15.1	324 33.5	223 40.9	25 46.0	322 48.5	- 0 52.7
8	300 54.2	19 16.2	354 38.4	253 39.9	25 45.7	352 49.9	- 0 51.2
10	330 54.1	19 17.3	24 43.4	283 38.8	25 45.3	22 51.4	- 0 49.7
12	0 54.1	19 18.5	54 48.3	313 37.8	25 45.0	52 52.8	- 0 48.2
14	30 54.1	19 19.6	84 53.2	343 36.7	25 44.6	82 54.3	- 0 46.7
16	60 54.0	19 20.7	114 58.1	13 35.7	25 44.2	112 55.7	- 0 45.3
18	90 54.0	19 21.8	145 3.1	43 34.6	25 43.8	142 57.2	- 0 43.8
20	120 53.9	19 23.0	175 8.0	73 33.6	25 43.5	172 58.6	- 0 42.3
22	150 53.9	19 24.1	205 12.9	103 32.6	25 43.1	203 .1	- 0 40.8
Δ	0	6		-5	-2	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 19	20 36	1 6	:::	2 38	.7	23 11	3.6
55	3 50	20 4	0 49	:::	3 26	1.5	22 6	3.2
50	4 12	19 42	0 40	2 48	3 58	1.8	21 26	3.1
45	4 29	19 24	0 35	2 11	4 23	2.0	20 58	3.0
40	4 43	19 10	0 31	1 52	4 42	2.2	20 35	2.9
35	4 55	18 58	0 28	1 40	4 59	2.3	20 17	2.9
30	5 6	18 47	0 26	1 31	5 13	2.3	20 1	2.8
20	5 23	18 30	0 24	1 21	5 38	2.5	19 34	2.8
10	5 39	18 14	0 22	1 15	5 59	2.6	19 11	2.7
0	5 53	17 60	0 22	1 13	6 19	2.7	18 49	2.7
10	6 7	17 46	0 22	1 13	6 39	2.8	18 28	2.6
20	6 22	17 31	0 23	1 17	7 1	2.9	18 5	2.6
30	6 39	17 14	0 25	1 23	7 27	3.0	17 38	2.5
35	6 49	17 4	0 27	1 28	7 42	3.0	17 23	2.4
40	6 60	16 53	0 29	1 34	7 59	3.1	17 5	2.4
45	7 13	16 39	0 32	1 43	8 20	3.2	16 43	2.3
50	7 29	16 23	0 36	1 54	8 47	3.4	16 15	2.2
55	7 49	16 3	0 41	2 9	9 24	3.7	15 37	1.9
60	8 17	15 35	0 50	2 32	10 22	4.4	14 37	1.2

UT	MESEC				JUPITER				SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♄	δ _♄	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 20.3	36 24 32.5	92	338 .4	-22 6.8	92 40.2	16 24.6	122 44.9	16 24.6	152 49.6	16 24.5	
2	208 5.5	35 24 50.9	88	8 5.9	-22 6.8	182 54.3	16 24.4	212 59.0	16 24.3	243 3.7	16 24.3	
4	236 50.5	33 25 8.6	85	38 11.4	-22 6.7	273 8.3	16 24.2	303 13.0	16 24.1	333 17.7	16 24.0	
6	265 35.1	32 25 25.6	81	68 16.9	-22 6.7	3 22.4	16 23.9	33 27.1	16 23.9	63 31.8	16 23.8	
8	294 19.5	31 25 41.7	77	98 22.5	-22 6.6	63 27.1	16 23.9	63 31.8	16 23.8			
10	323 3.6	30 25 57.2	73	128 28.0	-22 6.6							
12	351 47.5	29 26 11.8	69	158 33.5	-22 6.5							
14	20 31.2	28 26 25.7	65	188 39.0	-22 6.5							
16	49 14.8	27 26 38.7	61	218 44.6	-22 6.4							
18	77 58.1	26 26 51.0	57	248 50.1	-22 6.4							
20	106 41.3	25 27 2.5	53	278 55.6	-22 6.3							
22	135 24.4	25 27 13.1	49	309 1.1	-22 6.3							
Δ				28	0	23	0					

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	3 37.4	-.1	15.8	T _m	12 34	2.7	60.7 16.5
12	3 36.5	T _{m☉}	11 h 56.4 min	Starost	.2 d	Faza ●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 6	.2	259	-4.1	♄	1 28	.0	104	-2.4
♂	8 29	.1	358	.9	♄	17 47	.0	218	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 53.9	19 25.2	235 17.9	133 31.5	25 42.7	233 1.5	- 0 39.3
2	210 53.8	19 26.3	265 22.8	163 30.5	25 42.3	263 3.0	- 0 37.8
4	240 53.8	19 27.4	295 27.7	193 29.5	25 41.9	293 4.4	- 0 36.3
6	270 53.7	19 28.5	325 32.6	223 28.5	25 41.5	323 5.9	- 0 34.8
8	300 53.7	19 29.6	355 37.6	253 27.4	25 41.1	353 7.3	- 0 33.3
10	330 53.6	19 30.8	25 42.5	283 26.4	25 40.7	23 8.8	- 0 31.8
12	0 53.6	19 31.9	55 47.4	313 25.4	25 40.3	53 10.2	- 0 30.3
14	30 53.5	19 33.0	85 52.4	343 24.4	25 39.8	83 11.6	- 0 28.8
16	60 53.5	19 34.1	115 57.3	13 23.4	25 39.4	113 13.1	- 0 27.3
18	90 53.4	19 35.2	146 2.2	43 22.4	25 39.0	143 14.5	- 0 25.8
20	120 53.4	19 36.2	176 7.1	73 21.3	25 38.6	173 16.0	- 0 24.3
22	150 53.3	19 37.3	206 12.1	103 20.3	25 38.1	203 17.4	- 0 22.8
Δ	0	6		-5	-2	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 16	20 38	1 7	:::	2 55	2.0	..	.0
55	3 48	20 6	0 49	:::	4 2	2.4	23 22	2.1
50	4 11	19 43	0 40	2 51	4 42	2.5	22 40	2.3
45	4 28	19 25	0 35	2 12	5 11	2.5	22 9	2.4
40	4 43	19 11	0 31	1 52	5 34	2.6	21 46	2.4
35	4 55	18 59	0 28	1 40	5 53	2.6	21 26	2.5
30	5 5	18 48	0 26	1 31	6 9	2.6	21 9	2.5
20	5 23	18 30	0 24	1 21	6 37	2.6	20 41	2.5
10	5 39	18 14	0 22	1 15	7 1	2.7	20 17	2.6
0	5 53	17 60	0 22	1 13	7 23	2.7	19 54	2.6
10	6 7	17 46	0 22	1 14	7 46	2.7	19 31	2.6
20	6 22	17 30	0 23	1 17	8 10	2.7	19 7	2.7
30	6 39	17 13	0 26	1 23	8 38	2.7	18 38	2.7
35	6 49	17 3	0 27	1 28	8 55	2.7	18 21	2.7
40	7 1	16 52	0 29	1 34	9 14	2.7	18 2	2.8
45	7 14	16 38	0 32	1 43	9 38	2.7	17 38	2.8
50	7 30	16 22	0 36	1 54	10 8	2.7	17 7	2.8
55	7 51	16 2	0 42	2 10	10 51	2.6	16 24	2.9
60	8 19	15 33	0 50	2 32	12 9	2.5	15 6	3.0

UT	MESEC				JUPITER				SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♄	δ _♄	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	164 7.4	25 27 23.0	45	339 6.7	-22 6.3	93 36.5	16 23.7	123 41.2	16 23.6	153 45.9	16 23.5	
2	192 50.3	24 27 32.0	41	9 12.2	-22 6.2	183 50.6	16 23.5	213 55.3	16 23.4	243 59.9	16 23.3	
4	221 33.1	24 27 40.2	37	39 17.7	-22 6.2	274 4.6	16 23.2	304 9.3	16 23.1	334 14.0	16 23.0	
6	250 16.0	24 27 47.6	33	69 23.3	-22 6.1	3 18.7	16 23.0	3 18.7	16 23.0			
8	278 58.8	24 27 54.2	29	99 28.8	-22 6.1	4 18.7	16 23.0	4 18.7	16 23.0			
10	307 41.6	24 27 59.9	25	129 34.3	-22 6.0							
12	336 24.5	25 28 4.8	20	159 39.8	-22 6.0							
14	5 7.4	25 28 8.9	16	189 45.4	-22 5.9							
16	33 50.5	26 28 12.2	12	219 50.9	-22 5.9							
18	62 33.6	26 28 14.6	8	249 56.4	-22 5.8							
20	91 16.9	27 28 16.2	4	280 2.0	-22 5.8							
22	120 .3	28 28 17.1	0	310 7.5	-22 5.7							
Δ				28	0	23	0					

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	3 35.6	-.1	15.8	T _m	13 39	2.6	60.2 16.4
12	3 34.5	T _{m☉}	11 h 56.4 min	Starost	1.2 d	Faza ●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 6	.2	258	-4.1	♄	1 23	.0	104	-2.4
♂	8 27	.1	358	.9	♄	17 43	.0	218	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 53.3	19 38.4	236 17.0	133 19.3	25 37.7	233 18.9	- 0 21.3
2	210 53.2	19 39.5	266 21.9	163 18.3	25 37.2	263 20.4	- 0 19.8
4	240 53.2	19 40.6	296 26.9	193 17.3	25 36.8	293 21.8	- 0 18.4
6	270 53.1	19 41.7	326 31.8	223 16.3	25 36.3	323 23.3	- 0 16.9
8	300 53.1	19 42.8	356 36.7	253 15.4	25 35.9	353 24.7	- 0 15.4
10	330 53.0	19 43.8	26 41.6	283 14.4	25 35.4	23 26.2	- 0 13.9
12	0 52.9	19 44.9	56 46.6	313 13.4	25 34.9	53 27.6	- 0 12.4
14	30 52.9	19 46.0	86 51.5	343 12.4	25 34.5	83 29.1	- 0 10.9
16	60 52.8	19 47.1	116 56.4	13 11.4	25 34.0	113 30.5	- 0 9.4
18	90 52.7	19 48.1	147 1.4	43 10.4	25 33.5	143 32.0	- 0 7.9
20	120 52.7	19 49.2	177 6.3	73 9.5	25 33.0	173 33.4	- 0 6.4
22	150 52.6	19 50.3	207 11.2	103 8.5	25 32.5	203 34.9	- 0 4.9
Δ	0	5		-5	-2	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 14	20 40	1 8	: : :	3 44	3.8	0 38	1.6
55	3 46	20 8	0 49	: : :	4 59	3.2	. . .	.0
50	4 9	19 44	0 40	2 53	5 42	3.1	23 34	1.6
45	4 27	19 26	0 35	2 13	6 12	2.9	23 6	1.8
40	4 42	19 12	0 31	1 53	6 36	2.9	22 44	1.9
35	4 54	18 59	0 28	1 40	6 55	2.8	22 25	2.0
30	5 5	18 49	0 26	1 32	7 12	2.8	22 9	2.1
20	5 23	18 30	0 24	1 21	7 40	2.7	21 42	2.2
10	5 38	18 15	0 22	1 15	8 5	2.6	21 19	2.3
0	5 53	18 0	0 22	1 13	8 27	2.5	20 57	2.4
10	6 7	17 46	0 22	1 14	8 50	2.5	20 35	2.5
20	6 23	17 30	0 23	1 17	9 14	2.4	20 11	2.6
30	6 40	17 13	0 26	1 23	9 42	2.3	19 43	2.8
35	6 50	17 3	0 27	1 28	9 59	2.2	19 27	2.8
40	7 2	16 51	0 29	1 35	10 18	2.1	19 8	2.9
45	7 15	16 37	0 32	1 43	10 42	2.0	18 44	3.1
50	7 31	16 21	0 36	1 54	11 12	1.9	18 14	3.2
55	7 52	15 60	0 42	2 10	11 55	1.6	17 32	3.5
60	8 21	15 31	0 51	2 33	13 9	.8	16 19	4.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	148 44.0	29 28 17.1	-4	340 13.0	-22 5.7	94 32.7	16 22.7	
2	177 27.8	30 28 16.3	-8	10 18.6	-22 5.6	124 37.4	16 22.6	
4	206 11.9	32 28 14.7	-12	40 24.1	-22 5.6	154 42.1	16 22.6	
6	234 56.2	33 28 12.3	-16	70 29.7	-22 5.5	184 46.8	16 22.5	
8	263 40.8	35 28 9.2	-20	100 35.2	-22 5.5	214 51.5	16 22.4	
10	292 25.7	36 28 5.2	-23	130 40.7	-22 5.4	244 56.1	16 22.3	
12	321 11.0	38 28 .6	-27	160 46.3	-22 5.4	275 .8	16 22.2	
14	349 56.5	40 27 55.1	-31	190 51.8	-22 5.3	305 5.5	16 22.1	
16	18 42.4	41 27 49.0	-34	220 57.4	-22 5.3	335 10.2	16 22.1	
18	47 28.7	43 27 42.1	-38	251 2.9	-22 5.2	5 14.8	16 22.0	
20	76 15.4	45 27 34.4	-42	281 8.4	-22 5.2	35 19.5	16 21.9	
22	105 2.5	47 27 26.1	-45	311 14.0	-22 5.1	65 24.2	16 21.8	
Δ				28	0	23	0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s / ' / "	h min	h min	min / ' / "	h min	h min	
00	3 33.3	-.1	15.8	T _m	14 42	2.5	59.4	16.2
12	3 31.8	T _{m☉}	11 h 56.5 min	Starost	2.2 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min / ' / "	h min / ' / "	° / ' / "	° / ' / "	° / ' / "	h min / ' / "	h min / ' / "	° / ' / "	° / ' / "	° / ' / "
♀ 15 7 .2	257	-4.1	♃	1 19 .0	104	-2.4			
♂ 8 26 .1	357	.9	♄	17 39 .0	218	.4			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 52.6	19 51.3	237 16.1	133 7.5	25 32.1	233 36.3	- 0 3.4
2	210 52.5	19 52.4	267 21.1	163 6.5	25 31.6	263 37.8	- 0 1.9
4	240 52.4	19 53.4	297 26.0	193 5.6	25 31.1	293 39.2	- 0 .4
6	270 52.4	19 54.5	327 30.9	223 4.6	25 30.6	323 40.7	0 1.0
8	300 52.3	19 55.5	357 35.8	253 3.7	25 30.0	353 42.1	0 2.5
10	330 52.2	19 56.6	27 40.8	283 2.7	25 29.5	23 43.6	0 4.0
12	0 52.1	19 57.6	57 45.7	313 1.7	25 29.0	53 45.1	0 5.5
14	30 52.1	19 58.7	87 50.6	343 .8	25 28.5	83 46.5	0 7.0
16	60 52.0	19 59.7	117 55.6	12 59.8	25 28.0	113 48.0	0 8.5
18	90 51.9	20 .8	148 .5	42 58.9	25 27.4	143 49.4	0 10.0
20	120 51.9	20 1.8	178 5.4	72 58.0	25 26.9	173 50.9	0 11.5
22	150 51.8	20 2.8	208 10.3	102 57.0	25 26.4	203 52.3	0 13.0
Δ	0	5		-5	-3	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 12	20 43	1 9	: : :	5 15	4.4	1 17	.6
55	3 45	20 9	0 50	: : :	6 17	3.6	0 13	1.3
50	4 8	19 46	0 41	2 56	6 55	3.3	. . .	.0
45	4 26	19 27	0 35	2 14	7 23	3.1	23 48	1.3
40	4 41	19 13	0 31	1 53	7 45	3.0	23 29	1.5
35	4 53	19 0	0 28	1 41	8 3	2.8	23 13	1.6
30	5 4	18 49	0 26	1 32	8 18	2.7	22 59	1.7
20	5 22	18 31	0 24	1 21	8 44	2.6	22 35	1.9
10	5 38	18 15	0 22	1 16	9 7	2.4	22 14	2.1
0	5 53	18 0	0 22	1 13	9 28	2.3	21 55	2.2
10	6 8	17 45	0 22	1 14	9 49	2.2	21 35	2.4
20	6 23	17 30	0 23	1 17	10 11	2.1	21 14	2.5
30	6 41	17 12	0 26	1 23	10 37	1.9	20 50	2.7
35	6 51	17 2	0 27	1 28	10 52	1.8	20 35	2.8
40	7 2	16 50	0 29	1 35	11 10	1.7	20 18	2.9
45	7 16	16 37	0 32	1 43	11 31	1.5	19 58	3.1
50	7 33	16 20	0 36	1 55	11 57	1.3	19 32	3.3
55	7 54	15 58	0 42	2 10	12 33	.9	18 57	3.7
60	8 23	15 29	0 51	2 33	13 29	.3	18 2	4.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	133 49.9	50 27 17.1	-48	341 19.5	-22 5.1	95 28.9	16 21.7	
2	162 37.9	52 27 7.4	-52	11 25.1	-22 5.0	125 33.5	16 21.6	
4	191 26.2	54 26 57.0	-55	41 30.6	-22 5.0	155 38.2	16 21.5	
6	220 15.0	56 26 46.0	-58	71 36.2	-22 4.9	185 42.9	16 21.5	
8	249 4.3	59 26 34.3	-61	101 41.7	-22 4.9	215 47.6	16 21.4	
10	277 54.1	61 26 22.0	-65	131 47.3	-22 4.8	245 52.2	16 21.3	
12	306 44.3	64 26 9.1	-68	161 52.8	-22 4.8	275 56.9	16 21.2	
14	335 35.1	66 25 55.6	-70	191 58.3	-22 4.7	306 1.6	16 21.1	
16	4 26.3	69 25 41.5	-73	222 3.9	-22 4.7	336 6.2	16 21.0	
18	33 18.1	71 25 26.8	-76	252 9.4	-22 4.6	6 10.9	16 20.9	
20	62 10.3	74 25 11.5	-79	282 15.0	-22 4.6	36 15.6	16 20.8	
22	91 3.1	76 24 55.8	-82	312 20.5	-22 4.5	66 20.2	16 20.8	
Δ				28	0	23	0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s / ' / "	h min	h min	min / ' / "	h min	h min	
00	3 30.4	-.1	15.8	T _m	15 42	2.3	58.5	16.0
12	3 28.7	T _{m☉}	11 h 56.5 min	Starost	3.2 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min / ' / "	h min / ' / "	° / ' / "	° / ' / "	° / ' / "	h min / ' / "	h min / ' / "	° / ' / "	° / ' / "	° / ' / "
♀ 15 8 .2	256	-4.1	♃	1 14 .0	104	-2.4			
♂ 8 25 .1	356	.9	♄	17 35 .0	218	.4			

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	51.7	20	3.9	238	15.3	132	56.1	25	25.8	233	53.8	0	14.5
2	210	51.6	20	4.9	268	20.2	162	55.1	25	25.3	263	55.2	0	16.0
4	240	51.5	20	5.9	298	25.1	192	54.2	25	24.7	293	56.7	0	17.4
6	270	51.5	20	7.0	328	30.1	222	53.3	25	24.2	323	58.2	0	18.9
8	300	51.4	20	8.0	358	35.0	252	52.4	25	23.6	353	59.6	0	20.4
10	330	51.3	20	9.0	28	39.9	282	51.4	25	23.1	24	1.1	0	21.9
12	0	51.2	20	10.0	58	44.8	312	50.5	25	22.5	54	2.5	0	23.4
14	30	51.1	20	11.0	88	49.8	342	49.6	25	21.9	84	4.0	0	24.9
16	60	51.1	20	12.0	118	54.7	12	48.7	25	21.3	114	5.4	0	26.4
18	90	51.0	20	13.1	148	59.6	42	47.8	25	20.8	144	6.9	0	27.9
20	120	50.9	20	14.1	179	64.6	72	46.9	25	20.2	174	8.4	0	29.4
22	150	50.8	20	15.1	209	69.5	102	46.0	25	19.6	204	9.8	0	30.8
Δ	0		5				-5		-3		7		7	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 10	20 45	1 10	∴ ∴ ∴	7 0	4.2	1 30	.2
55	3 43	20 11	0 50	∴ ∴ ∴	7 45	3.6	0 44	.8
50	4 7	19 47	0 41	2 59	8 15	3.3	0 12	1.1
45	4 25	19 29	0 35	2 14	8 37	3.1	∴ ∴ ∴	.0
40	4 40	19 14	0 31	1 54	8 56	2.9	∴ ∴ ∴	.0
35	4 53	19 1	0 29	1 41	9 11	2.7	23 52	1.3
30	5 4	18 50	0 27	1 32	9 24	2.6	23 40	1.4
20	5 22	18 31	0 24	1 21	9 46	2.4	23 21	1.6
10	5 38	18 15	0 23	1 16	10 5	2.2	23 4	1.8
0	5 53	18 0	0 22	1 13	10 23	2.1	22 48	2.0
10	6 8	17 45	0 22	1 14	10 41	1.9	22 32	2.2
20	6 23	17 30	0 23	1 17	11 0	1.8	22 14	2.3
30	6 41	17 12	0 26	1 23	11 22	1.6	21 54	2.6
35	6 52	17 1	0 27	1 28	11 35	1.4	21 42	2.7
40	7 3	16 49	0 29	1 35	11 50	1.3	21 29	2.8
45	7 17	16 36	0 32	1 43	12 7	1.1	21 13	3.0
50	7 34	16 19	0 36	1 55	12 28	.9	20 52	3.2
55	7 56	15 57	0 42	2 11	12 56	.6	20 26	3.6
60	8 25	15 27	0 51	2 34	13 36	.1	19 48	4.1

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	119	56.4	79	24	39.5	-84	342	26.1	-22	4.5	96	24.9	16	20.7
2	148	50.1	82	24	22.6	-87	12	31.6	-22	4.4	126	29.6	16	20.6
4	177	44.5	84	24	5.3	-89	42	37.2	-22	4.4	156	34.2	16	20.5
6	206	39.3	87	23	47.5	-91	72	42.8	-22	4.3	186	38.9	16	20.4
8	235	34.7	89	23	29.2	-94	102	48.3	-22	4.3	216	43.6	16	20.3
10	264	30.5	92	23	10.4	-96	132	53.9	-22	4.2	246	48.2	16	20.2
12	293	26.9	95	22	51.2	-98	162	59.4	-22	4.2	276	52.9	16	20.1
14	322	23.8	97	22	31.6	-100	193	5.0	-22	4.1	306	57.6	16	20.1
16	351	21.2	100	22	11.5	-102	223	10.5	-22	4.1	337	2.2	16	20.0
18	20	19.1	102	21	51.1	-104	253	16.1	-22	4.0	7	6.9	16	19.9
20	49	17.6	105	21	30.2	-106	283	21.6	-22	4.0	37	11.5	16	19.8
22	78	16.5	107	21	9.0	-108	313	27.2	-22	3.9	67	16.2	16	19.7
Δ							28		0		23		0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	3 27.0	- .2	15.8	T _m	16 36	2.0	57.6	15.7
12	3 25.0			T _{m☉}	11 h 56.6 min	Starost	4.2 d	Faza ●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	°	h min	'	°	°	°
♀	15 9	.2	255	-4.1	♃	1 10	.0	104	-2.4
♂	8 24	.1	356	.9	♄	17 32	.0	218	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	50.7	20	16.1	239	14.4	132	45.1	25	19.0	234	11.3	0	32.3
2	210	50.6	20	17.1	269	19.3	162	44.2	25	18.4	264	12.7	0	33.8
4	240	50.5	20	18.1	299	24.3	192	43.3	25	17.8	294	14.2	0	35.3
6	270	50.5	20	19.1	329	29.2	222	42.4	25	17.2	324	15.7	0	36.8
8	300	50.4	20	20.1	359	34.1	252	41.5	25	16.6	354	17.1	0	38.3
10	330	50.3	20	21.1	29	39.1	282	40.6	25	16.0	24	18.6	0	39.8
12	0	50.2	20	22.1	59	44.0	312	39.7	25	15.4	54	20.0	0	41.3
14	30	50.1	20	23.0	89	48.9	342	38.8	25	14.7	84	21.5	0	42.7
16	60	50.0	20	24.0	119	53.8	12	37.9	25	14.1	114	23.0	0	44.2
18	90	49.9	20	25.0	149	58.8	42	37.1	25	13.5	144	24.4	0	45.7
20	120	49.8	20	26.0	180	63.7	72	36.2	25	12.9	174	25.9	0	47.2
22	150	49.7	20	27.0	210	68.6	102	35.3	25	12.2	204	27.3	0	48.7
Δ	0		5				-4		-3		7		7	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 8	20 47	1 11	∴ ∴ ∴	8 42	3.9	1 35	.1
55	3 42	20 13	0 50	∴ ∴ ∴	9 12	3.5	1 2	.5
50	4 6	19 48	0 41	3 1	9 34	3.2	0 38	.8
45	4 24	19 30	0 35	2 15	9 51	2.9	0 20	1.0
40	4 39	19 14	0 31	1 54	10 5	2.7	0 5	1.2
35	4 52	19 2	0 29	1 41	10 17	2.6	∴ ∴ ∴	.0
30	5 3	18 51	0 27	1 32	10 27	2.5	∴ ∴ ∴	.0
20	5 22	18 32	0 24	1 21	10 44	2.3	∴ ∴ ∴	.0
10	5 38	18 15	0 23	1 16	10 59	2.1	23 48	1.6
0	5 53	18 0	0 22	1 13	11 14	1.9	23 36	1.8
10	6 8	17 45	0 22	1 14	11 28	1.7	23 24	2.0
20	6 24	17 29	0 23	1 17	11 43	1.5	23 11	2.2
30	6 42	17 11	0 26	1 24	11 60	1.3	22 56	2.4
35	6 52	17 1	0 27	1 29	12 10	1.2	22 47	2.5
40	7 4	16 49	0 30	1 35	12 21	1.1	22 37	2.7
45	7 18	16 35	0 32	1 44	12 34	.9	22 25	2.9
50	7 35	16 18	0 36	1 55	12 50	.7	22 10	3.1
55	7 57	15 56	0 42	2 11	13 10	.4	21 52	3.4
60	8 27	15 25	0 52	2 35	13 38	.0	21 26	3.8

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	107	15.9	110	20	47.4	-110	343	32.8	-22	3.9	97	20.9	16	19.6
2	136	15.8	112	20	25.5	-111	13	38.3	-22	3.8	127	25.5	16	19.5
4	165	16.2	114	20	3.2	-113	43	43.9	-22	3.8	157	30.2	16	19.4
6	194	17.0	117	19	40.6	-115	73	49.4	-22	3.7	187	34.8	16	19.3
8	223	18.4	119	19	17.6	-116	103	55.0	-22	3.7	217	39.5	16	19.2
10	252	20.1	121	18	54.4	-118	134	.6	-22	3.6	247	44.1	16	19.2
12	281	22.4	123	18	30.8	-119	164	6.1	-22	3.6	277	48.8	16	19.1
14	310	25.1	126	18	7.0	-120	194	11.7	-22	3.5	307	53.5	16	19.0
16	339	28.2	128	17	42.9	-122	224	18.2	-22	3.4	337	58.1	16	18.9
18	8	31.7	130	17	18.6	-123	254	22.8	-22	3.4	8	2.8	16	18.8
20	37	35.7	132	16	53.9	-124	284	28.4	-22	3.3	38	7.4	16	18.7
22	66	40.0	134	16	29.1	-125	314	33.9	-22	3.3	68	12.1	16	18.6
Δ							28		0		23		0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	3 23.0	- .2	15.8	T _m	17 25	1.8	56

UT	SUNCE				PROLEĆ. TAČKA				VENERA				MARS			
	S_{\odot}		δ_{\odot}		S_{Υ}		δ_{Υ}		S_{ζ}		δ_{ζ}		S_{σ}		δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	180	49.6	20	27.9	240	13.6	132	34.5	25	11.6	234	28.8	0	50.2		
2	210	49.5	20	28.9	270	18.5	162	33.6	25	10.9	264	30.3	0	51.7		
4	240	49.4	20	29.9	300	23.4	192	32.7	25	10.3	294	31.7	0	53.1		
6	270	49.3	20	30.8	330	28.3	222	31.9	25	9.6	324	33.2	0	54.6		
8	300	49.2	20	31.8	0	33.3	252	31.0	25	9.0	354	34.6	0	56.1		
10	330	49.1	20	32.8	30	38.2	282	30.2	25	8.3	24	36.1	0	57.6		
12	0	49.0	20	33.7	60	43.1	312	29.3	25	7.7	54	37.6	0	59.1		
14	30	48.9	20	34.7	90	48.0	342	28.5	25	7.0	84	39.0	1	6		
16	60	48.8	20	35.6	120	53.0	12	27.7	25	6.3	114	40.5	1	2.1		
18	90	48.7	20	36.6	150	57.9	42	26.8	25	5.6	144	42.0	1	3.5		
20	120	48.6	20	37.5	181	2.8	72	26.0	25	5.0	174	43.4	1	5.0		
22	150	48.5	20	38.5	211	7.8	102	25.2	25	4.3	204	44.9	1	6.5		
Δ		-1		5				-4		-3			7		7	

UT	MESEC				JUPITER				SATURN						
	S_{ζ}		Δ		δ_{ζ}		Δ		S_{η}		δ_{η}		Δ		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	
0	95	44.8	136	16	4.0	-126	344	39.5	-22	3.2	98	16.7	16	18.5	
2	124	50.0	138	15	38.7	-128	14	45.1	-22	3.2	128	21.4	16	18.4	
4	153	55.5	140	15	13.2	-129	44	50.6	-22	3.1	158	26.0	16	18.3	
6	183	1.4	141	14	47.5	-130	74	56.2	-22	3.1	188	30.7	16	18.2	
8	212	7.7	143	14	21.6	-130	105	1.8	-22	3.0	218	35.3	16	18.1	
10	241	14.3	145	13	55.5	-131	135	7.3	-22	3.0	248	40.0	16	18.1	
12	270	21.3	146	13	29.2	-132	165	12.9	-22	2.9	278	44.6	16	18.0	
14	299	28.6	148	13	2.8	-133	195	18.5	-22	2.9	308	49.3	16	17.9	
16	328	36.2	150	12	36.2	-134	225	24.0	-22	2.8	338	53.9	16	17.8	
18	357	44.1	151	12	9.5	-134	255	29.6	-22	2.8	8	58.6	16	17.7	
20	26	52.3	153	11	42.6	-135	285	35.2	-22	2.7	39	3.2	16	17.6	
22	56	.9	154	11	15.6	-136	315	40.8	-22	2.7	69	7.8	16	17.5	
Δ							28		0		23		0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	3 6	20 49	1 12	:::	10 15	3.6	1 36	.0
55	3 40	20 14	0 51	:::	10 35	3.3	1 14	.4
50	4 5	19 50	0 41	3 5	10 49	3.0	0 57	.6
45	4 23	19 31	0 35	2 16	11 1	2.8	0 44	.8
40	4 39	19 15	0 31	1 55	11 11	2.6	0 33	1.0
35	4 51	19 2	0 29	1 42	11 19	2.5	0 24	1.1
30	5 3	18 51	0 27	1 33	11 26	2.3	0 15	1.2
20	5 22	18 32	0 24	1 22	11 38	2.1	0 1	1.5
10	5 38	18 16	0 23	1 16	11 49	1.9	...	.0
0	5 53	18 0	0 22	1 14	11 59	1.8	...	.0
10	6 8	17 45	0 22	1 14	12 9	1.6	...	.0
20	6 24	17 29	0 24	1 17	12 20	1.4	...	.0
30	6 42	17 11	0 26	1 24	12 32	1.2	23 53	2.3
35	6 53	17 0	0 27	1 29	12 39	1.1	23 47	2.4
40	7 5	16 48	0 30	1 35	12 46	.9	23 41	2.6
45	7 19	16 34	0 33	1 44	12 55	.7	23 33	2.7
50	7 37	16 16	0 37	1 55	13 6	.6	23 24	2.9
55	7 59	15 54	0 43	2 11	13 20	.3	23 12	3.2
60	8 29	15 24	0 52	2 35	13 38	.0	22 57	3.6
S								

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min	s	s	h min	min	'	'
00	3 18.6	-.2	15.8	T_m 18 9	1.8	55.9	15.2
12	3 16.1	$T_{m\odot}$ 11 h 56.7 min	Starost 6.2 d	Faza	☉		

PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
	h min	'	°			h min	'	°	
ζ	15 10	.2	252	-4.1	η	1 1	.0	104	-2.4
σ	8 22	.1	354	.9	η	17 24	.0	218	.4

UT	SUNCE				PROLEĆ. TAČKA				VENERA				MARS			
	S_{\odot}		δ_{\odot}		S_{Υ}		δ_{Υ}		S_{ζ}		δ_{ζ}		S_{σ}		δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	180	48.4	20	39.4	241	12.7	132	24.3	25	3.6	234	46.3	1	8.0		
2	210	48.3	20	40.4	271	17.6	162	23.5	25	2.9	264	47.8	1	9.5		
4	240	48.2	20	41.3	301	22.5	192	22.7	25	2.2	294	49.3	1	11.0		
6	270	48.0	20	42.3	331	27.5	222	21.9	25	1.5	324	50.7	1	12.4		
8	300	47.9	20	43.2	1	32.4	252	21.0	25	.8	354	52.2	1	13.9		
10	330	47.8	20	44.1	31	37.3	282	20.2	25	.1	24	53.7	1	15.4		
12	0	47.7	20	45.1	61	42.3	312	19.4	24	59.4	54	55.1	1	16.9		
14	30	47.6	20	46.0	91	47.2	342	18.6	24	58.7	84	56.6	1	18.4		
16	60	47.5	20	46.9	121	52.1	12	17.8	24	57.9	114	58.1	1	19.8		
18	90	47.4	20	47.8	151	57.0	42	17.0	24	57.2	144	59.5	1	21.3		
20	120	47.2	20	48.8	182	2.0	72	16.2	24	56.5	175	1.0	1	22.8		
22	150	47.1	20	49.7	212	6.9	102	15.4	24	55.8	205	2.4	1	24.3		
Δ		-1		5				-4		-4			7		7	

UT	MESEC				JUPITER				SATURN						
	S_{ζ}		Δ		δ_{ζ}		Δ		S_{η}		δ_{η}		Δ		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	
0	85	9.7	155	10	48.4	-136	345	46.3	-22	2.6	99	12.5	16	17.4	
2	114	18.7	157	10	21.2	-137	15	51.9	-22	2.6	129	17.1	16	17.3	
4	143	28.1	158	9	53.8	-137	45	57.5	-22	2.5	159	21.8	16	17.2	
6	172	37.7	159	9	26.3	-138	76	3.0	-22	2.4	189	26.4	16	17.1	
8	201	47.5	160	8	58.8	-138	106	8.6	-22	2.4	219	31.1	16	17.0	
10	230	57.5	161	8	31.1	-139	136	14.2	-22	2.3	249	35.7	16	16.9	
12	260	7.8	162	8	3.4	-139	166	19.8	-22	2.3	279	40.3	16	16.8	
14	289	18.3	163	7	35.6	-139	196	25.3	-22	2.2	309	45.0	16	16.7	
16	318	29.0	164	7	7.7	-140	226	30.9	-22	2.2	339	49.6	16	16.6	
18	347	39.8	165	6	39.7	-140	256	36.5	-22	2.1	9	54.3	16	16.5	
20	16	50.9	166	6	11.7	-140	286	42.1	-22	2.1	39	58.9	16	16.4	
22	46	2.1	167	5	43.6	-141	316	47.6	-22	2.0	70	3.5	16	16.3	
Δ							28		0		23		0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	3 4	20 51	1 13	:::	11 43	3.5	1 36	.0
55	3 39	20 16	0 51	:::	11 53	3.1	1 23	.3
50	4 4	19 51	0 41	3 8	12 1	2.9	1 12	.5
45	4 23	19 32	0 35	2 17	12 8	2.7	1 4	.7
40	4 38	19 16	0 32	1 55	12 13	2.5	0 57	.9
35	4 51	19 3	0 29	1 42	12 18	2.4	0 51	1.0
30	5 2	18 52	0 27	1 33	12 22	2.2	0 45	1.1
20	5 21	18 32	0 24	1 22	12 29	2.0	0 36	1.3
10	5 38	18 16	0 23	1 16	12 35	1.8	0 27	1.5
0	5 53	18 0	0 22	1 14	12 41	1.7	0 19	1.7
10	6 8	17 45	0 22	1 14	12 47	1.5	0 12	1.9
20	6 25	17 29	0 24	1 17	12 53	1.3	0 3	2.1
30	6 43	17 10	0 26	1 24	12 60	1.1	...	.0
35	6 54	16 60	0 27	1 29	13 4	1.0	...	.0
40	7 6	16 47	0 30	1 35	13 8	.8	...	.0
45	7 20	16 33	0 33	1 44	13 13	.7	...	.0
50	7 38	16 15	0 37	1 56	13 20	.5	...	.0
55	8 0	15 53	0 43	2 12	13 27	.3	...	.0
60	8 31	15 22	0 52	2 36	13 37	.0	...	.0
S								

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	47.0	20	50.6	242	11.8	132	14.7	24	55.0	235	3.9	1	25.8	
2	210	46.9	20	51.5	272	16.8	162	13.9	24	54.3	265	5.4	1	27.3	
4	240	46.8	20	52.4	302	21.7	192	13.1	24	53.5	295	6.8	1	28.7	
6	270	46.7	20	53.3	332	26.6	222	12.3	24	52.8	325	8.3	1	30.2	
8	300	46.5	20	54.2	2	31.5	252	11.5	24	52.0	355	9.8	1	31.7	
10	330	46.4	20	55.1	32	36.5	282	10.8	24	51.3	25	11.2	1	33.2	
12	0	46.3	20	56.0	62	41.4	312	10.0	24	50.5	55	12.7	1	34.6	
14	30	46.2	20	56.9	92	46.3	342	9.2	24	49.8	85	14.2	1	36.1	
16	60	46.0	20	57.8	122	51.3	12	8.5	24	49.0	115	15.6	1	37.6	
18	90	45.9	20	58.7	152	56.2	42	7.7	24	48.2	145	17.1	1	39.1	
20	120	45.8	20	59.6	183	1.1	72	7.0	24	47.5	175	18.6	1	40.6	
22	150	45.7	21	.5	213	6.0	102	6.2	24	46.7	205	20.0	1	42.0	
Δ		-1		4				-4		-4			7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 2	20 53	1 15	:	13 6	3.4	1 35	.0
55	3 37	20 17	0 52	:	13 8	3.1	1 29	.2
50	4 2	19 52	0 42	:	13 11	2.8	1 25	.5
45	4 22	19 33	0 36	:	13 12	2.6	1 21	.7
40	4 37	19 17	0 32	:	13 14	2.5	1 17	.8
35	4 50	19 4	0 29	:	13 15	2.3	1 15	.9
30	5 2	18 52	0 27	:	13 16	2.2	1 12	1.1
20	5 21	18 33	0 24	:	13 18	2.0	1 8	1.3
10	5 38	18 16	0 23	:	13 19	1.8	1 4	1.5
0	5 53	18 1	0 22	:	13 21	1.6	1 0	1.6
10	6 9	17 45	0 22	:	13 22	1.5	0 57	1.8
20	6 25	17 29	0 24	:	13 24	1.3	0 53	2.0
30	6 44	17 10	0 26	:	13 26	1.1	0 48	2.2
35	6 54	16 59	0 27	:	13 27	.9	0 46	2.3
40	7 7	16 47	0 30	:	13 28	.8	0 43	2.5
45	7 21	16 32	0 33	:	13 30	.6	0 39	2.7
50	7 39	16 14	0 37	:	13 31	.5	0 35	2.8
55	8 2	15 52	0 43	:	13 33	.2	0 30	3.1
60	8 33	15 20	0 53	:	13 36	.0	0 23	3.4
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	75	13.5	168	5	15.5	-141	346	53.2	-22	2.0	100	8.2	16	16.2	
2	104	25.0	168	4	47.4	-141	16	58.8	-22	1.9	130	12.8	16	16.1	
4	133	36.7	169	4	19.2	-141	47	4.4	-22	1.9	160	17.4	16	16.0	
6	162	48.5	170	3	51.0	-141	77	10.0	-22	1.8	190	22.1	16	15.9	
8	192	.4	170	3	22.8	-141	107	15.5	-22	1.7	220	26.7	16	15.9	
10	221	12.4	171	2	54.5	-141	137	21.1	-22	1.7	250	31.3	16	15.8	
12	250	24.6	171	2	26.3	-141	167	26.7	-22	1.6	280	36.0	16	15.7	
14	279	36.8	171	1	58.0	-141	197	32.3	-22	1.6	310	40.6	16	15.6	
16	308	49.1	172	1	29.7	-141	227	37.9	-22	1.5	340	45.2	16	15.5	
18	338	1.4	172	1	1.5	-141	257	43.4	-22	1.5	10	49.9	16	15.4	
20	7	13.9	172	0	33.2	-141	287	49.0	-22	1.4	40	54.5	16	15.3	
22	36	26.3	173	0	5.0	-141	317	54.6	-22	1.4	70	59.1	16	15.2	
Δ								28		0			23		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	3	8.2	- .2	15.8	T _m	19 30	1.6	54.7	14.9
12	3	5.3	T _{m☉}	11 h 56.9 min	Starost	8.2 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 11	.2	250	-4.1	♄	0 52	.0	105	-2.4
	8 19	.1	353	.9	♅	17 17	.0	218	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	45.5	21	1.4	243	11.0	132	5.5	24	45.9	235	21.5	1	43.5	
2	210	45.4	21	2.3	273	15.9	162	4.7	24	45.1	265	23.0	1	45.0	
4	240	45.3	21	3.1	303	20.8	192	4.0	24	44.3	295	24.4	1	46.5	
6	270	45.1	21	4.0	333	25.8	222	3.2	24	43.5	325	25.9	1	47.9	
8	300	45.0	21	4.9	3	30.7	252	2.5	24	42.7	355	27.4	1	49.4	
10	330	44.9	21	5.8	33	35.6	282	1.8	24	41.9	25	28.8	1	50.9	
12	0	44.8	21	6.6	63	40.5	312	1.1	24	41.1	55	30.3	1	52.4	
14	30	44.6	21	7.5	93	45.5	342	.3	24	40.3	85	31.8	1	53.9	
16	60	44.5	21	8.4	123	50.4	11	59.6	24	39.5	115	33.3	1	55.3	
18	90	44.3	21	9.2	153	55.3	41	58.9	24	38.7	145	34.7	1	56.8	
20	120	44.2	21	10.1	184	.3	71	58.2	24	37.9	175	36.2	1	58.3	
22	150	44.1	21	11.0	214	5.2	101	57.5	24	37.0	205	37.7	1	59.8	
Δ		-1		4				-4		-4			7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 0	20 55	1 16	:	14 27	3.4	1 34	.0
55	3 36	20 19	0 52	:	14 22	3.1	1 35	.2
50	4 1	19 53	0 42	:	14 18	2.8	1 36	.5
45	4 21	19 34	0 36	:	14 15	2.6	1 37	.7
40	4 37	19 18	0 32	:	14 13	2.5	1 37	.8
35	4 50	19 5	0 29	:	14 11	2.3	1 37	.9
30	5 1	18 53	0 27	:	14 9	2.2	1 38	1.1
20	5 21	18 33	0 24	:	14 12	2.0	1 39	1.3
10	5 38	18 16	0 23	:	14 13	1.8	1 39	1.5
0	5 53	18 1	0 22	:	14 14	1.6	1 40	1.6
10	6 9	17 45	0 22	:	14 13	1.5	1 40	1.8
20	6 25	17 28	0 24	:	14 17	1.3	1 41	2.0
30	6 44	17 10	0 26	:	14 24	1.1	1 42	2.2
35	6 55	16 59	0 28	:	14 25	1.0	1 42	2.3
40	7 8	16 46	0 30	:	14 28	.8	1 42	2.5
45	7 22	16 31	0 33	:	14 45	.7	1 43	2.6
50	7 40	16 13	0 37	:	14 42	.5	1 44	2.8
55	8 3	15 50	0 43	:	14 39	.3	1 44	3.1
60	8 35	15 18	0 53	:	14 35	.0	1 45	3.4
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	65	38.9	173	- 0	23.2	-141	348	.2	-22	1.3	101	3.8	16	15.1	
2	94	51.4	173	- 0	51.4	-141	18	5.8	-22	1.3	131	8.4	16	15.0	
4	124	4.0	173	- 1	19.6	-141	48	11.3	-22	1.2	161	13.0	16	14.9	
6	153	16.6	173	- 1	47.7	-140	78	16.9	-22	1.1	191	17.6	16	14.8	
8	182	29.2	173	- 2	15.7	-140	108	22.5	-22	1.1	221	22.3	16	14.7	
10	211	41.8	173	- 2	43.8	-140	138	28.1	-22	1.0	251	26.9	16	14.6	
12	240	54.4	173	- 3	11.7	-140	168	33.7	-22	1.0	281	31.5	16	14.5	
14	270	6.9	173	- 3	39.6	-139	198	39.3	-22	.9	311	36.1	16	14.4	
16	299	19.5	172	- 4	7.5	-139	228	44.9	-22	.9	341	40.8	16	14.3	
18	328	31.9	172	- 4	35.3	-139	258	50.4	-22	.8	11	45.4	16	14.2	
20	357	44.4	172	- 5	3.0	-138	288	56.0	-22	.8	41	50.0	16	14.1	
22	26	56.8	172	- 5	30.6	-138	319	1.6	-22	.7	71	54.6	16	14.0	
Δ								28		0			23		-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	3	2.3	- .3	15.8	T _m	20 9	1.7	54.3	14.8
12	2	59.1	T _{m☉}	11 h 57.0 min	Starost	9.2 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 12								

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	43.9	21	11.8	244	10.1	131	56.8	24	36.2	235	39.1	2	1.2	
2	210	43.8	21	12.7	274	15.0	161	56.1	24	35.4	265	40.6	2	2.7	
4	240	43.7	21	13.5	304	20.0	191	55.4	24	34.5	295	42.1	2	4.2	
6	270	43.5	21	14.4	334	24.9	221	54.7	24	33.7	325	43.5	2	5.7	
8	300	43.4	21	15.2	4	29.8	251	54.0	24	32.9	355	45.0	2	7.1	
10	330	43.2	21	16.0	34	34.7	281	53.3	24	32.0	25	46.5	2	8.6	
12	0	43.1	21	16.9	64	39.7	311	52.6	24	31.2	55	47.9	2	10.1	
14	30	43.0	21	17.7	94	44.6	341	52.0	24	30.3	85	49.4	2	11.5	
16	60	42.8	21	18.6	124	49.5	11	51.3	24	29.5	115	50.9	2	13.0	
18	90	42.7	21	19.4	154	54.5	41	50.6	24	28.6	145	52.4	2	14.5	
20	120	42.5	21	20.2	184	59.4	71	49.9	24	27.7	175	53.8	2	16.0	
22	150	42.4	21	21.0	215	4.3	101	49.3	24	26.9	205	55.3	2	17.4	
Δ		-1		4				-3		-4			7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 58	20 57	1 17	: : :	15 49	3.5	1 33	.0
55	3 35	20 20	0 52	: : :	15 36	3.2	1 41	.3
50	4 0	19 54	0 42	3 19	15 26	2.9	1 47	.5
45	4 20	19 35	0 36	2 20	15 19	2.7	1 52	.7
40	4 36	19 19	0 32	1 57	15 12	2.5	1 56	.9
35	4 49	19 5	0 29	1 43	15 7	2.4	2 0	1.0
30	5 1	18 54	0 27	1 34	15 2	2.3	2 3	1.1
20	5 21	18 34	0 24	1 22	14 53	2.0	2 9	1.3
10	5 38	18 17	0 23	1 16	14 46	1.9	2 14	1.5
0	5 54	18 1	0 22	1 14	14 39	1.7	2 19	1.7
10	6 9	17 45	0 22	1 14	14 32	1.5	2 23	1.8
20	6 26	17 28	0 24	1 18	14 25	1.4	2 29	2.0
30	6 45	17 9	0 26	1 24	14 17	1.2	2 34	2.2
35	6 56	16 58	0 28	1 29	14 13	1.0	2 38	2.4
40	7 8	16 46	0 30	1 36	14 7	.9	2 42	2.5
45	7 23	16 31	0 33	1 44	14 1	.7	2 46	2.7
50	7 41	16 13	0 37	1 56	13 54	.6	2 51	2.9
55	8 5	15 49	0 43	2 13	13 45	.3	2 58	3.1
60	8 37	15 17	0 53	2 38	13 34	.0	3 7	3.5

UT	MESEC				JUPITER			SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄						
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	56	9.1	171	-5	58.1	-137	349	7.2	-22	.6	101	59.3	16	13.9	
2	85	21.3	171	-6	25.6	-137	19	12.8	-22	.6	132	3.9	16	13.7	
4	114	33.5	170	-6	52.9	-136	49	18.4	-22	.5	162	8.5	16	13.6	
6	143	45.5	170	-7	20.1	-136	79	24.0	-22	.5	192	13.1	16	13.5	
8	172	57.5	169	-7	47.3	-135	109	29.6	-22	.4	222	17.7	16	13.4	
10	202	9.3	169	-8	14.3	-135	139	35.1	-22	.4	252	22.4	16	13.3	
12	231	21.0	168	-8	41.2	-134	169	40.7	-22	.3	282	27.0	16	13.2	
14	260	32.6	167	-9	8.0	-133	199	46.3	-22	.2	312	31.6	16	13.1	
16	289	44.1	167	-9	34.7	-133	229	51.9	-22	.2	342	36.2	16	13.0	
18	318	55.4	166	-10	1.2	-132	259	57.5	-22	.1	12	40.8	16	12.9	
20	348	6.6	165	-10	27.5	-131	290	3.1	-22	.1	42	45.4	16	12.8	
22	17	17.6	164	-10	53.8	-130	320	8.7	-22	.0	72	50.1	16	12.7	
Δ							28		0		23			-1	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	2 55.9	- .3	15.8	T _m	20 49	1.7	54.1	14.8
12	2 52.5			T _{m☉}	11 h 57.1 min	Starost	10.2 d	Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♀	15 13	.2	248	-4.1	♃	0 43	.0	105	-2.4
♂	8 17	.1	351	.9	♄	17 9	.0	218	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	42.2	21	21.9	245	9.2	131	48.6	24	26.0	235	56.8	2	18.9	
2	210	42.1	21	22.7	275	14.2	161	48.0	24	25.1	265	58.2	2	20.4	
4	240	41.9	21	23.5	305	19.1	191	47.3	24	24.2	295	59.7	2	21.8	
6	270	41.8	21	24.3	335	24.0	221	46.7	24	23.4	326	1.2	2	23.3	
8	300	41.6	21	25.1	5	29.0	251	46.0	24	22.5	356	2.7	2	24.8	
10	330	41.5	21	26.0	35	33.9	281	45.4	24	21.6	26	4.1	2	26.3	
12	0	41.3	21	26.8	65	38.8	311	44.7	24	20.7	56	5.6	2	27.7	
14	30	41.2	21	27.6	95	43.7	341	44.1	24	19.8	86	7.1	2	29.2	
16	60	41.0	21	28.4	125	48.7	11	43.5	24	18.9	116	8.5	2	30.7	
18	90	40.9	21	29.2	155	53.6	41	42.9	24	18.0	146	10.0	2	32.1	
20	120	40.7	21	30.0	185	58.5	71	42.2	24	17.1	176	11.5	2	33.6	
22	150	40.6	21	30.8	216	3.5	101	41.6	24	16.2	206	13.0	2	35.1	
Δ		-1		4				-3		-4			7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 56	20 59	1 19	: : :	17 14	3.7	1 33	.0
55	3 34	20 22	0 53	: : :	16 52	3.3	1 48	.3
50	3 60	19 56	0 42	3 24	16 36	3.0	1 60	.6
45	4 19	19 36	0 36	2 21	16 23	2.8	2 9	.8
40	4 35	19 19	0 32	1 57	16 13	2.6	2 17	1.0
35	4 49	19 6	0 29	1 43	16 4	2.5	2 24	1.1
30	5 1	18 54	0 27	1 34	15 56	2.3	2 30	1.2
20	5 21	18 34	0 24	1 22	15 43	2.1	2 41	1.4
10	5 38	18 17	0 23	1 16	15 31	2.0	2 50	1.6
0	5 54	18 1	0 22	1 14	15 20	1.8	2 59	1.7
10	6 9	17 45	0 23	1 14	15 9	1.6	3 7	1.9
20	6 26	17 28	0 24	1 18	14 58	1.5	3 17	2.1
30	6 45	17 9	0 26	1 24	14 45	1.3	3 28	2.3
35	6 56	16 58	0 28	1 29	14 37	1.2	3 34	2.4
40	7 9	16 45	0 30	1 36	14 29	1.0	3 41	2.6
45	7 24	16 30	0 33	1 45	14 19	.9	3 50	2.7
50	7 42	16 12	0 37	1 56	14 7	.7	3 60	2.9
55	8 6	15 48	0 43	2 13	13 53	.4	4 13	3.2
60	8 39	15 15	0 53	2 38	13 33	.0	4 30	3.6

UT	MESEC				JUPITER			SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄						
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	46	28.4	163	-11	19.8	-130	350	14.3	-21	60.0	102	54.7	16	12.6	
2	75	39.1	162	-11	45.8	-129	20	19.9	-21	59.9	132	59.3	16	12.5	
4	104	49.6	161	-12	11.5	-128	50	25.5	-21	59.9	163	3.9	16	12.4	
6	133	59.9	160	-12	37.1	-127	80	31.1	-21	59.8	193	8.5	16	12.3	
8	163	10.0	159	-13	2.5	-126	110	36.7	-21	59.7	223	13.1	16	12.2	
10	192	19.8	158	-13	27.7	-125	140	42.2	-21	59.7	253	17.7	16	12.1	
12	221	29.5	157	-13	52.7	-124	170	47.8	-21	59.6	283	22.4	16	12.0	
14	250	39.0	156	-14	17.5	-123	200	53.4	-21	59.6	313	27.0	16	11.9	
16	279	48.2	155	-14	42.1	-122	230	59.0	-21	59.5	343	31.6	16	11.8	
18	308	57.2	154	-15	6.5	-121	261	4.6	-21	59.5	13	36.2	16	11.7	
20	338	5.9	152	-15	30.7	-120	291	10.2	-21	59.4	43	40.8	16	11.6	
22	7	14.4	151	-15	54.6	-119	321	15.8	-21	59.3	73	45.4	16	11.5	
Δ							28		0		23			-1	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	2 49.1	- .3	15.8	T _m	21 30	1.8	54.1	14.7
12	2 45.4			T _{m☉}				

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS						
	S _☉		δ _☉		S _♄		δ _♄		S _♂		δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	40.4	21	31.6	246	8.4	131	41.0	24	15.2	236	14.4	2	36.5	
2	210	40.2	21	32.4	276	13.3	161	40.4	24	14.3	266	15.9	2	38.0	
4	240	40.1	21	33.1	306	18.2	191	39.8	24	13.4	296	17.4	2	39.5	
6	270	39.9	21	33.9	336	23.2	221	39.2	24	12.5	326	18.8	2	40.9	
8	300	39.8	21	34.7	6	28.1	251	38.6	24	11.5	356	20.3	2	42.4	
10	330	39.6	21	35.5	36	33.0	281	38.0	24	10.6	26	21.8	2	43.9	
12	0	39.4	21	36.3	66	38.0	311	37.4	24	9.7	56	23.3	2	45.3	
14	30	39.3	21	37.0	96	42.9	341	36.8	24	8.7	86	24.7	2	46.8	
16	60	39.1	21	37.8	126	47.8	11	36.2	24	7.8	116	26.2	2	48.3	
18	90	39.0	21	38.6	156	52.7	41	35.6	24	6.8	146	27.7	2	49.7	
20	120	38.8	21	39.4	186	57.7	71	35.1	24	5.9	176	29.2	2	51.2	
22	150	38.6	21	40.1	217	2.6	101	34.5	24	4.9	206	30.6	2	52.7	
Δ		-1		4				-3		-5			7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 55	21 1	1 20	∴ ∴ ∴	18 43	3.9	1 32	.0
55	3 32	20 23	0 53	∴ ∴ ∴	18 10	3.3	1 56	.5
50	3 59	19 57	0 42	3 30	17 47	3.0	2 14	.7
45	4 19	19 37	0 36	2 22	17 29	2.8	2 28	1.0
40	4 35	19 20	0 32	1 58	17 15	2.6	2 40	1.1
35	4 49	19 7	0 29	1 44	17 3	2.5	2 50	1.2
30	5 0	18 55	0 27	1 34	16 52	2.4	2 59	1.4
20	5 20	18 34	0 24	1 22	16 34	2.2	3 14	1.5
10	5 38	18 17	0 23	1 17	16 18	2.1	3 28	1.7
0	5 54	18 1	0 22	1 14	16 3	1.9	3 40	1.9
10	6 10	17 45	0 23	1 14	15 49	1.8	3 53	2.0
20	6 27	17 28	0 24	1 18	15 33	1.6	4 7	2.2
30	6 46	17 9	0 26	1 24	15 16	1.5	4 23	2.4
35	6 57	16 57	0 28	1 29	15 5	1.4	4 32	2.5
40	7 10	16 45	0 30	1 36	14 54	1.2	4 43	2.6
45	7 25	16 29	0 33	1 45	14 40	1.1	4 55	2.8
50	7 44	16 11	0 37	1 57	14 23	.9	5 10	3.0
55	8 7	15 47	0 44	2 13	14 2	.6	5 30	3.3
60	8 41	15 14	0 54	2 39	13 34	.1	5 56	3.8
S								

UT	MESEC				JUPITER		SATURN								
	S _♃		Δ δ _♃		S _♃		δ _♃								
h	°	'	°	'	°	'	°	'							
0	36	22.7	150	-16	18.4	-117	351	21.4	-21	59.3	103	50.0	16	11.4	
2	65	30.6	149	-16	41.8	-116	21	27.0	-21	59.2	133	54.6	16	11.2	
4	94	38.4	147	-17	5.1	-115	51	32.6	-21	59.2	163	59.2	16	11.1	
6	123	45.8	146	-17	28.0	-114	81	38.2	-21	59.1	194	3.8	16	11.0	
8	152	53.0	144	-17	50.7	-112	111	43.8	-21	59.1	224	8.4	16	10.9	
10	181	59.8	143	-18	13.2	-111	141	49.4	-21	59.0	254	13.0	16	10.8	
12	211	6.4	141	-18	35.3	-109	171	55.0	-21	58.9	284	17.6	16	10.7	
14	240	12.7	140	-18	57.2	-108	202	.6	-21	58.9	314	22.3	16	10.6	
16	269	18.7	138	-19	18.8	-106	232	6.2	-21	58.8	344	26.9	16	10.5	
18	298	24.4	137	-19	40.1	-105	262	11.8	-21	58.8	14	31.5	16	10.4	
20	327	29.8	135	-20	1.0	-103	292	17.4	-21	58.7	44	36.1	16	10.3	
22	356	34.9	134	-20	21.7	-102	322	23.0	-21	58.7	74	40.7	16	10.2	
Δ								28		0			23		-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	2 41.8	-.3	15.8	T _m	22 14	2.0	54.1	14.8
12	2 37.9			T _{m☉}	11 h 57.4 min	Starost	12.2 d	Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♂	h min	'	°	°
♀	15 14	.2	246	-4.1	♃	0 34	.0	105	-2.4
♂	8 15	.1	350	.9	♄	17 2	.0	218	.4

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS						
	S _☉		δ _☉		S _♄		δ _♄		S _♂		δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	38.5	21	40.9	247	7.5	131	33.9	24	4.0	236	32.1	2	54.1	
2	210	38.3	21	41.6	277	12.5	161	33.4	24	3.0	266	33.6	2	55.6	
4	240	38.1	21	42.4	307	17.4	191	32.8	24	2.1	296	35.0	2	57.0	
6	270	38.0	21	43.1	337	22.3	221	32.2	24	1.1	326	36.5	2	58.5	
8	300	37.8	21	43.9	7	27.2	251	31.7	24	.1	356	38.0	2	60.0	
10	330	37.6	21	44.6	37	32.2	281	31.1	23	59.1	26	39.5	3	1.4	
12	0	37.5	21	45.4	67	37.1	311	30.6	23	58.2	56	40.9	3	2.9	
14	30	37.3	21	46.1	97	42.0	341	30.1	23	57.2	86	42.4	3	4.4	
16	60	37.1	21	46.9	127	47.0	11	29.5	23	56.2	116	43.9	3	5.8	
18	90	36.9	21	47.6	157	51.9	41	29.0	23	55.2	146	45.4	3	7.3	
20	120	36.8	21	48.4	187	56.8	71	28.5	23	54.2	176	46.8	3	8.7	
22	150	36.6	21	49.1	218	1.7	101	27.9	23	53.2	206	48.3	3	10.2	
Δ		-1		4				-3		-5			7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 53	21 3	1 21	∴ ∴ ∴	20 16	3.9	1 33	.2
55	3 31	20 25	0 54	∴ ∴ ∴	19 30	3.3	2 7	.7
50	3 58	19 58	0 42	3 37	18 60	3.0	2 32	1.0
45	4 18	19 37	0 36	2 22	18 37	2.8	2 51	1.2
40	4 34	19 21	0 32	1 58	18 18	2.6	3 7	1.3
35	4 48	19 7	0 29	1 44	18 3	2.5	3 20	1.5
30	5 0	18 55	0 27	1 34	17 50	2.5	3 31	1.6
20	5 20	18 35	0 24	1 23	17 27	2.3	3 51	1.7
10	5 38	18 17	0 23	1 17	17 8	2.2	4 9	1.9
0	5 54	18 1	0 22	1 14	16 50	2.1	4 25	2.0
10	6 10	17 45	0 23	1 15	16 32	2.0	4 42	2.1
20	6 27	17 28	0 24	1 18	16 12	1.8	4 59	2.3
30	6 46	17 8	0 26	1 24	15 51	1.7	5 20	2.4
35	6 58	16 57	0 28	1 29	15 38	1.6	5 32	2.5
40	7 11	16 44	0 30	1 36	15 23	1.5	5 45	2.7
45	7 26	16 29	0 33	1 45	15 6	1.4	6 2	2.8
50	7 45	16 10	0 37	1 57	14 44	1.2	6 22	3.0
55	8 9	15 46	0 44	2 14	14 16	.9	6 49	3.3
60	8 42	15 12	0 54	2 39	13 37	.3	7 27	3.9
S								

UT	MESEC				JUPITER		SATURN								
	S _♃		Δ δ _♃		S _♃		δ _♃								
h	°	'	°	'	°	'	°	'							
0	25	39.6	132	-20	42.0	-100	352	28.6	-21	58.6	104	45.3	16	10.1	
2	54	44.1	131	-21	2.0	-98	22	34.2	-21	58.5	134	49.9	16	10.0	
4	83	48.2	129	-21	21.6	-96	52	39.8	-21	58.5	164	54.5	16	9.8	
6	112	52.0	127	-21	40.9	-95	82	45.4	-21	58.4	194	59.1	16	9.7	
8	141	55.5	126	-21	59.9	-93	112	51.0	-21	58.4	225	3.7	16	9.6	
10	170	58.6	124	-22	18.4	-91	142	56.6	-21	58.3	255	8.3	16	9.5	
12	200	1.4	122	-22	36.6	-89	173	2.2	-21	58.2	285	12.9	16	9.4	
14	229	3.9	121	-22	54.4	-87	203	7.8	-21	58.2	315	17.4	16	9.3	
16	258	6.0	119	-23	11.8	-85	233	13.4	-21	58.1	345	22.0	16	9.2	
18	287	7.9	117	-23	28.8	-83	263	19.0	-21	58.1	15	26.6	16	9.1	
20	316	9.3	116	-23	45.4	-81	293	24.6	-21	58.0	45	31.2	16	9.0	
22	345	10.5	114	-24	1.6	-79	323	30.2	-21	58.0	75	35.8	16	8.9	
Δ								28		0			23		-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	2 34.0	-.3	15.8	T _m	23 1	2.1	54.3	14.8
12	2 2							

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	36.4	21	49.8	248	6.7	131	27.4	23	52.2	236	49.8	3	11.7	
2	210	36.2	21	50.5	278	11.6	161	26.9	23	51.2	266	51.3	3	13.1	
4	240	36.1	21	51.3	308	16.5	191	26.4	23	50.2	296	52.7	3	14.6	
6	270	35.9	21	52.0	338	21.4	221	25.9	23	49.2	326	54.2	3	16.0	
8	300	35.7	21	52.7	8	26.4	251	25.4	23	48.2	356	55.7	3	17.5	
10	330	35.5	21	53.4	38	31.3	281	24.9	23	47.2	26	57.2	3	19.0	
12	0	35.4	21	54.1	68	36.2	311	24.4	23	46.1	56	58.6	3	20.4	
14	30	35.2	21	54.9	98	41.2	341	23.9	23	45.1	87	1	3	21.9	
16	60	35.0	21	55.6	128	46.1	11	23.4	23	44.1	117	1.6	3	23.3	
18	90	34.8	21	56.3	158	51.0	41	22.9	23	43.1	147	3.1	3	24.8	
20	120	34.6	21	57.0	188	55.9	71	22.4	23	42.0	177	4.5	3	26.2	
22	150	34.5	21	57.7	219	9	101	22.0	23	41.0	207	6.0	3	27.7	
Δ		-1		4				-2		-5			7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC					
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	2 51	21 5	1 23	:	:	:	21 51	3.5	1 37	.4
55	3 30	20 26	0 54	:	:	:	20 49	2.9	2 24	1.1
50	3 57	19 59	0 43	:	:	:	20 11	2.7	2 56	1.4
45	4 17	19 38	0 36	2 23	19 43	2.6	3 20	1.5		
40	4 34	19 22	0 32	1 59	19 22	2.5	3 39	1.7		
35	4 48	19 8	0 29	1 44	19 4	2.5	3 55	1.8		
30	4 60	18 56	0 27	1 34	18 48	2.4	4 9	1.8		
20	5 20	18 35	0 24	1 23	18 22	2.3	4 33	2.0		
10	5 38	18 18	0 23	1 17	18 0	2.3	4 54	2.1		
0	5 54	18 1	0 22	1 14	17 39	2.2	5 13	2.1		
10	6 10	17 45	0 23	1 15	17 19	2.1	5 33	2.2		
20	6 27	17 28	0 24	1 18	16 57	2.1	5 54	2.3		
30	6 47	17 8	0 26	1 25	16 31	2.0	6 18	2.4		
35	6 58	16 57	0 28	1 30	16 16	1.9	6 32	2.5		
40	7 11	16 44	0 30	1 36	15 59	1.8	6 49	2.6		
45	7 27	16 28	0 33	1 45	15 38	1.8	7 9	2.7		
50	7 46	16 9	0 37	1 57	15 12	1.6	7 34	2.9		
55	8 10	15 45	0 44	2 14	14 37	1.4	8 8	3.1		
60	8 44	15 11	0 54	2 40	13 44	.8	9 1	3.8		
S										

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	14	11.3	112	-24	17.4	-77	353	35.8	-21	57.9	105	40.4	16	8.7	
2	43	11.8	111	-24	32.7	-74	23	41.4	-21	57.8	135	45.0	16	8.6	
4	72	12.0	109	-24	47.6	-72	53	47.0	-21	57.8	165	49.6	16	8.5	
6	101	11.8	108	-25	2.0	-70	83	52.6	-21	57.7	195	54.2	16	8.4	
8	130	11.3	106	-25	15.9	-67	113	58.2	-21	57.7	225	58.8	16	8.3	
10	159	10.5	104	-25	29.4	-65	144	3.8	-21	57.6	256	3.4	16	8.2	
12	188	9.4	103	-25	42.4	-63	174	9.4	-21	57.5	286	8.0	16	8.1	
14	217	8.0	101	-25	54.9	-60	204	15.0	-21	57.5	316	12.6	16	8.0	
16	246	6.3	100	-26	7.0	-58	234	20.6	-21	57.4	346	17.2	16	7.8	
18	275	4.2	98	-26	18.5	-55	264	26.2	-21	57.4	16	21.7	16	7.7	
20	304	1.9	97	-26	29.5	-53	294	31.8	-21	57.3	46	26.3	16	7.6	
22	332	59.3	96	-26	40.0	-50	324	37.4	-21	57.3	76	30.9	16	7.5	
Δ								28		0			23		-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	'	h min	min	'	'		
00	2 25.9	.4	15.8	T _m	23 52	2.2	54.6	14.9	
12	2 21.6	T _{m☉}	11 h 57.6 min	Starost	14.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	'	°	h min	'	°
♂	15 14	.2	243	-4.1	♀	0 26	.0	105	-2.4
♂	8 12	.1	349	.9	♂	16 55	.0	218	.5

1. JUN

PETAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	34.3	21	58.4	249	5.8	131	21.5	23	39.9	237	7.5	3	29.2	
2	210	34.1	21	59.1	279	10.7	161	21.0	23	38.9	267	9.0	3	30.6	
4	240	33.9	21	59.8	309	15.7	191	20.6	23	37.9	297	10.5	3	32.1	
6	270	33.7	22	5	339	20.6	221	20.1	23	36.8	327	11.9	3	33.5	
8	300	33.5	22	1.2	9	25.5	251	19.7	23	35.7	357	13.4	3	35.0	
10	330	33.3	22	1.8	39	30.4	281	19.2	23	34.7	27	14.9	3	36.4	
12	0	33.2	22	2.5	69	35.4	311	18.8	23	33.6	57	16.4	3	37.9	
14	30	33.0	22	3.2	99	40.3	341	18.3	23	32.6	87	17.8	3	39.3	
16	60	32.8	22	3.9	129	45.2	11	17.9	23	31.5	117	19.3	3	40.8	
18	90	32.6	22	4.6	159	50.2	41	17.5	23	30.4	147	20.8	3	42.2	
20	120	32.4	22	5.2	189	55.1	71	17.0	23	29.4	177	22.3	3	43.7	
22	150	32.2	22	5.9	220	.0	101	16.6	23	28.3	207	23.7	3	45.1	
Δ		-1		3				-2		-5			7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC					
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	2 50	21 7	1 24	:	:	:	23 15	2.2	1 47	1.1
55	3 29	20 27	0 54	:	:	:	21 59	2.3	2 50	1.7
50	3 56	19 60	0 43	:	:	:	21 16	2.3	3 28	1.9
45	4 17	19 39	0 36	2 24	20 46	2.3	3 57	2.0		
40	4 33	19 22	0 32	1 59	20 23	2.3	4 19	2.0		
35	4 47	19 8	0 29	1 44	20 3	2.3	4 37	2.1		
30	4 60	18 56	0 27	1 35	19 47	2.3	4 53	2.1		
20	5 20	18 36	0 24	1 23	19 19	2.3	5 20	2.2		
10	5 38	18 18	0 23	1 17	18 55	2.3	5 43	2.2		
0	5 54	18 1	0 22	1 14	18 32	2.3	6 5	2.3		
10	6 10	17 45	0 23	1 15	18 10	2.3	6 26	2.3		
20	6 28	17 28	0 24	1 18	17 46	2.3	6 50	2.3		
30	6 47	17 8	0 26	1 25	17 19	2.3	7 17	2.4		
35	6 59	16 56	0 28	1 30	17 2	2.2	7 33	2.4		
40	7 12	16 43	0 30	1 36	16 43	2.2	7 51	2.4		
45	7 28	16 28	0 33	1 45	16 20	2.2	8 14	2.5		
50	7 47	16 9	0 38	1 57	15 51	2.2	8 43	2.5		
55	8 11	15 44	0 44	2 14	15 10	2.1	9 23	2.6		
60	8 46	15 9	0 55	2 40	14 2	1.9	10 31	2.9		
S										

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	1	56.4	94	-26	50.0	-47	354	43.1	-21	57.2	106	35.5	16	7.4	
2	30	53.2	93	-26	59.4	-45	24	48.7	-21	57.1	136	40.1	16	7.3	
4	59	49.8	92	-27	8.3	-42	54	54.3	-21	57.1	166	44.7	16	7.2	
6	88	46.1	90	-27	16.7	-39	84	59.9	-21	57.0	196	49.3	16	7.1	
8	117	42.2	89	-27	24.5	-36	115	5.5	-21	57.0	226	53.9	16	6.9	
10	146	38.0	88	-27	31.8	-33	145	11.1	-21	56.9	256	58.4	16	6.8	
12	175	33.6	87	-27	38.4	-31	175	16.7	-21	56.8	287	3.0	16	6.7	
14	204	29.0	86	-27	44.6	-28	205	22.3	-21	56.8	317	7.6	16	6.6	
16	233	24.2	85	-27	50.1	-25	235	27.9	-21	56.7	347	12.2	16	6.5	
18	262	19.1	84	-27	55.1	-22	265	33.5	-21	56.7	17	16.8	16	6.4	
20	291	13.9	83	-27	59.4	-19	295	39.1	-21	56.6	47	21.3	16	6.3	
22	320	8.5	82	-28	3.2	-16	325	44.7	-21	56.5	77	25.9	16	6.1	
Δ								28		0			23		-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	2 17.3	.4	15.8	T _m	...	1.0	55.0	15.0
12	2 12.8	T _{m☉}	11 h 57.8 min	Starost	15.			

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	32.0	22	6.6	250	4.9	131	16.2	23	27.2	237	25.2	3	46.6	
2	210	31.8	22	7.2	280	9.9	161	15.8	23	26.1	267	26.7	3	48.0	
4	240	31.6	22	7.9	310	14.8	191	15.3	23	25.0	297	28.2	3	49.5	
6	270	31.4	22	8.5	340	19.7	221	14.9	23	23.9	327	29.7	3	50.9	
8	300	31.2	22	9.2	10	24.7	251	14.5	23	22.8	357	31.1	3	52.4	
10	330	31.1	22	9.9	40	29.6	281	14.1	23	21.7	27	32.6	3	53.8	
12	0	30.9	22	10.5	70	34.5	311	13.7	23	20.6	57	34.1	3	55.3	
14	30	30.7	22	11.2	100	39.4	341	13.4	23	19.5	87	35.6	3	56.7	
16	60	30.5	22	11.8	130	44.4	11	13.0	23	18.4	117	37.0	3	58.2	
18	90	30.3	22	12.4	160	49.3	41	12.6	23	17.3	147	38.5	3	59.6	
20	120	30.1	22	13.1	190	54.2	71	12.2	23	16.2	177	40.0	4	1.1	
22	150	29.9	22	13.7	220	59.2	101	11.8	23	15.1	207	41.5	4	2.5	
Δ		-1		3				-2		-6			7		7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	349	3.0	81	-28	6.4	-13	355	50.3	-21	56.5	107	30.5	16	6.0		
2	17	57.3	81	-28	9.0	-10	25	55.9	-21	56.4	137	35.1	16	5.9		
4	46	51.4	80	-28	11.0	-7	56	1.5	-21	56.4	167	39.7	16	5.8		
6	75	45.4	80	-28	12.3	-4	86	7.2	-21	56.3	197	44.2	16	5.7		
8	104	39.4	79	-28	13.1	-1	116	12.8	-21	56.2	227	48.8	16	5.6		
10	133	33.2	79	-28	13.2	2	146	18.4	-21	56.2	257	53.4	16	5.4		
12	162	26.9	78	-28	12.8	5	176	24.0	-21	56.1	287	58.0	16	5.3		
14	191	20.6	78	-28	11.7	8	206	29.6	-21	56.1	318	2.6	16	5.2		
16	220	14.2	78	-28	10.0	12	236	35.2	-21	56.0	348	7.1	16	5.1		
18	249	7.7	78	-28	7.7	15	266	40.8	-21	55.9	18	11.7	16	5.0		
20	278	1.2	77	-28	4.7	18	296	46.4	-21	55.9	48	16.3	16	4.9		
22	306	54.7	77	-28	1.2	21	326	52.0	-21	55.8	78	20.9	16	4.7		
Δ								28		0			23		-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 48	21 9	1 26	:::	0 7	.9	3 18	3.9
55	3 28	20 29	0 55	:::	23 30	1.0	4 31	3.2
50	3 55	20 1	0 43	:::	22 53	1.3	5 12	3.0
45	4 16	19 40	0 36	2 25	22 26	1.5	5 42	2.8
40	4 33	19 23	0 32	1 59	21 18	2.0	6 5	2.7
35	4 47	19 9	0 29	1 45	21 47	1.8	6 24	2.6
30	4 59	18 57	0 27	1 35	21 32	1.9	6 41	2.6
20	5 20	18 36	0 24	1 23	21 6	2.0	7 8	2.5
10	5 38	18 18	0 23	1 17	20 43	2.1	7 32	2.4
0	5 54	18 2	0 22	1 14	20 22	2.2	7 54	2.3
10	6 11	17 45	0 23	1 15	20 1	2.4	8 16	2.2
20	6 28	17 28	0 24	1 18	19 38	2.5	8 39	2.1
30	6 48	17 8	0 26	1 25	19 12	2.6	9 6	2.0
35	6 60	16 56	0 28	1 30	18 56	2.7	9 22	1.9
40	7 13	16 43	0 30	1 37	18 38	2.8	9 41	1.8
45	7 28	16 27	0 33	1 45	18 16	2.9	10 3	1.7
50	7 48	16 8	0 38	1 58	17 48	3.1	10 32	1.5
55	8 13	15 43	0 44	2 15	17 10	3.4	11 11	1.2
60	8 47	15 8	0 55	2 41	16 6	4.1	12 15	.6
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	2 8.3	.4	15.8	T _m	0 45	2.3	55.4	15.1	
12	2 3.6	T _{m☉}	11 h 57.9 min	Starost	16.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	15 15	.2	241	-4.1	♃	0 17	.0	106	-2.4
♂	8 10	.1	347	.8	♄	16 47	.0	217	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	29.7	22	14.4	251	4.1	131	11.5	23	14.0	237	43.0	4	4.0	
2	210	29.5	22	15.0	281	9.0	161	11.1	23	12.9	267	44.4	4	5.4	
4	240	29.3	22	15.6	311	13.9	191	10.7	23	11.7	297	45.9	4	6.9	
6	270	29.1	22	16.2	341	18.9	221	10.4	23	10.6	327	47.4	4	8.3	
8	300	28.9	22	16.9	11	23.8	251	10.0	23	9.5	357	48.9	4	9.8	
10	330	28.7	22	17.5	41	28.7	281	9.7	23	8.3	27	50.3	4	11.2	
12	0	28.5	22	18.1	71	33.6	311	9.3	23	7.2	57	51.8	4	12.7	
14	30	28.3	22	18.7	101	38.6	341	9.0	23	6.1	87	53.3	4	14.1	
16	60	28.0	22	19.3	131	43.5	11	8.7	23	4.9	117	54.8	4	15.5	
18	90	27.8	22	20.0	161	48.4	41	8.3	23	3.8	147	56.3	4	17.0	
20	120	27.6	22	20.6	191	53.4	71	8.0	23	2.6	177	57.7	4	18.4	
22	150	27.4	22	21.2	221	58.3	101	7.7	23	1.5	207	59.2	4	19.9	
Δ		-1		3				-2		-6			7		7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	335	48.2	77	-27	57.0	24	356	57.6	-21	55.8	108	25.4	16	4.6		
2	4	41.7	78	-27	52.2	27	27	3.2	-21	55.7	138	30.0	16	4.5		
4	33	35.3	78	-27	46.7	30	57	8.9	-21	55.6	168	34.6	16	4.4		
6	62	28.8	78	-27	40.7	33	87	14.5	-21	55.6	198	39.1	16	4.3		
8	91	22.4	78	-27	34.0	36	117	20.1	-21	55.5	228	43.7	16	4.1		
10	120	16.1	79	-27	26.7	39	147	25.7	-21	55.5	258	48.3	16	4.0		
12	149	9.8	79	-27	18.8	43	177	31.3	-21	55.4	288	52.9	16	3.9		
14	178	3.6	79	-27	10.3	46	207	36.9	-21	55.3	318	57.4	16	3.8		
16	206	57.5	80	-27	1.2	49	237	42.5	-21	55.3	349	2.0	16	3.7		
18	235	51.5	81	-26	51.4	52	267	48.1	-21	55.2	19	6.6	16	3.6		
20	264	45.6	81	-26	41.1	55	297	53.7	-21	55.2	49	11.1	16	3.4		
22	293	39.8	82	-26	30.1	58	327	59.3	-21	55.1	79	15.7	16	3.3		
Δ								28		0			23		-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 47	21 10	1 27	:::	0 7	.9	3 18	3.9
55	3 27	20 30	0 55	:::	23 30	1.0	4 31	3.2
50	3 55	20 2	0 43	:::	22 53	1.3	5 12	3.0
45	4 16	19 41	0 37	2 26	22 26	1.5	5 42	2.8
40	4 33	19 24	0 32	1 60	22 5	1.6	6 5	2.7
35	4 47	19 10	0 29	1 45	21 47	1.8	6 24	2.6
30	4 59	18 57	0 27	1 35	21 32	1.9	6 41	2.6
20	5 20	18 36	0 24	1 23	21 6	2.0	7 8	2.5
10	5 38	18 18	0 23	1 17	20 43	2.1	7 32	2.4
0	5 54	18 2	0 22	1 14	20 22	2.2	7 54	2.3
10	6 11	17 45	0 23	1 15	20 1	2.4	8 16	2.2
20	6 28	17 28	0 24	1 18	19 38	2.5	8 39	2.1
30	6 48	17 8	0 26	1 25	19 12	2.6	9 6	2.0
35	7 0	16 56	0 28	1 30	18 56	2.7	9 22	1.9
40	7 14	16 43	0 30	1 37	18 38	2.8	9 41	1.8
45	7 29	16 27	0 33	1 46	18 16	2.9	10 3	1.7
50	7 49	16 7	0 38	1 58	17 48	3.1	10 32	1.5
55	8 14	15 42	0 44	2 15	17 10	3.4	11 11	1.2
60	8 49	15 7	0 55	2 41	16 6	4.1	12 15	.6
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s</				

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 27.2	22 21.8	252 3.2	131 7.4	23 1.3	238 1.7	4 21.3
2	210 27.0	22 22.4	282 8.1	161 7.1	22 59.1	268 2.2	4 22.8
4	240 26.8	22 23.0	312 13.1	191 6.8	22 58.0	298 3.6	4 24.2
6	270 26.6	22 23.6	342 18.0	221 6.5	22 56.8	328 5.1	4 25.6
8	300 26.4	22 24.2	12 22.9	251 6.2	22 55.6	358 6.6	4 27.1
10	330 26.2	22 24.7	42 27.9	281 5.9	22 54.5	28 8.1	4 28.5
12	0 26.0	22 25.3	72 32.8	311 5.6	22 53.3	58 9.6	4 30.0
14	30 25.8	22 25.9	102 37.7	341 5.3	22 52.1	88 11.0	4 31.4
16	60 25.5	22 26.5	132 42.6	11 5.0	22 50.9	118 12.5	4 32.8
18	90 25.3	22 27.1	162 47.6	41 4.7	22 49.7	148 14.0	4 34.3
20	120 25.1	22 27.6	192 52.5	71 4.5	22 48.6	178 15.5	4 35.7
22	150 24.9	22 28.2	222 57.4	101 4.2	22 47.4	208 17.0	4 37.1
Δ	-1	3		-1	-6	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 46	21 12	1 29	:	0 28	.3	4 51	4.3
55	3 26	20 31	0 55	:	23 53	.7	5 48	3.6
50	3 54	20 3	0 43	:	23 25	1.0	6 23	3.3
45	4 15	19 42	0 37	2 26	23 3	1.2	6 49	3.0
40	4 32	19 25	0 32	2 0	22 45	1.4	7 10	2.9
35	4 47	19 10	0 29	1 45	22 30	1.5	7 27	2.8
30	4 59	18 58	0 27	1 35	22 16	1.6	7 42	2.6
20	5 20	18 37	0 24	1 23	21 54	1.8	8 7	2.5
10	5 38	18 19	0 23	1 17	21 34	2.0	8 28	2.3
0	5 55	18 2	0 22	1 15	21 16	2.1	8 48	2.2
10	6 11	17 45	0 23	1 15	20 58	2.3	9 8	2.1
20	6 29	17 28	0 24	1 18	20 38	2.5	9 29	1.9
30	6 49	17 7	0 26	1 25	20 15	2.7	9 54	1.7
35	7 1	16 56	0 28	1 30	20 1	2.8	10 8	1.6
40	7 14	16 42	0 30	1 37	19 46	2.9	10 24	1.5
45	7 30	16 26	0 33	1 46	19 27	3.1	10 44	1.3
50	7 50	16 7	0 38	1 58	19 4	3.3	11 8	1.1
55	8 15	15 41	0 44	2 15	18 32	3.7	11 41	.8
60	8 50	15 6	0 55	2 42	17 45	4.3	12 29	.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	322 34.2	83 -26	18.6	61	358 5.0	-21 55.0	109 20.3	16 3.2
2	351 28.7	83 -26	6.5	64	28 10.6	-21 55.0	139 24.8	16 3.1
4	20 23.4	84 -25	53.8	66	58 16.2	-21 54.9	169 29.4	16 3.0
6	49 18.3	85 -25	40.5	69	88 21.8	-21 54.9	199 34.0	16 2.8
8	78 13.3	86 -25	26.6	72	118 27.4	-21 54.8	229 38.5	16 2.7
10	107 8.5	87 -25	12.2	75	148 33.0	-21 54.7	259 43.1	16 2.6
12	136 3.8	88 -24	57.2	78	178 38.6	-21 54.7	289 47.7	16 2.5
14	164 59.4	89 -24	41.6	81	208 44.2	-21 54.6	319 52.2	16 2.4
16	193 55.2	90 -24	25.5	83	238 49.8	-21 54.6	349 56.8	16 2.2
18	222 51.1	91 -24	8.8	86	268 55.5	-21 54.5	20 1.3	16 2.1
20	251 47.3	92 -23	51.6	89	299 1.1	-21 54.4	50 5.9	16 2.0
22	280 43.7	93 -23	33.9	91	329 6.7	-21 54.4	80 10.5	16 1.9
Δ					28	0	23	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	1 49.1	-.4	15.8	T _m	2 35	2.3	56.3 15.3		
12	1 44.0	T _{m☉}	11 h 58.3 min	Starost	18.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♁	15 16 .2	239	-4.2	♃	0 8 .0	106	-2.4		
♂	8 8 .1	346	.8	♄	16 40 .0	217	.5		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 24.7	22 28.8	253 2.4	131 3.9	22 46.2	238 18.4	4 38.6
2	210 24.5	22 29.4	283 7.3	161 3.7	22 45.0	268 19.9	4 40.0
4	240 24.3	22 29.9	313 12.2	191 3.4	22 43.8	298 21.4	4 41.5
6	270 24.0	22 30.5	343 17.1	221 3.2	22 42.6	328 22.9	4 42.9
8	300 23.8	22 31.0	13 22.1	251 2.9	22 41.4	358 24.4	4 44.3
10	330 23.6	22 31.6	43 27.0	281 2.7	22 40.2	28 25.8	4 45.8
12	0 23.4	22 32.2	73 31.9	311 2.5	22 39.0	58 27.3	4 47.2
14	30 23.2	22 32.7	103 36.9	341 2.2	22 37.7	88 28.8	4 48.6
16	60 22.9	22 33.3	133 41.8	11 2.0	22 36.5	118 30.3	4 50.1
18	90 22.7	22 33.8	163 46.7	41 1.8	22 35.3	148 31.8	4 51.5
20	120 22.5	22 34.3	193 51.6	71 1.6	22 34.1	178 33.2	4 52.9
22	150 22.3	22 34.9	223 56.6	101 1.4	22 32.9	208 34.7	4 54.4
Δ	-1	3		-1	-6	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 44	21 13	1 30	:	0 36	.1	6 34	4.3
55	3 25	20 32	0 56	:	23 53	.0	7 14	3.7
50	3 54	20 4	0 43	:	23 48	.8	7 41	3.4
45	4 15	19 42	0 37	2 27	23 31	1.0	8 2	3.1
40	4 32	19 25	0 32	2 0	23 18	1.2	8 19	2.9
35	4 46	19 11	0 29	1 45	23 6	1.3	8 33	2.8
30	4 59	18 58	0 27	1 35	22 56	1.5	8 46	2.7
20	5 20	18 37	0 24	1 23	22 38	1.7	9 6	2.4
10	5 38	18 19	0 23	1 17	22 22	1.9	9 24	2.3
0	5 55	18 2	0 22	1 15	22 8	2.1	9 41	2.1
10	6 11	17 45	0 23	1 15	21 53	2.2	9 58	1.9
20	6 29	17 28	0 24	1 18	21 37	2.4	10 15	1.7
30	6 50	17 7	0 26	1 25	21 19	2.7	10 35	1.5
35	7 1	16 55	0 28	1 30	21 8	2.8	10 47	1.4
40	7 15	16 42	0 30	1 37	20 56	2.9	11 1	1.3
45	7 31	16 26	0 33	1 46	20 41	3.1	11 16	1.1
50	7 50	16 6	0 38	1 58	20 23	3.4	11 36	.9
55	8 16	15 41	0 45	2 16	20 0	3.7	12 0	.6
60	8 52	15 5	0 56	2 42	19 28	4.2	12 34	.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	309 40.3	94 -23	15.6	94	359 12.3	-21 54.3	110 15.0	16 1.7
2	338 37.1	95 -22	56.8	96	29 17.9	-21 54.3	140 19.6	16 1.6
4	7 34.2	96 -22	37.5	99	59 23.5	-21 54.2	170 24.2	16 1.5
6	36 31.4	97 -22	17.7	101	89 29.1	-21 54.1	200 28.7	16 1.4
8	65 28.9	99 -21	57.4	104	119 34.7	-21 54.1	230 33.3	16 1.3
10	94 26.6	100 -21	36.6	106	149 40.3	-21 54.0	260 37.8	16 1.1
12	123 24.6	101 -21	15.4	109	179 46.0	-21 53.9	290 42.4	16 1.0
14	152 22.8	102 -20	53.6	111	209 51.6	-21 53.9	320 46.9	16 .9
16	181 21.2	103 -20	31.4	113	239 57.2	-21 53.8	350 51.5	16 .8
18	210 19.8	104 -20	8.8	115	270 2.8	-21 53.8	20 56.1	16 .6
20	239 18.7	105 -19	45.7	118	300 8.4	-21 53.7	51 .6	16 .5
22	268 17.8	107 -19	22.2	120	330 14.0	-21 53.6	81 5.2	16 .4
Δ					28	0	23	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	1 38.9	-.4	15.8	T _m	3 29	2.1	56.8 15.5		
12	1 33.7	T _{m☉}	11 h 58.4 min	Starost	19.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♁	15 16 .2	238	-4.2	♃	0 3 .0	106	-2.4		
♂	8 6 .1	345	.8	♄	16 36 .0	217	.5		

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS				
	S _☉		δ _☉		S _♈		S _♀	δ _♀		S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	22.1	22	35.4	254	1.5	131	1.1	22	31.6	238	36.2	4	55.8
2	210	21.8	22	36.0	284	6.4	161	.9	22	30.4	268	37.7	4	57.2
4	240	21.6	22	36.5	314	11.4	191	.7	22	29.2	298	39.2	4	58.6
6	270	21.4	22	37.0	344	16.3	221	.6	22	27.9	328	40.6	5	.1
8	300	21.2	22	37.5	14	21.2	251	.4	22	26.7	358	42.1	5	1.5
10	330	20.9	22	38.1	44	26.1	281	.2	22	25.4	28	43.6	5	2.9
12	0	20.7	22	38.6	74	31.1	311	.0	22	24.2	58	45.1	5	4.4
14	30	20.5	22	39.1	104	36.0	340	59.8	22	22.9	88	46.6	5	5.8
16	60	20.3	22	39.6	134	40.9	10	59.7	22	21.7	118	48.0	5	7.2
18	90	20.0	22	40.1	164	45.9	40	59.5	22	20.4	148	49.5	5	8.6
20	120	19.8	22	40.6	194	50.8	70	59.3	22	19.2	178	51.0	5	10.1
22	150	19.6	22	41.1	224	55.7	100	59.2	22	17.9	208	52.5	5	11.5
Δ		-1		3				-1		-6		7		7

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'				
0	297	17.1	108	-18	58.2	122	0	19.6	-21	53.6	111	9.7	16	.3
2	326	16.6	109	-18	33.8	124	30	25.2	-21	53.5	141	14.3	16	.1
4	355	16.3	110	-18	9.0	126	60	30.9	-21	53.5	171	18.8	16	.0
6	24	16.3	111	-17	43.8	128	90	36.5	-21	53.4	201	23.4	15	59.9
8	53	16.5	112	-17	18.2	130	120	42.1	-21	53.3	231	27.9	15	59.8
10	82	16.8	113	-16	52.2	132	150	47.7	-21	53.3	261	32.5	15	59.6
12	111	17.4	114	-16	25.9	134	180	53.3	-21	53.2	291	37.0	15	59.5
14	140	18.2	115	-15	59.1	135	210	58.9	-21	53.2	321	41.6	15	59.4
16	169	19.1	116	-15	32.1	137	241	4.5	-21	53.1	351	46.1	15	59.3
18	198	20.2	117	-15	4.6	139	271	10.1	-21	53.0	21	50.7	15	59.1
20	227	21.6	117	-14	36.9	140	301	15.7	-21	53.0	51	55.2	15	59.0
22	256	23.0	118	-14	8.8	142	331	21.4	-21	52.9	81	59.8	15	58.9
Δ								28		0		23		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 43	21 15	1 32	:::	0 39	.0	8 16	4.1
55	3 25	20 33	0 56	:::	0 10	.5	8 43	3.7
50	3 53	20 5	0 44	:::	...	.0	9 2	3.4
45	4 14	19 43	0 37	2 28	23 55	.9	9 17	3.1
40	4 32	19 26	0 32	2 1	23 46	1.0	9 30	2.9
35	4 46	19 11	0 29	1 46	23 38	1.2	9 40	2.8
30	4 59	18 59	0 27	1 35	23 31	1.3	9 49	2.6
20	5 20	18 38	0 24	1 23	23 18	1.6	10 5	2.4
10	5 38	18 19	0 23	1 17	23 7	1.8	10 19	2.2
0	5 55	18 2	0 22	1 15	22 57	2.0	10 31	2.0
10	6 12	17 45	0 23	1 15	22 46	2.2	10 44	1.8
20	6 30	17 28	0 24	1 18	22 35	2.4	10 57	1.6
30	6 50	17 7	0 26	1 25	22 23	2.6	11 12	1.4
35	7 2	16 55	0 28	1 30	22 15	2.8	11 21	1.3
40	7 15	16 42	0 30	1 37	22 7	2.9	11 31	1.1
45	7 32	16 26	0 33	1 46	21 56	3.1	11 42	.9
50	7 51	16 6	0 38	1 58	21 44	3.4	11 56	.7
55	8 17	15 40	0 45	2 16	21 29	3.7	12 14	.4
60	8 53	15 4	0 56	2 43	21 8	4.1	12 36	.0
S								

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	1 28.4	-.5	15.8	T _m	4 20	2.0	57.4	15.6
12	1 23.0	T _{m☉}	11 h 58.6 min	Starost	20.2 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 16	.2	237	-4.2	♄	23 50	.0	106	-2.5
♂	8 5	.1	345	.8	♂	16 33	.0	217	.5

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS				
	S _☉		δ _☉		S _♈		S _♀	δ _♀		S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	19.4	22	41.7	255	.6	130	59.0	22	16.6	238	54.0	5	12.9
2	210	19.1	22	42.2	285	5.6	160	58.9	22	15.4	268	55.4	5	14.4
4	240	18.9	22	42.7	315	10.5	190	58.7	22	14.1	298	56.9	5	15.8
6	270	18.7	22	43.1	345	15.4	220	58.6	22	12.8	328	58.4	5	17.2
8	300	18.4	22	43.6	15	20.3	250	58.5	22	11.6	358	59.9	5	18.6
10	330	18.2	22	44.1	45	25.3	280	58.3	22	10.3	29	1.4	5	20.0
12	0	18.0	22	44.6	75	30.2	310	58.2	22	9.0	59	2.9	5	21.5
14	30	17.7	22	45.1	105	35.1	340	58.1	22	7.7	89	4.3	5	22.9
16	60	17.5	22	45.6	135	40.1	10	58.0	22	6.4	119	5.8	5	24.3
18	90	17.3	22	46.1	165	45.0	40	57.9	22	5.1	149	7.3	5	25.7
20	120	17.0	22	46.5	195	49.9	70	57.8	22	3.9	179	8.8	5	27.2
22	150	16.8	22	47.0	225	54.8	100	57.7	22	2.6	209	10.3	5	28.6
Δ		-1		2				-1		-6		7		7

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'				
0	285	24.7	119	-13	40.3	144	1	27.0	-21	52.8	112	4.3	15	58.8
2	314	26.5	120	-13	11.6	145	31	32.6	-21	52.8	142	8.9	15	58.6
4	343	28.5	120	-12	42.6	147	61	38.2	-21	52.7	172	13.4	15	58.5
6	12	30.6	121	-12	13.2	148	91	43.8	-21	52.7	202	18.0	15	58.4
8	41	32.8	122	-11	43.6	149	121	49.4	-21	52.6	232	22.5	15	58.3
10	70	35.1	122	-11	13.7	151	151	55.0	-21	52.5	262	27.1	15	58.1
12	99	37.6	123	-10	43.6	152	182	.6	-21	52.5	292	31.6	15	58.0
14	128	40.2	123	-10	13.2	153	212	6.3	-21	52.4	322	36.1	15	57.9
16	157	42.9	124	-9	42.5	154	242	11.9	-21	52.3	352	40.7	15	57.8
18	186	45.7	124	-9	11.6	156	272	17.5	-21	52.3	22	45.2	15	57.6
20	215	48.5	125	-8	40.5	157	302	23.1	-21	52.2	52	49.8	15	57.5
22	244	51.5	125	-8	9.2	158	332	28.7	-21	52.2	82	54.3	15	57.4
Δ								28		0		23		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 42	21 16	1 33	:::	0 40	.0	9 56	4.1
55	3 24	20 34	0 56	:::	0 21	.4	10 12	3.7
50	3 53	20 6	0 44	:::	0 7	.6	10 23	3.4
45	4 14	19 44	0 37	2 29	...	.0	10 33	3.1
40	4 31	19 26	0 33	2 1	...	.0	10 40	2.9
35	4 46	19 12	0 29	1 46	...	.0	10 47	2.8
30	4 58	18 59	0 27	1 36	...	.0	10 53	2.6
20	5 20	18 38	0 24	1 23	23 56	1.5	11 3	2.4
10	5 38	18 20	0 24	1 17	23 50	1.8	11 12	2.2
0	5 55	18 2	0 22	1 15	23 44	2.0	11 20	2.0
10	6 12	17 46	0 23	1 15	23 39	2.2	11 28	1.8
20	6 30	17 28	0 24	1 18	23 33	2.4	11 36	1.5
30	6 50	17 7	0 26	1 25	23 26	2.6	11 46	1.3
35	7 2	16 55	0 28	1 30	23 22	2.8	11 51	1.2
40	7 16	16 41	0 30	1 37	23 17	3.0	11 57	1.0
45	7 32	16 25	0 34	1 46	23 12	3.2	12 4	.8
50	7 52	16 5	0 38	1 58	23 5	3.4	12 13	.6
55	8 18	15 39	0 45	2 16	22 57	3.7	12 23	.3
60	8 55	15 3	0 56	2 43	22 47	4.1	12 37	.0
S								

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	1 17.6	-.5	15.8	T _m	5 8	2.0	57.9	15.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 16.6	22 47.5	255 59.8	130 57.6	22 1.3	239 11.7	5 30.0
2	210 16.3	22 48.0	286 4.7	160 57.5	21 60.0	269 13.2	5 31.4
4	240 16.1	22 48.4	316 9.6	190 57.4	21 58.7	299 14.7	5 32.8
6	270 15.9	22 48.9	346 14.6	220 57.3	21 57.4	329 16.2	5 34.3
8	300 15.6	22 49.3	16 19.5	250 57.3	21 56.0	359 17.7	5 35.7
10	330 15.4	22 49.8	46 24.4	280 57.2	21 54.7	29 19.1	5 37.1
12	0 15.1	22 50.3	76 29.3	310 57.1	21 53.4	59 20.6	5 38.5
14	30 14.9	22 50.7	106 34.3	340 57.1	21 52.1	89 22.1	5 39.9
16	60 14.7	22 51.2	136 39.2	10 57.0	21 50.8	119 23.6	5 41.3
18	90 14.4	22 51.6	166 44.1	40 57.0	21 49.5	149 25.1	5 42.8
20	120 14.2	22 52.0	196 49.1	70 56.9	21 48.1	179 26.6	5 44.2
22	150 14.0	22 52.5	226 54.0	100 56.9	21 46.8	209 28.0	5 45.6
Δ	-1	2		0	-7	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 41	21 18	1 35	: : :	0 40	.0	11 34	4.1
55	3 23	20 35	0 56	: : :	0 30	.3	11 40	3.7
50	3 52	20 6	0 44	: : :	0 23	.6	11 44	3.4
45	4 14	19 44	0 37	2 29	0 16	.8	11 48	3.2
40	4 31	19 27	0 33	2 1	0 11	1.0	11 51	3.0
35	4 46	19 12	0 30	1 46	0 7	1.2	11 54	2.8
30	4 58	18 60	0 27	1 36	0 3	1.3	11 56	2.7
20	5 20	18 38	0 24	1 24	...	.0	12 0	2.4
10	5 38	18 20	0 23	1 17	...	.0	12 4	2.2
0	5 55	18 3	0 22	1 15	...	.0	12 7	2.0
10	6 12	17 46	0 23	1 15	...	.0	12 10	1.8
20	6 30	17 28	0 24	1 18	...	.0	12 13	1.5
30	6 51	17 7	0 26	1 25	...	.0	12 17	1.3
35	7 3	16 55	0 28	1 30	...	.0	12 19	1.1
40	7 17	16 41	0 30	1 37	...	.0	12 22	1.0
45	7 33	16 25	0 34	1 46	...	.0	12 24	.8
50	7 53	16 5	0 38	1 59	...	.0	12 28	.6
55	8 19	15 39	0 45	2 16	...	.0	12 32	.3
60	8 56	15 2	0 56	2 44	...	.0	12 37	.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	273 54.5	125 - 7	37.6	159	2 34.3	-21 52.1	112 58.9	15 57.2
2	302 57.5	126 - 7	5.9	160	32 39.9	-21 52.0	143 3.4	15 57.1
4	332 .6	126 - 6	34.0	161	62 45.5	-21 52.0	173 7.9	15 57.0
6	1 3.8	126 - 6	1.9	161	92 51.1	-21 51.9	203 12.5	15 56.9
8	30 6.9	126 - 5	29.6	162	122 56.8	-21 51.9	233 17.0	15 56.7
10	59 10.1	126 - 4	57.2	163	153 2.4	-21 51.8	263 21.6	15 56.6
12	88 13.3	126 - 4	24.6	164	183 8.0	-21 51.7	293 26.1	15 56.5
14	117 16.5	126 - 3	51.9	164	213 13.6	-21 51.7	323 30.6	15 56.3
16	146 19.6	126 - 3	19.1	165	243 19.2	-21 51.6	353 35.2	15 56.2
18	175 22.7	125 - 2	46.1	165	273 24.8	-21 51.5	23 39.7	15 56.1
20	204 25.8	125 - 2	13.1	166	303 30.4	-21 51.5	53 44.2	15 56.0
22	233 28.9	125 - 1	39.9	166	333 36.0	-21 51.4	83 48.8	15 55.8
Δ					28	0	23	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s / ' / "	h min	h min	min	' / "	' / "
00	1 6.5	-.5	15.8	T _m	5 56	2.0	58.5 15.9
12	1 .7	T _m ☉	11 h 59.0 min	Starost	22.2 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min	' / "	°	°	h min	' / "	°	°	h min	' / "
♀	15 16	.2	235	-4.2	♃	23 45	.0	107	-2.4
♂	8 3	.1	343	.8	♄	16 26	.0	217	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 13.7	22 52.9	256 58.9	130 56.8	21 45.5	239 29.5	5 47.0
2	210 13.5	22 53.4	287 3.8	160 56.8	21 44.2	269 31.0	5 48.4
4	240 13.2	22 53.8	317 8.8	190 56.8	21 42.8	299 32.5	5 49.8
6	270 13.0	22 54.2	347 13.7	220 56.8	21 41.5	329 34.0	5 51.2
8	300 12.7	22 54.6	17 18.6	250 56.7	21 40.1	359 35.4	5 52.6
10	330 12.5	22 55.1	47 23.6	280 56.7	21 38.8	29 36.9	5 54.1
12	0 12.3	22 55.5	77 28.5	310 56.7	21 37.5	59 38.4	5 55.5
14	30 12.0	22 55.9	107 33.4	340 56.7	21 36.1	89 39.9	5 56.9
16	60 11.8	22 56.3	137 38.3	10 56.7	21 34.8	119 41.4	5 58.3
18	90 11.5	22 56.7	167 43.3	40 56.7	21 33.4	149 42.9	5 59.7
20	120 11.3	22 57.1	197 48.2	70 56.7	21 32.0	179 44.3	6 1.1
22	150 11.0	22 57.5	227 53.1	100 56.8	21 30.7	209 45.8	6 2.5
Δ	-1	2		0	-7	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 40	21 19	1 36	: : :	0 40	.0	13 12	4.2
55	3 23	20 36	0 57	: : :	0 38	.3	13 9	3.8
50	3 52	20 7	0 44	: : :	0 37	.6	13 6	3.5
45	4 14	19 45	0 37	2 30	0 36	.8	13 4	3.3
40	4 31	19 28	0 33	2 2	0 35	1.0	13 2	3.1
35	4 46	19 13	0 30	1 46	0 34	1.2	13 1	2.9
30	4 58	19 0	0 27	1 36	0 34	1.3	12 60	2.7
20	5 20	18 39	0 24	1 24	0 33	1.6	12 58	2.5
10	5 38	18 20	0 23	1 17	0 32	1.8	12 56	2.2
0	5 56	18 3	0 22	1 15	0 31	2.0	12 54	2.0
10	6 13	17 46	0 23	1 15	0 31	2.2	12 52	1.8
20	6 31	17 28	0 24	1 18	0 30	2.4	12 50	1.6
30	6 51	17 7	0 26	1 25	0 29	2.7	12 48	1.3
35	7 3	16 55	0 28	1 30	0 29	2.8	12 47	1.2
40	7 17	16 41	0 30	1 37	0 28	3.0	12 45	1.0
45	7 34	16 25	0 34	1 46	0 28	3.2	12 44	.8
50	7 54	16 5	0 38	1 59	0 27	3.5	12 42	.6
55	8 20	15 38	0 45	2 16	0 27	3.8	12 39	.3
60	8 57	15 1	0 57	2 44	0 26	4.1	12 36	.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	262 31.8	125 - 1	6.7	167	3 41.6	-21 51.4	113 53.3	15 55.7
2	291 34.7	124 - 0	33.4	167	33 47.3	-21 51.3	143 57.8	15 55.6
4	320 37.6	124 0	.0	167	63 52.9	-21 51.2	174 2.4	15 55.4
6	349 40.3	123 0	33.4	167	93 58.5	-21 51.2	204 6.9	15 55.3
8	18 42.9	123 1	6.9	167	124 4.1	-21 51.1	234 11.4	15 55.2
10	47 45.4	122 1	40.4	168	154 9.7	-21 51.0	264 16.0	15 55.0
12	76 47.8	121 2	13.9	168	184 15.3	-21 51.0	294 20.5	15 54.9
14	105 50.0	120 2	47.4	167	214 20.9	-21 50.9	324 25.0	15 54.8
16	134 52.1	120 3	20.9	167	244 26.5	-21 50.9	354 29.6	15 54.6
18	163 54.0	119 3	54.3	167	274 32.1	-21 50.8	24 34.1	15 54.5
20	192 55.8	118 4	27.8	167	304 37.7	-21 50.7	54 38.6	15 54.4
22	221 57.3	117 5	1.2	167	334 43.3	-21 50.7	84 43.2	15 54.2
Δ					28	0	23	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s / ' / "	h min	h min	min	' / "	' / "
00	0 55.0	-.5	15.8	T _m	6 43	2.0	59.1 16.1
12	0 49.1	T _m ☉	11 h 59.2 min	Starost	23.2 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min	' / "	°	°	h min	' / "	°	°	h min	' / "
♀	15 16	.2	234	-4.2	♃	23 41	.0	107	-2.4
♂	8 2	.1	343	.8	♄	16 22	.0	217	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS					
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂				
h	°	'	°	'	°	'	°	'			
0	180	10.8	22 58.0	257	58.1	130	56.8	21 29.3	239	47.3	6 3.9
2	210	10.5	22 58.4	288	3.0	160	56.8	21 28.0	269	48.8	6 5.3
4	240	10.3	22 58.8	318	7.9	190	56.8	21 26.6	299	50.3	6 6.7
6	270	10.0	22 59.1	348	12.8	220	56.9	21 25.2	329	51.8	6 8.1
8	300	9.8	22 59.5	18	17.8	250	56.9	21 23.9	359	53.2	6 9.5
10	330	9.5	22 59.9	48	22.7	280	57.0	21 22.5	29	54.7	6 11.0
12	0	9.3	23 .3	78	27.6	310	57.0	21 21.1	59	56.2	6 12.4
14	30	9.0	23 .7	108	32.5	340	57.1	21 19.7	89	57.7	6 13.8
16	60	8.8	23 1.1	138	37.5	10	57.2	21 18.4	119	59.2	6 15.2
18	90	8.5	23 1.5	168	42.4	40	57.2	21 17.0	150	.7	6 16.6
20	120	8.3	23 1.8	198	47.3	70	57.3	21 15.6	180	2.1	6 18.0
22	150	8.0	23 2.2	228	52.3	100	57.4	21 14.2	210	3.6	6 19.4
Δ		-1	2			0		-7	7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 39	21 20	1 37	:::	0 39	.0	14 53	4.4
55	3 22	20 37	0 57	:::	0 46	.4	14 40	4.0
50	3 51	20 8	0 44	:::	0 51	.7	14 30	3.6
45	4 13	19 46	0 37	2 30	0 56	.9	14 22	3.4
40	4 31	19 28	0 33	2 2	0 59	1.1	14 16	3.2
35	4 46	19 13	0 30	1 46	1 3	1.3	14 10	3.0
30	4 58	19 1	0 27	1 36	1 5	1.4	14 5	2.8
20	5 20	18 39	0 24	1 24	1 10	1.7	13 57	2.6
10	5 38	18 20	0 23	1 17	1 15	1.9	13 50	2.4
0	5 56	18 3	0 22	1 15	1 19	2.1	13 43	2.2
10	6 13	17 46	0 23	1 15	1 24	2.3	13 36	1.9
20	6 31	17 28	0 24	1 18	1 28	2.5	13 29	1.7
30	6 52	17 7	0 26	1 25	1 34	2.8	13 20	1.5
35	7 4	16 55	0 28	1 30	1 37	2.9	13 15	1.3
40	7 18	16 41	0 30	1 37	1 41	3.1	13 10	1.2
45	7 34	16 24	0 34	1 46	1 45	3.3	13 4	1.0
50	7 54	16 4	0 38	1 59	1 50	3.6	12 57	.7
55	8 21	15 38	0 45	2 17	1 57	3.9	12 47	.4
60	8 58	15 0	0 57	2 44	2 5	4.3	12 36	.0
S								

UT	MESEC				JUPITER		SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	
h	°	'	°	'	°	'	°	'	
0	250	58.7	116	5 34.5	166	4 49.0	-21 50.6	114 47.7	15 54.1
2	279	59.9	115	6 7.8	166	34 54.6	-21 50.5	144 52.2	15 54.0
4	309	.8	114	6 41.0	166	65 .2	-21 50.5	174 56.7	15 53.8
6	338	1.5	112	7 14.1	165	95 5.8	-21 50.4	205 1.3	15 53.7
8	7	2.0	111	7 47.1	164	125 11.4	-21 50.4	235 5.8	15 53.6
10	36	2.2	110	8 20.0	164	155 17.0	-21 50.3	265 10.3	15 53.4
12	65	2.1	108	8 52.7	163	185 22.6	-21 50.2	295 14.9	15 53.3
14	94	1.8	107	9 25.3	162	215 28.2	-21 50.2	325 19.4	15 53.2
16	123	1.2	106	9 57.7	161	245 33.8	-21 50.1	355 23.9	15 53.0
18	152	.3	104	10 30.0	160	275 39.4	-21 50.0	25 28.4	15 52.9
20	180	59.1	102	11 2.0	159	305 45.0	-21 50.0	55 33.0	15 52.8
22	209	57.6	101	11 33.9	158	335 50.6	-21 49.9	85 37.5	15 52.6
Δ						28	0	23	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	'	h min	min	'		
00	0 43.3	-.5	15.8	T _m	7 31	2.1	59.6	16.2	
12	0 37.3	T _{m☉}	11 h 59.4 min	Starost	24.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	15 16	.2	233	-4.2	♄	23 36	.0	107	-2.4
	8 0	.1	342	.8	♅	16 18	.0	217	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS					
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂				
h	°	'	°	'	°	'	°	'			
0	180	7.8	23 2.6	258	57.2	130	57.5	21 12.8	240	5.1	6 20.8
2	210	7.5	23 2.9	289	2.1	160	57.5	21 11.4	270	6.6	6 22.2
4	240	7.3	23 3.3	319	7.0	190	57.6	21 10.0	300	8.1	6 23.6
6	270	7.0	23 3.7	349	12.0	220	57.7	21 8.6	330	9.5	6 25.0
8	300	6.8	23 4.0	19	16.9	250	57.8	21 7.2	0	11.0	6 26.4
10	330	6.5	23 4.4	49	21.8	280	58.0	21 5.8	30	12.5	6 27.8
12	0	6.3	23 4.7	79	26.8	310	58.1	21 4.4	60	14.0	6 29.2
14	30	6.0	23 5.1	109	31.7	340	58.2	21 3.0	90	15.5	6 30.6
16	60	5.8	23 5.4	139	36.6	10	58.3	21 1.6	120	17.0	6 32.0
18	90	5.5	23 5.8	169	41.5	40	58.4	21 .2	150	18.4	6 33.4
20	120	5.2	23 6.1	199	46.5	70	58.6	20 58.8	180	19.9	6 34.7
22	150	5.0	23 6.5	229	51.4	100	58.7	20 57.3	210	21.4	6 36.1
Δ		-1	2			1		-7	7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 39	21 21	1 39	:::	0 39	.1	16 39	4.7
55	3 22	20 38	0 57	:::	0 55	.5	16 15	4.1
50	3 51	20 8	0 44	:::	1 7	.8	15 57	3.8
45	4 13	19 46	0 37	2 31	1 17	1.1	15 43	3.5
40	4 31	19 29	0 33	2 2	1 26	1.3	15 32	3.3
35	4 46	19 14	0 30	1 46	1 33	1.4	15 22	3.1
30	4 58	19 1	0 27	1 36	1 39	1.6	15 14	3.0
20	5 20	18 39	0 25	1 24	1 50	1.8	14 59	2.7
10	5 39	18 21	0 23	1 17	2 0	2.0	14 46	2.5
0	5 56	18 3	0 22	1 15	2 9	2.2	14 34	2.3
10	6 13	17 46	0 23	1 15	2 19	2.4	14 23	2.1
20	6 31	17 28	0 24	1 19	2 29	2.7	14 10	1.9
30	6 52	17 7	0 26	1 25	2 41	2.9	13 56	1.7
35	7 4	16 55	0 28	1 30	2 48	3.1	13 47	1.5
40	7 18	16 41	0 30	1 37	2 56	3.2	13 38	1.4
45	7 35	16 24	0 34	1 46	3 5	3.5	13 27	1.2
50	7 55	16 4	0 38	1 59	3 16	3.7	13 14	.9
55	8 22	15 37	0 45	2 17	3 30	4.1	12 58	.6
60	8 59	14 60	0 57	2 45	3 49	4.6	12 36	.1
S								

UT	MESEC				JUPITER		SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	
h	°	'	°	'	°	'	°	'	
0	238	55.8	99	12 5.5	157	5 56.3	-21 49.9	115 42.0	15 52.5
2	267	53.6	97	12 36.9	156	36 1.9	-21 49.8	145 46.5	15 52.4
4	296	51.1	96	13 8.1	154	66 7.5	-21 49.7	175 51.0	15 52.2
6	325	48.2	94	13 38.9	153	96 13.1	-21 49.7	205 55.6	15 52.1
8	354	45.0	92	14 9.5	152	126 18.7	-21 49.6	236 .1	15 52.0
10	23	41.4	90	14 39.8	150	156 24.3	-21 49.5	266 4.6	15 51.8
12	52	37.4	88	15 9.8	148	186 29.9	-21 49.5	296 9.1	15 51.7
14	81	33.1	86	15 39.5	147	216 35.5	-21 49.4	326 13.6	15 51.6
16	110	28.4	84	16 8.8	145	246 41.1	-21 49.4	356 18.2	15 51.4
18	139	23.2	82	16 37.8	143	276 46.7	-21 49.3	26 22.7	15 51.3
20	168	17.7	80	17 6.4	141	306 52.3	-21 49.2	56 27.2	15 51.2
22	197	11.8	78	17 34.6	139	336 57.9	-21 49.2	86 31.7	15 51.0
Δ						28	0	23	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	'	h min	min	'		
00	0 31.3	-.5	15.8	T _m	8 22	2.3	60.0	16.3	
12	0 25.2	T _{m☉}	11 h 59.6 min	Starost	25.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	15 16	.2	232	-4.2	♄	23 32	.0	107	-2.4
	7 59	.1	341	.8	♅	16 15	.0	217	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	4.7	23	6.8	259	56.3	130	58.9	20	55.9	240	22.9	6	37.5
2	210	4.5	23	7.1	290	1.3	160	59.0	20	54.5	270	24.4	6	38.9
4	240	4.2	23	7.5	320	6.2	190	59.2	20	53.1	300	25.9	6	40.3
6	270	4.0	23	7.8	350	11.1	220	59.3	20	51.7	330	27.3	6	41.7
8	300	3.7	23	8.1	20	16.0	250	59.5	20	50.2	0	28.8	6	43.1
10	330	3.4	23	8.4	50	21.0	280	59.7	20	48.8	30	30.3	6	44.5
12	0	3.2	23	8.8	80	25.9	310	59.9	20	47.4	60	31.8	6	45.9
14	30	2.9	23	9.1	110	30.8	341	.0	20	45.9	90	33.3	6	47.3
16	60	2.7	23	9.4	140	35.8	11	.2	20	44.5	120	34.8	6	48.7
18	90	2.4	23	9.7	170	40.7	41	.4	20	43.0	150	36.2	6	50.1
20	120	2.1	23	10.0	200	45.6	71	.6	20	41.6	180	37.7	6	51.4
22	150	1.9	23	10.3	230	50.5	101	.8	20	40.2	210	39.2	6	52.8
Δ		-1		2				1		-7		7		7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	226	5.4	76	18	2.4	137	7	3.5	-21	49.1	116	36.2	15	50.9		
2	254	58.7	74	18	29.7	135	37	9.1	-21	49.0	146	40.7	15	50.7		
4	283	51.5	72	18	56.6	132	67	14.7	-21	49.0	176	45.3	15	50.6		
6	312	43.9	70	19	23.1	130	97	20.3	-21	48.9	206	49.8	15	50.5		
8	341	35.9	68	19	49.1	128	127	25.9	-21	48.9	236	54.3	15	50.3		
10	10	27.5	66	20	14.6	125	157	31.5	-21	48.8	266	58.8	15	50.2		
12	39	18.6	64	20	39.6	122	187	37.1	-21	48.7	297	3.3	15	50.1		
14	68	9.3	61	21	4.1	120	217	42.7	-21	48.7	327	7.8	15	49.9		
16	96	59.6	59	21	28.1	117	247	48.3	-21	48.6	357	12.3	15	49.8		
18	125	49.5	57	21	51.5	114	277	53.9	-21	48.5	27	16.9	15	49.6		
20	154	39.0	55	22	14.3	111	307	59.5	-21	48.5	57	21.4	15	49.5		
22	183	28.0	53	22	36.5	108	338	5.1	-21	48.4	87	25.9	15	49.4		
Δ								28		0		23		-1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 38	21 22	1 40	:	0 41	.2	18 33	4.8
55	3 21	20 39	0 57	:	1 7	.7	17 54	4.1
50	3 51	20 9	0 44	:	1 27	1.1	17 28	3.7
45	4 13	19 47	0 37	2 31	1 43	1.3	17 7	3.5
40	4 31	19 29	0 33	2 2	1 56	1.5	16 51	3.3
35	4 45	19 14	0 30	1 47	2 7	1.7	16 37	3.1
30	4 58	19 1	0 27	1 36	2 17	1.8	16 25	3.0
20	5 20	18 40	0 25	1 24	2 34	2.1	16 4	2.8
10	5 39	18 21	0 23	1 18	2 49	2.2	15 47	2.7
0	5 56	18 3	0 22	1 15	3 3	2.4	15 30	2.5
10	6 13	17 46	0 23	1 15	3 17	2.6	15 14	2.4
20	6 32	17 28	0 24	1 19	3 33	2.8	14 56	2.2
30	6 53	17 7	0 26	1 25	3 51	3.0	14 36	2.0
35	7 5	16 55	0 28	1 31	4 1	3.1	14 25	1.9
40	7 19	16 41	0 30	1 37	4 13	3.3	14 11	1.7
45	7 35	16 24	0 34	1 47	4 28	3.5	13 56	1.5
50	7 56	16 4	0 38	1 59	4 45	3.8	13 36	1.3
55	8 22	15 37	0 45	2 17	5 8	4.2	13 12	.9
60	9 0	14 59	0 57	2 45	5 40	4.9	12 38	.2

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	0 19.1	-.5	15.8	T _m	9 17	2.5	60.2	16.4
12	0 12.9	T _{m☉}	11 h 59.8 min	Starost	26.2 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	15 16	.2	231	-4.2	♂	23 27	.0	107	-2.4
♂	7 58	.1	340	.8	♂	16 11	.0	217	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	1.6	23	10.6	260	55.5	131	1.0	20	38.7	240	40.7	6	54.2
2	210	1.4	23	10.9	291	.4	161	1.2	20	37.3	270	42.2	6	55.6
4	240	1.1	23	11.2	321	5.3	191	1.5	20	35.8	300	43.7	6	57.0
6	270	.8	23	11.5	351	10.3	221	1.7	20	34.3	330	45.2	6	58.4
8	300	.6	23	11.8	21	15.2	251	1.9	20	32.9	0	46.6	6	59.8
10	330	.3	23	12.1	51	20.1	281	2.1	20	31.4	30	48.1	7	1.1
12	0	.0	23	12.4	81	25.0	311	2.4	20	30.0	60	49.6	7	2.5
14	29	59.8	23	12.6	111	30.0	341	2.6	20	28.5	90	51.1	7	3.9
16	59	59.5	23	12.9	141	34.9	11	2.9	20	27.0	120	52.6	7	5.3
18	89	59.3	23	13.2	171	39.8	41	3.1	20	25.6	150	54.1	7	6.7
20	119	59.0	23	13.5	201	44.8	71	3.4	20	24.1	180	55.5	7	8.1
22	149	58.7	23	13.8	231	49.7	101	3.7	20	22.6	210	57.0	7	9.4
Δ		-1		1				1		-7		7		7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	212	16.7	51	22	58.2	105	8	10.8	-21	48.4	117	30.4	15	49.2		
2	241	4.9	49	23	19.2	102	38	16.4	-21	48.3	147	34.9	15	49.1		
4	269	52.8	47	23	39.6	99	68	22.0	-21	48.2	177	39.4	15	49.0		
6	298	40.3	46	23	59.4	96	98	27.6	-21	48.2	207	43.9	15	48.8		
8	327	27.4	44	24	18.5	92	128	33.2	-21	48.1	237	48.4	15	48.7		
10	356	14.1	42	24	36.9	89	158	38.8	-21	48.0	267	52.9	15	48.5		
12	25	.5	40	24	54.6	85	188	44.4	-21	48.0	297	57.4	15	48.4		
14	53	46.6	39	25	11.7	82	218	50.0	-21	47.9	328	2.0	15	48.3		
16	82	32.3	37	25	28.0	78	248	55.6	-21	47.9	358	6.5	15	48.1		
18	111	17.7	36	25	43.7	74	279	1.1	-21	47.8	28	11.0	15	48.0		
20	140	2.9	34	25	58.5	71	309	6.7	-21	47.7	58	15.5	15	47.8		
22	168	47.7	33	26	12.7	67	339	12.3	-21	47.7	88	20.0	15	47.7		
Δ								28		0		23		-1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 37	21 23	1 41	:	0 45	.5	20 29	4.3
55	3 21	20 39	0 58	:	1 25	1.2	19 33	3.6
50	3 51	20 10	0 44	:	1 53	1.5	18 57	3.3
45	4 13	19 47	0 37	2 32	2 15	1.8	18 30	3.2
40	4 31	19 30	0 33	2 3	2 33	1.9	18 10	3.1
35	4 45	19 15	0 30	1 47	2 48	2.1	17 52	3.0
30	4 58	19 2	0 27	1 36	3 1	2.2	17 37	2.9
20	5 20	18 40	0 25	1 24	3 23	2.3	17 12	2.8
10	5 39	18 21	0 23	1 18	3 43	2.5	16 51	2.7
0	5 56	18 4	0 23	1 15	4 1	2.6	16 30	2.6
10	6 14	17 46	0 23	1 15	4 20	2.7	16 10	2.6
20	6 32	17 28	0 24	1 19	4 40	2.8	15 49	2.5
30	6 53	17 7	0 26	1 25	5 3	3.0	15 24	2.3
35	7 5	16 55	0 28	1 31	5 17	3.1	15 9	2.2
40	7 19	16 41	0 30	1 37	5 33	3.2	14 52	2.1
45	7 36	16 24	0 34	1 47	5 52	3.4	14 32	2.0
50	7 56	16 4	0 38	1 59	6 16	3.6	14 7	1.8
55	8 23	15 37	0 45	2 17	6 48	3.9	13 34	1.5
60	9 1	14 59	0 57	2 45	7 37	4.8	12 44	.7

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	0 6.6	-.5					

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	58.5	23	14.0	261	54.6	131	3.9	20	21.2	240	58.5	7	10.8
2	209	58.2	23	14.3	291	59.5	161	4.2	20	19.7	270	60.0	7	12.2
4	239	57.9	23	14.5	322	4.5	191	4.5	20	18.2	301	1.5	7	13.6
6	269	57.7	23	14.8	352	9.4	221	4.8	20	16.7	331	3.0	7	15.0
8	299	57.4	23	15.1	22	14.3	251	5.1	20	15.2	1	4.5	7	16.3
10	329	57.1	23	15.3	52	19.2	281	5.4	20	13.8	31	5.9	7	17.7
12	359	56.9	23	15.6	82	24.2	311	5.7	20	12.3	61	7.4	7	19.1
14	29	56.6	23	15.8	112	29.1	341	6.0	20	10.8	91	8.9	7	20.5
16	59	56.3	23	16.1	142	34.0	11	6.3	20	9.3	121	10.4	7	21.8
18	89	56.1	23	16.3	172	39.0	41	6.6	20	7.8	151	11.9	7	23.2
20	119	55.8	23	16.5	202	43.9	71	7.0	20	6.3	181	13.4	7	24.6
22	149	55.5	23	16.8	232	48.8	101	7.3	20	4.8	211	14.8	7	26.0
Δ		-1		1				2		-7		7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 37	21 24	1 43	:	0 56	1.3	22 12	2.5
55	3 21	20 40	0 58	:	1 54	2.0	20 59	2.6
50	3 50	20 10	0 44	:	2 30	2.2	20 17	2.7
45	4 13	19 48	0 37	2 32	2 58	2.3	19 47	2.7
40	4 31	19 30	0 33	2 3	3 19	2.4	19 24	2.7
35	4 45	19 15	0 30	1 47	3 37	2.4	19 5	2.7
30	4 58	19 2	0 27	1 36	3 53	2.5	18 48	2.7
20	5 20	18 40	0 25	1 24	4 19	2.6	18 20	2.7
10	5 39	18 21	0 23	1 18	4 42	2.6	17 56	2.7
0	5 57	18 4	0 23	1 15	5 3	2.7	17 34	2.7
10	6 14	17 47	0 23	1 15	5 25	2.7	17 11	2.7
20	6 32	17 28	0 24	1 19	5 48	2.8	16 48	2.6
30	6 53	17 7	0 26	1 25	6 15	2.8	16 20	2.6
35	7 6	16 55	0 28	1 31	6 31	2.9	16 3	2.6
40	7 20	16 41	0 31	1 38	6 50	2.9	15 44	2.6
45	7 36	16 24	0 34	1 47	7 13	3.0	15 21	2.6
50	7 57	16 3	0 38	1 59	7 42	3.0	14 51	2.5
55	8 24	15 37	0 45	2 17	8 22	3.1	14 10	2.4
60	9 2	14 58	0 57	2 45	9 31	3.5	13 0	2.1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	197	32.3	32	26	26.1	63	9	17.9	-21	47.6	118	24.5	15	47.6		
2	226	16.6	31	26	38.7	59	39	23.5	-21	47.5	148	29.0	15	47.4		
4	255	.8	30	26	50.6	55	69	29.1	-21	47.5	178	33.5	15	47.3		
6	283	44.7	29	27	1.6	52	99	34.7	-21	47.4	208	38.0	15	47.1		
8	312	28.4	28	27	11.9	48	129	40.3	-21	47.4	238	42.5	15	47.0		
10	341	12.0	27	27	21.4	44	159	45.9	-21	47.3	268	47.0	15	46.9		
12	9	55.4	27	27	30.1	40	189	51.5	-21	47.2	298	51.5	15	46.7		
14	38	38.7	26	27	38.0	36	219	57.1	-21	47.2	328	56.0	15	46.6		
16	67	21.9	26	27	45.1	31	250	2.7	-21	47.1	359	.5	15	46.4		
18	96	5.1	26	27	51.4	27	280	8.3	-21	47.0	29	5.0	15	46.3		
20	124	48.2	25	27	56.9	23	310	13.9	-21	47.0	59	9.5	15	46.1		
22	153	31.3	25	28	1.5	19	340	19.5	-21	46.9	89	14.0	15	46.0		
Δ								28		0		23		-1		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	- 0 6.0	-.5	15.8	T _m	11 19	2.7	60.1	16.4
12	- 0 12.4	T _{m☉}	12 h .2 min	Starost	28.2 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	h min	'	°	'	°	h min
♀	15 16	.2	229	-4.2	♃	23 18	.0	107	-2.4
♂	7 56	.1	339	.8	♄	16 4	.0	216	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	55.3	23	17.0	262	53.7	131	7.6	20	3.3	241	16.3	7	27.3
2	209	55.0	23	17.2	292	58.7	161	8.0	20	1.8	271	17.8	7	28.7
4	239	54.7	23	17.5	323	3.6	191	8.3	20	.3	301	19.3	7	30.1
6	269	54.5	23	17.7	353	8.5	221	8.7	19	58.8	331	20.8	7	31.4
8	299	54.2	23	17.9	23	13.5	251	9.1	19	57.3	1	22.3	7	32.8
10	329	53.9	23	18.1	53	18.4	281	9.4	19	55.8	31	23.8	7	34.2
12	359	53.7	23	18.4	83	23.3	311	9.8	19	54.3	61	25.2	7	35.5
14	29	53.4	23	18.6	113	28.2	341	10.2	19	52.8	91	26.7	7	36.9
16	59	53.1	23	18.8	143	33.2	11	10.5	19	51.2	121	28.2	7	38.3
18	89	52.8	23	19.0	173	38.1	41	10.9	19	49.7	151	29.7	7	39.6
20	119	52.6	23	19.2	203	43.0	71	11.3	19	48.2	181	31.2	7	41.0
22	149	52.3	23	19.4	233	48.0	101	11.7	19	46.7	211	32.7	7	42.4
Δ		-1		1				2		-8		7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 25	1 44	:	1 27	3.1	23 11	.9
55	3 20	20 41	0 58	:	2 40	2.9	22 2	1.6
50	3 50	20 11	0 45	:	3 23	2.8	21 21	1.9
45	4 13	19 48	0 37	2 33	3 53	2.8	20 51	2.0
40	4 31	19 30	0 33	2 3	4 16	2.8	20 28	2.2
35	4 46	19 15	0 30	1 47	4 36	2.7	20 9	2.2
30	4 58	19 2	0 27	1 36	4 52	2.7	19 52	2.3
20	5 20	18 41	0 25	1 24	5 20	2.7	19 24	2.4
10	5 39	18 22	0 23	1 18	5 45	2.7	19 0	2.5
0	5 57	18 4	0 23	1 15	6 7	2.6	18 38	2.6
10	6 14	17 47	0 23	1 15	6 30	2.6	18 15	2.6
20	6 33	17 28	0 24	1 19	6 55	2.5	17 51	2.7
30	6 54	17 7	0 26	1 25	7 23	2.5	17 23	2.8
35	7 6	16 55	0 28	1 31	7 40	2.5	17 6	2.8
40	7 20	16 41	0 31	1 38	8 6	2.4	16 46	2.9
45	7 37	16 24	0 34	1 47	8 23	2.3	16 22	3.0
50	7 57	16 3	0 38	1 59	8 54	2.3	15 52	3.1
55	8 24	15 36	0 45	2 17	9 38	2.1	15 9	3.3
60	9 3	14 58	0 57	2 46	10 56	1.5	13 50	3.9

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	182	14.4	26	28	5.4	15	10	25.1	-21	46.9	119	18.5	15	45.9		
2	210	57.5	26	28	8.4	11	40	30.7	-21	46.8	149	23.0	15	45.7		
4	239	40.6	26	28	10.6	7	70	36.3	-21	46.7	179	27.5	15	45.6		
6	268	23.9	27	28	12.0	3	100	41.9	-21	46.7	209	32.0	15	45.4		
8	297	7.2	27	28	12.6	-1	130	47.5	-21	46.6	239	36.5	15	45.3		
10	325	50.7	28	28	12.4	-5	160	53.1	-21	46.5	269	41.0	15	45.1		
12	354	34.4	29	28	11.3	-9	190	58.7	-21	46.5	299	45.5	15	45.0		
14	23	18.2	30	28	9.5	-13	221	4.2	-21	46.4	329	50.0	15	44.9		
16	52	2.2	31	28	6.9	-17	251	9.8	-21	46.4	359	54.5	15	44.7		
18	80	46.4	32	28	3.5	-21	281	15.4	-21	46.3	29	59.0	15	44.6		
20	109	30.9	34	27	59.3	-25	311	21.0	-21	46.2	60	3.5	15	44.4		
22	138	15.6	35	27	54.4	-29	341	26.6	-21	46.2	90	8.0	15	44.3		
Δ								28		0		22		-1		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	- 0 18.8	-.5	15.8	T _m	12 23		

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
0	179	52.0	23	19.6	263	52.9	131	12.1	19	45.2	241	34.2	7	43.7
2	209	51.8	23	19.8	293	57.8	161	12.5	19	43.6	271	35.6	7	45.1
4	239	51.5	23	20.0	324	2.7	191	13.0	19	42.1	301	37.1	7	46.5
6	269	51.2	23	20.2	354	7.7	221	13.4	19	40.6	331	38.6	7	47.8
8	299	51.0	23	20.4	24	12.6	251	13.8	19	39.0	1	40.1	7	49.2
10	329	50.7	23	20.6	54	17.5	281	14.2	19	37.5	31	41.6	7	50.6
12	359	50.4	23	20.7	84	22.5	311	14.7	19	36.0	61	43.1	7	51.9
14	29	50.1	23	20.9	114	27.4	341	15.1	19	34.4	91	44.6	7	53.3
16	59	49.9	23	21.1	144	32.3	11	15.6	19	32.9	121	46.0	7	54.6
18	89	49.6	23	21.3	174	37.2	41	16.0	19	31.4	151	47.5	7	56.0
20	119	49.3	23	21.4	204	42.2	71	16.5	19	29.8	181	49.0	7	57.4
22	149	49.1	23	21.6	234	47.1	101	17.0	19	28.3	211	50.5	7	58.7
Δ		-1		1				2		-8		7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 26	1 45	:	2 41	4.3	23 33	.3
55	3 20	20 41	0 58	:	3 50	3.6	22 41	1.0
50	3 50	20 11	0 45	:	4 31	3.3	22 6	1.3
45	4 13	19 49	0 37	2 33	4 60	3.1	21 40	1.5
40	4 31	19 31	0 33	2 3	5 23	3.0	21 20	1.7
35	4 46	19 16	0 30	1 47	5 42	2.9	21 2	1.8
30	4 59	19 3	0 27	1 37	5 58	2.8	20 47	1.9
20	5 21	18 41	0 25	1 24	6 25	2.7	20 22	2.1
10	5 39	18 22	0 23	1 18	6 49	2.6	19 60	2.2
0	5 57	18 4	0 23	1 15	7 10	2.5	19 39	2.4
10	6 14	17 47	0 23	1 15	7 32	2.4	19 18	2.5
20	6 33	17 28	0 24	1 19	7 56	2.2	18 56	2.6
30	6 54	17 7	0 26	1 25	8 23	2.1	18 30	2.8
35	7 6	16 55	0 28	1 31	8 39	2.0	18 14	2.9
40	7 20	16 41	0 31	1 38	8 57	1.9	17 56	3.0
45	7 37	16 24	0 34	1 47	9 20	1.8	17 34	3.2
50	7 58	16 3	0 38	1 59	9 48	1.6	17 7	3.4
55	8 25	15 36	0 45	2 18	10 27	1.2	16 28	3.7
60	9 3	14 58	0 58	2 46	11 31	.5	15 25	4.5

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄
0	167	.6	37	27	48.7	-32	11	32.2	-21	46.1	120	12.5	15	44.1	
2	195	45.9	38	27	42.2	-36	41	37.8	-21	46.0	150	17.0	15	44.0	
4	224	31.6	40	27	35.0	-40	71	43.4	-21	46.0	180	21.5	15	43.8	
6	253	17.6	42	27	27.0	-43	101	49.0	-21	45.9	210	25.9	15	43.7	
8	282	4.0	44	27	18.4	-47	131	54.5	-21	45.9	240	30.4	15	43.6	
10	310	50.7	46	27	9.0	-50	162	.1	-21	45.8	270	34.9	15	43.4	
12	339	37.9	48	26	58.9	-54	192	5.7	-21	45.7	300	39.4	15	43.3	
14	8	25.4	50	26	48.2	-57	222	11.3	-21	45.7	330	43.9	15	43.1	
16	37	13.4	52	26	36.7	-60	252	16.9	-21	45.6	0	48.4	15	43.0	
18	66	1.8	54	26	24.6	-64	282	22.5	-21	45.5	30	52.9	15	42.8	
20	94	50.6	57	26	11.9	-67	312	28.1	-21	45.5	60	57.4	15	42.7	
22	123	40.0	59	25	58.5	-70	342	33.7	-21	45.4	91	1.9	15	42.5	
Δ							28			0		22		-1	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 0 31.7	-.5	15.8	T _m	13 25	2.4	59.1
12	- 0 38.2	T _{m☉}	12 h .6 min	Starost	.9 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♀	15 15	.2	227	-4.2	♃	23 10	.0	108	-2.4
♂	7 53	.1	338	.8	♄	15 57	.0	216	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
0	179	48.8	23	21.8	264	52.0	131	17.4	19	26.7	241	52.0	8	.1
2	209	48.5	23	21.9	294	57.0	161	17.9	19	25.2	271	53.5	8	1.4
4	239	48.2	23	22.1	325	1.9	191	18.4	19	23.6	301	55.0	8	2.8
6	269	48.0	23	22.2	355	6.8	221	18.9	19	22.1	331	56.4	8	4.1
8	299	47.7	23	22.4	25	11.7	251	19.4	19	20.5	1	57.9	8	5.5
10	329	47.4	23	22.6	55	16.7	281	19.9	19	19.0	31	59.4	8	6.8
12	359	47.1	23	22.7	85	21.6	311	20.4	19	17.4	62	.9	8	8.2
14	29	46.9	23	22.8	115	26.5	341	20.9	19	15.9	92	2.4	8	9.5
16	59	46.6	23	23.0	145	31.4	11	21.4	19	14.3	122	3.9	8	10.9
18	89	46.3	23	23.1	175	36.4	41	22.0	19	12.7	152	5.4	8	12.2
20	119	46.1	23	23.3	205	41.3	71	22.5	19	11.2	182	6.8	8	13.6
22	149	45.8	23	23.4	235	46.2	101	23.0	19	9.6	212	8.3	8	14.9
Δ		-1		1				3		-8		7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 26	1 45	:	4 25	4.4	23 41	.1
55	3 20	20 42	0 58	:	5 16	3.7	23 4	.6
50	3 50	20 12	0 45	:	5 50	3.4	22 37	.9
45	4 13	19 49	0 37	2 33	6 15	3.2	22 17	1.1
40	4 31	19 31	0 33	2 3	6 34	3.0	22 0	1.3
35	4 46	19 16	0 30	1 47	6 51	2.9	21 46	1.5
30	4 59	19 3	0 27	1 37	7 5	2.7	21 33	1.6
20	5 21	18 41	0 25	1 24	7 29	2.5	21 12	1.8
10	5 40	18 22	0 23	1 18	7 50	2.4	20 53	2.0
0	5 57	18 5	0 23	1 15	8 9	2.2	20 36	2.1
10	6 15	17 47	0 23	1 15	8 29	2.1	20 18	2.3
20	6 33	17 29	0 24	1 19	8 49	1.9	19 59	2.5
30	6 54	17 7	0 26	1 26	9 13	1.7	19 37	2.7
35	7 7	16 55	0 28	1 31	9 27	1.6	19 24	2.8
40	7 21	16 41	0 31	1 38	9 43	1.5	19 9	3.0
45	7 38	16 24	0 34	1 47	10 2	1.3	18 51	3.1
50	7 58	16 3	0 38	1 59	10 26	1.1	18 28	3.4
55	8 25	15 36	0 46	2 18	10 57	.7	17 58	3.7
60	9 4	14 58	0 58	2 46	11 43	.2	17 13	4.3

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄
0	152	29.8	61	25	44.5	-73	12	39.2	-21	45.4	121	6.4	15	42.4	
2	181	20.0	64	25	29.9	-76	42	44.8	-21	45.3	151	10.8	15	42.2	
4	210	10.8	66	25	14.7	-79	72	50.4	-21	45.2	181	15.3	15	42.1	
6	239	2.0	69	24	58.9	-82	102	56.0	-21	45.2	211	19.8	15	42.0	
8	267	53.8	71	24	42.6	-84	133	1.6	-21	45.1	241	24.3	15	41.8	
10	296	46.0	74	24	25.7	-87	163	7.2	-21	45.1	271	28.8	15	41.7	
12	325	38.8	76	24	8.3	-90	193	12.7	-21	45.0	301	33.3	15	41.5	
14	354	32.0	79	23	50.4	-92	223	18.3	-21	44.9	331	37.8	15	41.4	
16	23	25.8	81	23	31.9	-95	253	23.9	-21	44.9	1	42.2	15	41.2	
18	52	20.1	84	23	13.0	-97	283	29.5	-21	44.8	31	46.7	15	41.1	
20	81	14.9	87	22	53.6	-99	313	35.1	-21	44.7	61	51.2	15	40.9	
22	110	10.3	89	22	33.7	-102	343	40.6	-21	44.7	91	55.7	15	40.8	
Δ							28			0		22		-1	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 0 44.7	-.5	15.8	T _m	14 23	2.2	58.3
12	- 0 51.3	T _{m☉}	12 h .9 min	Starost	1.9 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°					

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	45.5	23	23.5	265	51.2	131	23.6	19	8.0	242	9.8	8	16.3
2	209	45.2	23	23.7	295	56.1	161	24.1	19	6.5	272	11.3	8	17.6
4	239	45.0	23	23.8	326	1.0	191	24.7	19	4.9	302	12.8	8	19.0
6	269	44.7	23	23.9	356	5.9	221	25.3	19	3.3	332	14.3	8	20.3
8	299	44.4	23	24.0	26	10.9	251	25.8	19	1.7	2	15.8	8	21.7
10	329	44.1	23	24.1	56	15.8	281	26.4	19	.2	32	17.3	8	23.0
12	359	43.9	23	24.3	86	20.7	311	27.0	18	58.6	62	18.7	8	24.4
14	29	43.6	23	24.4	116	25.7	341	27.6	18	57.0	92	20.2	8	25.7
16	59	43.3	23	24.5	146	30.6	11	28.2	18	55.4	122	21.7	8	27.1
18	89	43.0	23	24.6	176	35.5	41	28.7	18	53.9	152	23.2	8	28.4
20	119	42.8	23	24.7	206	40.4	71	29.4	18	52.3	182	24.7	8	29.7
22	149	42.5	23	24.8	236	45.4	101	30.0	18	50.7	212	26.2	8	31.1
Δ		-1		1				3		-8		7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 27	1 46	:::	6 10	4.1	23 44	.0
55	3 20	20 42	0 58	:::	6 46	3.6	23 19	.4
50	3 50	20 12	0 45	:::	7 11	3.3	22 60	.7
45	4 13	19 50	0 37	2 33	7 31	3.1	22 44	.9
40	4 31	19 31	0 33	2 3	7 46	2.9	22 32	1.1
35	4 46	19 16	0 30	1 47	7 59	2.7	22 21	1.2
30	4 59	19 3	0 27	1 37	8 11	2.6	22 11	1.4
20	5 21	18 41	0 25	1 24	8 30	2.4	21 55	1.6
10	5 40	18 22	0 23	1 18	8 47	2.2	21 40	1.8
0	5 57	18 5	0 23	1 15	9 3	2.0	21 27	1.9
10	6 15	17 47	0 23	1 15	9 19	1.8	21 13	2.1
20	6 33	17 29	0 24	1 19	9 36	1.7	20 58	2.3
30	6 55	17 8	0 26	1 26	9 55	1.5	20 41	2.5
35	7 7	16 55	0 28	1 31	10 6	1.3	20 31	2.7
40	7 21	16 41	0 31	1 38	10 18	1.2	20 19	2.8
45	7 38	16 24	0 34	1 47	10 33	1.0	20 6	3.0
50	7 59	16 3	0 39	1 60	10 52	.8	19 49	3.2
55	8 26	15 36	0 46	2 18	11 15	.5	19 27	3.5
60	9 5	14 58	0 58	2 46	11 47	.0	18 57	4.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	139	6.1	92	22	13.4	-104	13	46.2	-21	44.6	122	.2	15	40.6		
2	168	2.4	94	21	52.7	-106	43	51.8	-21	44.6	152	4.7	15	40.5		
4	196	59.3	97	21	31.5	-108	73	57.4	-21	44.5	182	9.1	15	40.3		
6	225	56.7	99	21	9.9	-110	104	3.0	-21	44.4	212	13.6	15	40.2		
8	254	54.5	102	20	48.0	-112	134	8.5	-21	44.4	242	18.1	15	40.0		
10	283	52.9	104	20	25.7	-113	164	14.1	-21	44.3	272	22.6	15	39.9		
12	312	51.8	107	20	3.0	-115	194	19.7	-21	44.3	302	27.1	15	39.7		
14	341	51.1	109	19	39.9	-117	224	25.3	-21	44.2	332	31.5	15	39.6		
16	10	50.9	112	19	16.6	-118	254	30.8	-21	44.1	2	36.0	15	39.4		
18	39	51.2	114	18	52.9	-120	284	36.4	-21	44.1	32	40.5	15	39.3		
20	68	52.0	116	18	28.8	-122	314	42.0	-21	44.0	62	45.0	15	39.1		
22	97	53.3	118	18	4.5	-123	344	47.6	-21	43.9	92	49.4	15	39.0		
Δ								28		0		22		-1		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 0 57.8	-.5	15.8	T _m	15 15	2.0	57.5	15.7
12	- 1 4.4	T _{m☉}	12 h 1.1 min	Starost	2.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	h min	'	°	'	°	h min
♀	15 14	.2	226	-4.2	♃	23 1	.0	108	-2.4
♂	7 51	.1	336	.8	♄	15 50	.0	216	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	42.2	23	24.9	266	50.3	131	30.6	18	49.1	242	27.7	8	32.4
2	209	42.0	23	25.0	296	55.2	161	31.2	18	47.5	272	29.2	8	33.8
4	239	41.7	23	25.1	327	.2	191	31.8	18	45.9	302	30.6	8	35.1
6	269	41.4	23	25.1	357	5.1	221	32.5	18	44.3	332	32.1	8	36.4
8	299	41.1	23	25.2	27	10.0	251	33.1	18	42.7	2	33.6	8	37.8
10	329	40.9	23	25.3	57	14.9	281	33.7	18	41.1	32	35.1	8	39.1
12	359	40.6	23	25.4	87	19.9	311	34.4	18	39.5	62	36.6	8	40.4
14	29	40.3	23	25.5	117	24.8	341	35.1	18	37.9	92	38.1	8	41.8
16	59	40.0	23	25.5	147	29.7	11	35.7	18	36.3	122	39.6	8	43.1
18	89	39.8	23	25.6	177	34.7	41	36.4	18	34.7	152	41.1	8	44.5
20	119	39.5	23	25.7	207	39.6	71	37.1	18	33.1	182	42.5	8	45.8
22	149	39.2	23	25.7	237	44.5	101	37.8	18	31.5	212	44.0	8	47.1
Δ		-1		0				3		-8		7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 35	21 27	1 46	:::	7 49	3.8	23 45	.0
55	3 20	20 42	0 58	:::	8 13	3.4	23 29	.3
50	3 50	20 12	0 45	:::	8 30	3.1	23 16	.6
45	4 13	19 50	0 37	2 33	8 44	2.9	23 6	.8
40	4 31	19 32	0 33	2 3	8 55	2.7	22 58	.9
35	4 46	19 17	0 30	1 47	9 5	2.6	22 50	1.1
30	4 59	19 4	0 27	1 37	9 13	2.4	22 44	1.2
20	5 21	18 42	0 25	1 24	9 27	2.2	22 33	1.4
10	5 40	18 23	0 23	1 18	9 40	2.0	22 23	1.6
0	5 58	18 5	0 23	1 15	9 52	1.8	22 13	1.8
10	6 15	17 48	0 23	1 15	10 3	1.7	22 4	2.0
20	6 34	17 29	0 24	1 19	10 16	1.5	21 53	2.2
30	6 55	17 8	0 26	1 26	10 30	1.3	21 42	2.4
35	7 7	16 55	0 28	1 31	10 38	1.1	21 35	2.5
40	7 21	16 41	0 31	1 38	10 47	1.0	21 27	2.7
45	7 38	16 24	0 34	1 47	10 58	.8	21 17	2.8
50	7 59	16 4	0 39	1 60	11 10	.6	21 6	3.0
55	8 26	15 36	0 46	2 18	11 27	.3	20 52	3.3
60	9 5	14 58	0 58	2 46	11 48	.0	20 33	3.7
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	126	55.0	121	17	40.0	-124	14	53.1	-21	43.9	122	53.9	15	38.8		
2	155	57.1	123	17	15.1	-126	44	58.7	-21	43.8	152	58.4	15	38.7		
4	184	59.7	125	16	50.0	-127	75	4.3	-21	43.8	183	2.9	15	38.5		
6	214	2.7	127	16	24.6	-128	105	9.9	-21	43.7	213	7.4	15	38.4		
8	243	6.1	129	15	59.0	-129	135	15.4	-21	43.6	243	11.8	15	38.2		
10	272	10.0	131	15	33.2	-130	165	21.0	-21	43.6	273	16.3	15	38.1		
12	301	14.2	133	15	7.1	-131	195	26.6	-21	43.5	303	20.8	15	37.9		
14	330	18.9	135	14	40.8	-132	225	32.1	-21	43.5	333	25.3	15	37.8		
16	359	23.9	137	14	14.4	-133	255	37.7	-21	43.4	3	29.7	15	37.6		
18	28	29.3	139	13	47.7	-134	285	43.3	-21	43.3	33	34.2	15	37.5		
20	57	35.1	141	13	20.9	-135	315	48.8	-21	43.3	63	38.7	15	37.3		
22	86	41.2	142	12	53.9	-136	345	54.4	-21	43.2	93	43.1	15	37.2		
Δ		</														

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 38.9	23 25.8	267 49.4	131 38.4	18 29.9	242 45.5	8 48.4
2	209 38.7	23 25.9	297 54.4	161 39.1	18 28.3	272 47.0	8 49.8
4	239 38.4	23 25.9	327 59.3	191 39.8	18 26.7	302 48.5	8 51.1
6	269 38.1	23 26.0	358 4.2	221 40.5	18 25.1	332 50.0	8 52.4
8	299 37.9	23 26.0	28 9.2	251 41.3	18 23.5	2 51.5	8 53.8
10	329 37.6	23 26.1	58 14.1	281 42.0	18 21.9	32 53.0	8 55.1
12	359 37.3	23 26.1	88 19.0	311 42.7	18 20.3	62 54.4	8 56.4
14	29 37.0	23 26.2	118 23.9	341 43.4	18 18.6	92 55.9	8 57.7
16	59 36.8	23 26.2	148 28.9	11 44.2	18 17.0	122 57.4	8 59.1
18	89 36.5	23 26.2	178 33.8	41 44.9	18 15.4	152 58.9	9 1.4
20	119 36.2	23 26.3	208 38.7	71 45.7	18 13.8	183 4.9	9 1.7
22	149 35.9	23 26.3	238 43.7	101 46.4	18 12.2	213 1.9	9 3.0
Δ	-1	0		4	-8	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 28	1 47	:::	9 21	3.6	23 45	.0
55	3 20	20 43	0 58	:::	9 35	3.2	23 36	.3
50	3 50	20 13	0 45	:::	9 45	3.0	23 30	.5
45	4 13	19 50	0 37	2 33	9 53	2.8	23 25	.7
40	4 31	19 32	0 33	2 3	10 0	2.6	23 20	.8
35	4 46	19 17	0 30	1 47	10 6	2.4	23 16	1.0
30	4 59	19 4	0 27	1 37	10 12	2.3	23 13	1.1
20	5 21	18 42	0 25	1 24	10 21	2.1	23 6	1.3
10	5 40	18 23	0 23	1 18	10 28	1.9	23 1	1.5
0	5 58	18 5	0 23	1 15	10 36	1.7	22 56	1.7
10	6 15	17 48	0 23	1 15	10 43	1.5	22 51	1.9
20	6 34	17 29	0 24	1 19	10 51	1.4	22 45	2.1
30	6 55	17 8	0 26	1 26	10 60	1.1	22 39	2.3
35	7 7	16 56	0 28	1 31	11 5	1.0	22 35	2.4
40	7 22	16 41	0 31	1 38	11 11	.9	22 30	2.5
45	7 39	16 24	0 34	1 47	11 17	.7	22 25	2.7
50	7 59	16 4	0 39	1 60	11 25	.5	22 19	2.9
55	8 27	15 37	0 46	2 18	11 35	.3	22 12	3.2
60	9 5	14 58	0 58	2 46	11 48	.0	22 2	3.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	115 47.7	144	12 26.8	-136	15 60.0	-21 43.2	123 47.6	15 37.0
2	144 54.5	146	11 59.5	-137	46 5.5	-21 43.1	153 52.1	15 36.9
4	174 1.6	147	11 32.1	-138	76 11.1	-21 43.0	183 56.6	15 36.7
6	203 9.1	149	11 4.5	-138	106 16.7	-21 43.0	214 1.0	15 36.6
8	232 16.8	150	10 36.9	-139	136 22.2	-21 42.9	244 5.5	15 36.4
10	261 24.9	152	10 9.1	-139	166 27.8	-21 42.8	274 10.0	15 36.3
12	290 33.2	153	9 41.2	-140	196 33.4	-21 42.8	304 14.4	15 36.1
14	319 41.9	154	9 13.2	-140	226 38.9	-21 42.7	334 18.9	15 36.0
16	348 50.7	156	8 45.1	-141	256 44.5	-21 42.7	4 23.4	15 35.8
18	17 59.9	157	7 17.0	-141	286 50.1	-21 42.6	34 27.8	15 35.6
20	47 9.2	158	7 48.8	-141	316 55.6	-21 42.5	64 32.3	15 35.5
22	76 18.9	159	7 20.5	-142	347 1.2	-21 42.5	94 36.8	15 35.3
Δ					28	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 1 24.0	-.5	15.8	T _m	16 46	1.7	55.9	15.2	
12	- 1 30.6	T _{m☉}	12 h 1.5 min	Starost	4.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	15 13	.2	224	-4.3	♃	22 52	.0	108	-2.4
	7 49	.1	335	.8	♄	15 42	.0	216	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 35.7	23 26.3	268 48.6	131 47.2	18 10.5	243 3.4	9 4.4
2	209 35.4	23 26.3	298 53.5	161 48.0	18 8.9	273 4.9	9 5.7
4	239 35.1	23 26.4	328 58.4	191 48.7	18 7.3	303 6.3	9 7.0
6	269 34.8	23 26.4	359 3.4	221 49.5	18 5.7	333 7.8	9 8.3
8	299 34.6	23 26.4	29 8.3	251 50.3	18 4.0	3 9.3	9 9.7
10	329 34.3	23 26.4	59 13.2	281 51.1	18 2.4	33 10.8	9 11.0
12	359 34.0	23 26.4	89 18.1	311 51.9	18 .8	63 12.3	9 12.3
14	29 33.8	23 26.4	119 23.1	341 52.7	17 59.1	93 13.8	9 13.6
16	59 33.5	23 26.4	149 28.0	11 53.5	17 57.5	123 15.3	9 14.9
18	89 33.2	23 26.4	179 32.9	41 54.3	17 55.9	153 16.8	9 16.2
20	119 32.9	23 26.4	209 37.9	71 55.2	17 54.2	183 18.2	9 17.6
22	149 32.7	23 26.4	239 42.8	101 56.0	17 52.6	213 19.7	9 18.9
Δ	-1	0		4	-8	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 28	1 47	:::	10 47	3.4	23 44	.0
55	3 20	20 43	0 58	:::	10 52	3.1	23 43	.3
50	3 51	20 13	0 45	:::	10 56	2.9	23 42	.5
45	4 13	19 50	0 37	2 33	10 60	2.7	23 41	.7
40	4 31	19 32	0 33	2 3	11 3	2.5	23 40	.8
35	4 46	19 17	0 30	1 47	11 5	2.4	23 40	1.0
30	4 59	19 4	0 27	1 37	11 7	2.2	23 39	1.1
20	5 21	18 42	0 25	1 24	11 11	2.0	23 38	1.3
10	5 40	18 23	0 23	1 18	11 14	1.8	23 37	1.5
0	5 58	18 5	0 23	1 15	11 17	1.7	23 36	1.6
10	6 16	17 48	0 23	1 15	11 20	1.5	23 35	1.8
20	6 34	17 29	0 24	1 19	11 23	1.3	23 34	2.0
30	6 55	17 8	0 26	1 26	11 27	1.1	23 33	2.2
35	7 8	16 56	0 28	1 31	11 29	1.0	23 32	2.3
40	7 22	16 42	0 31	1 38	11 32	.8	23 32	2.5
45	7 39	16 25	0 34	1 47	11 34	.7	23 31	2.7
50	7 60	16 4	0 39	1 60	11 38	.5	23 29	2.9
55	8 27	15 37	0 46	2 18	11 42	.2	23 28	3.1
60	9 6	14 58	0 58	2 46	11 47	.0	23 26	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	105 28.7	160	6 52.1	-142	17 6.7	-21 42.4	124 41.2	15 35.2
2	134 38.7	161	6 23.7	-142	47 12.3	-21 42.4	154 45.7	15 35.0
4	163 49.0	162	5 55.3	-142	77 17.9	-21 42.3	184 50.2	15 34.9
6	192 59.4	163	5 26.8	-143	107 23.4	-21 42.2	214 54.6	15 34.7
8	222 10.0	164	4 58.3	-143	137 29.0	-21 42.2	244 59.1	15 34.6
10	251 20.8	165	4 29.7	-143	167 34.5	-21 42.1	275 3.6	15 34.4
12	280 31.8	166	4 1.2	-143	197 40.1	-21 42.1	305 8.0	15 34.3
14	309 42.9	166	3 32.6	-143	227 45.6	-21 42.0	335 12.5	15 34.1
16	338 54.1	167	3 4.0	-143	257 51.2	-21 41.9	5 17.0	15 34.0
18	8 5.5	167	2 35.4	-143	287 56.8	-21 41.9	35 21.4	15 33.8
20	37 17.0	168	2 6.8	-143	318 2.3	-21 41.8	65 25.9	15 33.6
22	66 28.6	169	1 38.3	-143	348 7.9	-21 41.8	95 30.4	15 33.5
Δ					28	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 1 37.2	-.5	15.8	T _m	17 27	1.6	55.3	15.1	
12	- 1 43.7	T _{m☉}	12 h 1.7 min	Starost	5.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	15 12	.2	223	-4.3	♃	22 47	.0	108	-2.4
	7 47	.1	334	.8	♄	15 39	.0	216	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 32.4	23 26.4	269 47.7	131 56.8	17 51.0	243 21.2	9 20.2
2	209 32.1	23 26.4	299 52.6	161 57.7	17 49.3	273 22.7	9 21.5
4	239 31.8	23 26.4	329 57.6	191 58.5	17 47.7	303 24.2	9 22.8
6	269 31.6	23 26.4	0 2.5	221 59.4	17 46.0	333 25.7	9 24.1
8	299 31.3	23 26.4	30 7.4	252 .3	17 44.4	3 27.2	9 25.4
10	329 31.0	23 26.3	60 12.4	282 1.1	17 42.7	33 28.7	9 26.7
12	359 30.8	23 26.3	90 17.3	312 2.0	17 41.1	63 30.2	9 28.1
14	29 30.5	23 26.3	120 22.2	342 2.9	17 39.5	93 31.6	9 29.4
16	59 30.2	23 26.3	150 27.1	12 3.8	17 37.8	123 33.1	9 30.7
18	89 29.9	23 26.2	180 32.1	42 4.7	17 36.2	153 34.6	9 32.0
20	119 29.7	23 26.2	210 37.0	72 5.6	17 34.5	183 36.1	9 33.3
22	149 29.4	23 26.2	240 41.9	102 6.5	17 32.9	213 37.6	9 34.6
Δ	-1	0		4	-8	7	7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	95 40.3	169 1	9.7	-143	18 13.4	-21 41.7	125 34.8	15 33.3
2	124 52.1	169 0	41.2	-143	48 19.0	-21 41.6	155 39.3	15 33.2
4	154 4.0	170 0	12.7	-142	78 24.5	-21 41.6	185 43.7	15 33.0
6	183 15.9	170 -0	15.8	-142	108 30.1	-21 41.5	215 48.2	15 32.9
8	212 27.9	170 -0	44.2	-142	138 35.6	-21 41.5	245 52.7	15 32.7
10	241 40.0	171 -1	12.6	-142	168 41.2	-21 41.4	275 57.1	15 32.6
12	270 52.1	171 -1	40.9	-141	198 46.7	-21 41.3	306 1.6	15 32.4
14	300 4.2	171 -2	9.2	-141	228 52.3	-21 41.3	336 6.0	15 32.2
16	329 16.4	171 -2	37.4	-141	258 57.8	-21 41.2	6 10.5	15 32.1
18	358 28.5	171 -3	5.6	-140	289 3.4	-21 41.2	36 15.0	15 31.9
20	27 40.7	171 -3	33.7	-140	319 8.9	-21 41.1	66 19.4	15 31.8
22	56 52.9	171 -4	1.7	-140	349 14.5	-21 41.0	96 23.9	15 31.6
Δ					28	0	22	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 28	1 47	:::	12 9	3.4	23 43	.0
55	3 21	20 43	0 58	:::	12 7	3.1	23 49	.3
50	3 51	20 13	0 45	:::	12 5	2.8	23 53	.5
45	4 13	19 51	0 37	2 33	12 4	2.6	23 57	.7
40	4 31	19 32	0 33	2 3	12 3	2.5	23 60	.8
35	4 47	19 17	0 30	1 47	12 2	2.3	...	.0
30	4 60	19 4	0 27	1 37	12 1	2.2	...	.0
20	5 22	18 42	0 25	1 24	11 59	2.0	...	.0
10	5 41	18 23	0 23	1 18	11 58	1.8	...	.0
0	5 58	18 6	0 23	1 15	11 57	1.6	...	.0
10	6 16	17 48	0 23	1 15	11 56	1.5	...	.0
20	6 34	17 30	0 24	1 19	11 54	1.3	...	.0
30	6 56	17 8	0 26	1 26	11 53	1.1	...	.0
35	7 8	16 56	0 28	1 31	11 52	1.0	...	.0
40	7 22	16 42	0 31	1 38	11 51	.8	...	.0
45	7 39	16 25	0 34	1 47	11 50	.7	...	.0
50	7 60	16 4	0 39	1 60	11 49	.5	...	.0
55	8 27	15 37	0 46	2 18	11 48	.3	...	.0
60	9 6	14 58	0 58	2 46	11 46	.0	...	.0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	' / "	' / "	h min	min	' / "	' / "
00	- 1 50.2	-.5	15.8	T _m	18 6	1.7	54.8 14.9
12	- 1 56.8	T _{m☉}	12 h 1.9 min	Starost	6.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	' / "	°	' / "	h	min	' / "	°	' / "
♀	15 12	.2	222	-4.3	♃	22 43	.0	108	-2.4
♂	7 46	.1	334	.7	♄	15 35	.0	216	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 29.1	23 26.1	270 46.9	132 7.4	17 31.2	243 39.1	9 35.9
2	209 28.9	23 26.1	300 51.8	162 8.4	17 29.5	273 40.6	9 37.2
4	239 28.6	23 26.0	330 56.7	192 9.3	17 27.9	303 42.1	9 38.5
6	269 28.3	23 26.0	1 1.6	222 10.2	17 26.2	333 43.6	9 39.8
8	299 28.1	23 25.9	31 6.6	252 11.2	17 24.6	3 45.0	9 41.1
10	329 27.8	23 25.9	61 11.5	282 12.1	17 22.9	33 46.5	9 42.4
12	359 27.5	23 25.8	91 16.4	312 13.1	17 21.3	63 48.0	9 43.7
14	29 27.2	23 25.7	121 21.4	342 14.1	17 19.6	93 49.5	9 45.0
16	59 27.0	23 25.7	151 26.3	12 15.0	17 17.9	123 51.0	9 46.3
18	89 26.7	23 25.6	181 31.2	42 16.0	17 16.3	153 52.5	9 47.6
20	119 26.4	23 25.5	211 36.1	72 17.0	17 14.6	183 54.0	9 48.9
22	149 26.2	23 25.5	241 41.1	102 18.0	17 12.9	213 55.5	9 50.2
Δ	-1	0		5	-8	7	6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	86 5.0	171 -4	29.6	-139	19 20.0	-21 41.0	126 28.3	15 31.5
2	115 17.1	170 -4	57.5	-139	49 25.6	-21 40.9	156 32.8	15 31.3
4	144 29.2	170 -5	25.2	-138	79 31.1	-21 40.9	186 37.2	15 31.1
6	173 41.3	170 -5	52.9	-138	109 36.6	-21 40.8	216 41.7	15 31.0
8	202 53.3	170 -6	20.5	-137	139 42.2	-21 40.7	246 46.1	15 30.8
10	232 5.2	169 -6	47.9	-137	169 47.7	-21 40.7	276 50.6	15 30.7
12	261 17.0	169 -7	15.3	-136	199 53.3	-21 40.6	306 55.1	15 30.5
14	290 28.8	168 -7	42.5	-136	229 58.8	-21 40.6	336 59.5	15 30.4
16	319 40.5	168 -8	9.6	-135	260 4.4	-21 40.5	7 4.0	15 30.2
18	348 52.1	167 -8	36.6	-134	290 9.9	-21 40.5	37 8.4	15 30.0
20	18 3.6	167 -9	3.4	-134	320 15.4	-21 40.4	67 12.9	15 29.9
22	47 14.9	166 -9	30.1	-133	350 21.0	-21 40.3	97 17.3	15 29.7
Δ					28	0	22	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 28	1 46	:::	13 31	3.5	23 42	.0
55	3 21	20 43	0 58	:::	13 21	3.1	23 55	.3
50	3 51	20 13	0 45	:::	13 14	2.9	...	.0
45	4 14	19 51	0 37	2 33	13 7	2.7	...	.0
40	4 32	19 33	0 33	2 3	13 2	2.5	...	.0
35	4 47	19 18	0 30	1 47	12 58	2.4	0 3	1.0
30	4 60	19 5	0 27	1 37	12 54	2.2	0 5	1.1
20	5 22	18 42	0 25	1 24	12 47	2.0	0 9	1.3
10	5 41	18 23	0 23	1 18	12 42	1.8	0 12	1.5
0	5 58	18 6	0 23	1 15	12 36	1.7	0 16	1.7
10	6 16	17 48	0 23	1 15	12 31	1.5	0 19	1.8
20	6 35	17 30	0 24	1 19	12 25	1.3	0 23	2.0
30	6 56	17 9	0 26	1 26	12 19	1.1	0 27	2.2
35	7 8	16 56	0 28	1 31	12 15	1.0	0 29	2.3
40	7 22	16 42	0 31	1 38	12 11	.9	0 32	2.5
45	7 39	16 25	0 34	1 47	12 6	.7	0 35	2.7
50	7 60	16 4	0 39	1 60	12 1	.5	0 39	2.9
55	8 27	15 37	0 46	2 18	11 54	.3	0 43	3.1
60	9 6	14 58	0 58	2 46	11 45	.0	0 49	3.4

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	' / "	' / "	h min	min	' / "	' / "
00	- 2 3.3	-.5	15.8	T _m	18 46	1.7	54.4 14.8
12	- 2 9.8	T _{m☉}	12 h 2.2 min	Starost	7.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	' / "	°	' / "	h	min	' / "	°	' / "
♀	15 11	.2	221	-4.3	♃	22 38	.0	109	-2.4
♂	7 45	.1	333	.7	♄	15 32	.0	216	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 25.9	23 25.4	271 46.0	132 19.0	17 11.3	243 56.9	9 51.5
2	209 25.6	23 25.3	301 50.9	162 20.0	17 9.6	273 58.4	9 52.8
4	239 25.4	23 25.2	331 55.9	192 21.0	17 7.9	303 59.9	9 54.1
6	269 25.1	23 25.1	2 .8	222 22.0	17 6.3	334 1.4	9 55.4
8	299 24.8	23 25.1	32 5.7	252 23.0	17 4.6	4 2.9	9 56.7
10	329 24.6	23 25.0	62 10.6	282 24.1	17 2.9	34 4.4	9 58.0
12	359 24.3	23 24.9	92 15.6	312 25.1	17 1.3	64 5.9	9 59.3
14	29 24.0	23 24.8	122 20.5	342 26.2	16 59.6	94 7.4	10 .5
16	59 23.8	23 24.7	152 25.4	12 27.2	16 57.9	124 8.9	10 1.8
18	89 23.5	23 24.6	182 30.3	42 28.3	16 56.2	154 10.3	10 3.1
20	119 23.2	23 24.5	212 35.3	72 29.3	16 54.6	184 11.8	10 4.4
22	149 23.0	23 24.4	242 40.2	102 30.4	16 52.9	214 13.3	10 5.7
Δ	-1	0		5	-8	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 37	21 28	1 46	:::	14 55	3.6	23 42	.0
55	3 21	20 43	0 58	:::	14 37	3.2	...	.0
50	3 51	20 13	0 45	:::	14 23	2.9	0 6	.6
45	4 14	19 51	0 37	2 33	14 12	2.7	0 14	.8
40	4 32	19 33	0 33	2 3	14 2	2.6	0 20	.9
35	4 47	19 18	0 30	1 47	13 55	2.4	0 26	1.0
30	5 0	19 5	0 27	1 37	13 48	2.3	0 31	1.2
20	5 22	18 43	0 25	1 24	13 36	2.1	0 40	1.4
10	5 41	18 24	0 23	1 18	13 26	1.9	0 48	1.5
0	5 59	18 6	0 23	1 15	13 16	1.8	0 55	1.7
10	6 16	17 49	0 23	1 15	13 7	1.6	1 3	1.9
20	6 35	17 30	0 24	1 19	12 57	1.4	1 11	2.1
30	6 56	17 9	0 26	1 26	12 46	1.2	1 20	2.3
35	7 8	16 56	0 28	1 31	12 39	1.1	1 25	2.4
40	7 23	16 42	0 31	1 38	12 32	1.0	1 31	2.5
45	7 39	16 25	0 34	1 47	12 23	.8	1 38	2.7
50	8 0	16 5	0 39	1 60	12 13	.6	1 47	2.9
55	8 27	15 38	0 46	2 18	12 1	.4	1 58	3.2
60	9 6	14 59	0 58	2 46	11 44	.0	2 12	3.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	76 26.1	166 -9	56.7 -132	20 26.5	-21 40.3	127 21.8	15 29.6	
2	105 37.2	165 -10	23.1 -131	50 32.0	-21 40.2	157 26.2	15 29.4	
4	134 48.2	164 -10	49.3 -130	80 37.6	-21 40.2	187 30.7	15 29.2	
6	163 59.0	163 -11	15.4 -130	110 43.1	-21 40.1	217 35.1	15 29.1	
8	193 9.7	162 -11	41.4 -129	140 48.6	-21 40.0	247 39.6	15 28.9	
10	222 20.1	162 -12	7.1 -128	170 54.2	-21 40.0	277 44.0	15 28.8	
12	251 30.4	161 -12	32.7 -127	200 59.7	-21 39.9	307 48.5	15 28.6	
14	280 40.6	160 -12	58.1 -126	231 5.3	-21 39.9	337 52.9	15 28.4	
16	309 50.5	159 -13	23.3 -125	261 10.8	-21 39.8	7 57.4	15 28.3	
18	339 .2	158 -13	48.3 -124	291 16.3	-21 39.8	38 1.8	15 28.1	
20	8 9.7	157 -14	13.1 -123	321 21.8	-21 39.7	68 6.3	15 28.0	
22	37 19.0	155 -14	37.7 -122	351 27.4	-21 39.6	98 10.7	15 27.8	
Δ				28	0	22	-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	- 2 16.2	-.5	15.8	T _m	19 26	1.8	54.2 14.8		
12	- 2 22.7	T _{m☉}	12 h 2.4 min	Starost	8.9 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	' / "	°	°	♃	h min	' / "	°	°
♁	15 10	.2	221	-4.3	♃	22 34	.0	109	-2.4
♂	7 44	.1	332	.7	♄	15 28	.0	216	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 22.7	23 24.3	272 45.1	132 31.5	16 51.2	244 14.8	10 7.0
2	209 22.4	23 24.1	302 50.1	162 32.6	16 49.5	274 16.3	10 8.3
4	239 22.2	23 24.0	332 55.0	192 33.7	16 47.8	304 17.8	10 9.6
6	269 21.9	23 23.9	2 59.9	222 34.8	16 46.2	334 19.3	10 10.8
8	299 21.6	23 23.8	33 4.8	252 35.9	16 44.5	4 20.8	10 12.1
10	329 21.4	23 23.7	63 9.8	282 37.0	16 42.8	34 22.3	10 13.4
12	359 21.1	23 23.5	93 14.7	312 38.1	16 41.1	64 23.7	10 14.7
14	29 20.8	23 23.4	123 19.6	342 39.3	16 39.4	94 25.2	10 16.0
16	59 20.6	23 23.3	153 24.6	12 40.4	16 37.7	124 26.7	10 17.2
18	89 20.3	23 23.1	183 29.5	42 41.5	16 36.1	154 28.2	10 18.5
20	119 20.0	23 23.0	213 34.4	72 42.7	16 34.4	184 29.7	10 19.8
22	149 19.8	23 22.9	243 39.3	102 43.8	16 32.7	214 31.2	10 21.1
Δ	-1	-1		6	-8	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 37	21 28	1 45	:::	16 22	3.8	23 42	.1
55	3 22	20 43	0 58	:::	15 54	3.3	0 4	.4
50	3 52	20 13	0 45	:::	15 33	3.0	0 19	.7
45	4 14	19 51	0 37	2 33	15 17	2.8	0 32	.9
40	4 32	19 33	0 33	2 3	15 4	2.6	0 42	1.0
35	4 47	19 18	0 30	1 47	14 53	2.5	0 51	1.2
30	5 0	19 5	0 27	1 37	14 43	2.4	0 59	1.3
20	5 22	18 43	0 25	1 24	14 26	2.2	1 13	1.5
10	5 41	18 24	0 23	1 18	14 12	2.0	1 25	1.7
0	5 59	18 6	0 23	1 15	13 59	1.9	1 36	1.8
10	6 16	17 49	0 23	1 15	13 45	1.7	1 48	2.0
20	6 35	17 30	0 24	1 19	13 31	1.6	2 0	2.1
30	6 56	17 9	0 26	1 26	13 15	1.4	2 14	2.3
35	7 8	16 57	0 28	1 31	13 6	1.3	2 23	2.5
40	7 23	16 43	0 31	1 38	12 55	1.1	2 32	2.6
45	7 39	16 26	0 34	1 47	12 43	1.0	2 43	2.8
50	8 0	16 5	0 38	1 60	12 28	.8	2 57	3.0
55	8 27	15 38	0 46	2 18	12 9	.5	3 14	3.3
60	9 6	14 59	0 58	2 46	11 44	.1	3 37	3.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	66 28.1	154 -15	2.1 -121	21 32.9	-21 39.6	128 15.2	15 27.6	
2	95 37.0	153 -15	26.3 -120	51 38.4	-21 39.5	158 19.6	15 27.5	
4	124 45.6	152 -15	50.2 -119	81 44.0	-21 39.5	188 24.1	15 27.3	
6	153 53.9	151 -16	13.9 -117	111 49.5	-21 39.4	218 28.5	15 27.2	
8	183 2.1	149 -16	37.4 -116	141 55.0	-21 39.3	248 32.9	15 27.0	
10	212 9.9	148 -17	.6 -115	172 .5	-21 39.3	278 37.4	15 26.8	
12	241 17.5	147 -17	23.6 -114	202 6.1	-21 39.2	308 41.8	15 26.7	
14	270 24.8	145 -17	46.3 -112	232 11.6	-21 39.2	338 46.3	15 26.5	
16	299 31.8	144 -18	8.7 -111	262 17.1	-21 39.1	8 50.7	15 26.3	
18	328 38.6	142 -18	30.9 -109	292 22.6	-21 39.1	38 55.2	15 26.2	
20	357 45.0	141 -18	52.7 -108	322 28.2	-21 39.0	68 59.6	15 26.0	
22	26 51.2	139 -19	14.3 -106	352 33.7	-21 38.9	99 4.1	15 25.9	
Δ				28	0	22	-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	- 2 29.1	-.5	15.8	T _m	20 9	1.9	54.2 14.8		
12	- 2 35.4	T _{m☉}	12 h 2.6 min	Starost	9.9 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	' / "	°	°	♃	h min	' / "	°	°
♁	15 9	.3	220	-4.3	♃	22 30	.0	109	-2.4
♂	7 43	.1	331	.7	♄	15 25	.0	215	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	19.5	23	22.7	273	44.3	132	45.0	16	31.0	244	32.7	10	22.4
2	209	19.2	23	22.6	303	49.2	162	46.2	16	29.3	274	34.2	10	23.6
4	239	19.0	23	22.4	333	54.1	192	47.4	16	27.6	304	35.7	10	24.9
6	269	18.7	23	22.3	3	59.1	222	48.5	16	25.9	334	37.2	10	26.2
8	299	18.5	23	22.1	34	4.0	252	49.7	16	24.2	4	38.6	10	27.5
10	329	18.2	23	21.9	64	8.9	282	50.9	16	22.5	34	40.1	10	28.7
12	359	17.9	23	21.8	94	13.8	312	52.1	16	20.9	64	41.6	10	30.0
14	29	17.7	23	21.6	124	18.8	342	53.3	16	19.2	94	43.1	10	31.3
16	59	17.4	23	21.4	154	23.7	12	54.6	16	17.5	124	44.6	10	32.5
18	89	17.1	23	21.3	184	28.6	42	55.8	16	15.8	154	46.1	10	33.8
20	119	16.9	23	21.1	214	33.6	72	57.0	16	14.1	184	47.6	10	35.1
22	149	16.6	23	20.9	244	38.5	102	58.3	16	12.4	214	49.1	10	36.3
Δ		-1		-1			6		-8		7			6

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	55	57.1	138	-19	35.6	-105	22	39.2	-21	38.9	129	8.5	15	25.7		
2	85	2.6	136	-19	56.6	-103	52	44.7	-21	38.8	159	12.9	15	25.5		
4	114	7.9	135	-20	17.2	-102	82	50.2	-21	38.8	189	17.4	15	25.4		
6	143	12.8	133	-20	37.6	-100	112	55.8	-21	38.7	219	21.8	15	25.2		
8	172	17.4	131	-20	57.6	-98	143	1.3	-21	38.7	249	26.3	15	25.0		
10	201	21.7	130	-21	17.3	-97	173	6.8	-21	38.6	279	30.7	15	24.9		
12	230	25.6	128	-21	36.6	-95	203	12.3	-21	38.5	309	35.1	15	24.7		
14	259	29.2	126	-21	55.6	-93	233	17.8	-21	38.5	339	39.6	15	24.6		
16	288	32.5	125	-22	14.2	-91	263	23.3	-21	38.4	9	44.0	15	24.4		
18	317	35.4	123	-22	32.4	-89	293	28.9	-21	38.4	39	48.5	15	24.2		
20	346	38.0	121	-22	50.3	-87	323	34.4	-21	38.3	69	52.9	15	24.1		
22	15	40.3	120	-23	7.8	-85	353	39.9	-21	38.3	99	57.3	15	23.9		
Δ							28		0		22			-1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 38	21 28	1 44	:::	17 54	4.0	23 45	.3
55	3 22	20 43	0 58	:::	17 13	3.3	0 14	.6
50	3 52	20 13	0 45	:::	16 45	3.0	0 36	.9
45	4 15	19 51	0 37	2 33	16 24	2.8	0 53	1.1
40	4 33	19 33	0 33	2 3	16 7	2.7	1 7	1.3
35	4 48	19 18	0 30	1 47	15 53	2.5	1 20	1.4
30	5 1	19 5	0 27	1 36	15 40	2.4	1 30	1.5
20	5 23	18 43	0 25	1 24	15 19	2.3	1 49	1.7
10	5 42	18 24	0 23	1 18	15 1	2.2	2 5	1.8
0	5 59	18 6	0 23	1 15	14 44	2.0	2 20	1.9
10	6 17	17 49	0 23	1 15	14 27	1.9	2 35	2.1
20	6 35	17 31	0 24	1 19	14 9	1.8	2 52	2.2
30	6 56	17 9	0 26	1 25	13 48	1.6	3 10	2.4
35	7 9	16 57	0 28	1 31	13 37	1.5	3 21	2.5
40	7 23	16 43	0 31	1 38	13 23	1.4	3 34	2.6
45	7 40	16 26	0 34	1 47	13 7	1.2	3 49	2.8
50	8 0	16 5	0 38	1 59	12 47	1.1	4 8	3.0
55	8 27	15 38	0 46	2 18	12 22	.8	4 32	3.3
60	9 6	14 60	0 58	2 46	11 46	.2	5 6	3.9

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 2 41.8	-.5	15.8	T _m	20 55	2.1	54.3	14.8
12	- 2 48.1	T _{m☉}	12 h 2.8 min	Starost	10.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min	'	°	°	h min	'	°	°	h min	'
♀	15 8	.3	219	-4.3	♃	22 25	.0	109	-2.4
♂	7 41	.1	331	.7	♄	15 21	.0	215	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	16.4	23	20.7	274	43.4	132	59.5	16	10.7	244	50.6	10	37.6
2	209	16.1	23	20.6	304	48.3	163	.8	16	9.0	274	52.0	10	38.9
4	239	15.8	23	20.4	334	53.3	193	2.0	16	7.3	304	53.5	10	40.1
6	269	15.6	23	20.2	4	58.2	223	3.3	16	5.6	334	55.0	10	41.4
8	299	15.3	23	20.0	35	3.1	253	4.6	16	3.9	4	56.5	10	42.7
10	329	15.1	23	19.8	65	8.1	283	5.9	16	2.2	34	58.0	10	43.9
12	359	14.8	23	19.6	95	13.0	313	7.2	16	.5	64	59.5	10	45.2
14	29	14.5	23	19.4	125	17.9	343	8.5	15	58.8	95	1.0	10	46.5
16	59	14.3	23	19.2	155	22.8	13	9.8	15	57.1	125	2.5	10	47.7
18	89	14.0	23	19.0	185	27.8	43	11.1	15	55.4	155	4.0	10	49.0
20	119	13.8	23	18.8	215	32.7	73	12.4	15	53.7	185	5.4	10	50.2
22	149	13.5	23	18.6	245	37.6	103	13.8	15	52.0	215	6.9	10	51.5
Δ		-1		-1			6		-9		7			6

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	44	42.2	118	-23	24.8	-83	23	45.4	-21	38.2	130	1.8	15	23.7		
2	73	43.8	116	-23	41.5	-81	53	50.9	-21	38.1	160	6.2	15	23.6		
4	102	45.0	114	-23	57.8	-79	83	56.4	-21	38.1	190	10.6	15	23.4		
6	131	45.9	113	-24	13.6	-77	114	1.9	-21	38.0	220	15.1	15	23.2		
8	160	46.5	111	-24	29.0	-75	144	7.4	-21	38.0	250	19.5	15	23.1		
10	189	46.7	109	-24	44.0	-73	174	12.9	-21	37.9	280	24.0	15	22.9		
12	218	46.5	108	-24	58.5	-70	204	18.4	-21	37.9	310	28.4	15	22.8		
14	247	46.1	106	-25	12.6	-68	234	23.9	-21	37.8	340	32.8	15	22.6		
16	276	45.2	104	-25	26.2	-66	264	29.5	-21	37.8	10	37.3	15	22.4		
18	305	44.1	103	-25	39.3	-63	294	35.0	-21	37.7	40	41.7	15	22.3		
20	334	42.6	101	-25	51.9	-61	324	40.5	-21	37.6	70	46.1	15	22.1		
22	3	40.8	99	-26	4.1	-58	354	46.0	-21	37.6	100	50.6	15	21.9		
Δ							28		0		22			-1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 38	21 27	1 43	:::	19 29	3.8	23 52	.8
55	3 23	20 43	0 58	:::	18 33	3.1	0 28	.9
50	3 53	20 13	0 44	:::	17 57	2.8	0 57	1.2
45	4 15	19 51	0 37	2 32	17 31	2.7	1 20	1.4
40	4 33	19 33	0 33	2 3	17 11	2.6	1 38	1.5
35	4 48	19 18	0 30	1 47	16 54	2.5	1 53	1.6
30	5 1	19 5	0 27	1 36	16 39	2.5	2 6	1.7
20	5 23	18 43	0 25	1 24	16 14	2.3	2 29	1.9
10	5 42	18 24	0 23	1 18	15 52	2.3	2 48	2.0
0	5 59	18 7	0 23	1 15	15 32	2.2	3 7	2.1
10	6 17	17 49	0 23	1 15	15 13	2.1	3 25	2.2
20	6 35	17 31	0 24	1 19	14 51	2.0	3 45	2.3
30	6 56	17 10	0 26	1 25	14 27	1.9	4 8	2.5
35	7 9	16 57	0 28	1 31	14 13	1.8	4 22	2.5
40	7 23	16 43	0 31	1 38	13 56	1.7	4 38	2.6
45	7 40	16 27	0 34	1 47	13 37	1.6	4 56	2.8
50	8 0	16 6	0 38	1 59	13 12	1.5	5 20	2.9
55	8 27	15 39	0 45	2 17	12 40	1.2	5 52	3.2
60	9 6	15 0	0 58	2 46	11 51	.5	6 39	3.9

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	°	'	°	'	°	'			
0	179	13.3	23	18.4	275	42.6	133	15.1	15	50.3	245	8.4	10	52.8
2	209	13.0	23	18.2	305	47.5	163	16.4	15	48.6	275	9.9	10	54.0
4	239	12.7	23	17.9	335	52.4	193	17.8	15	46.9	305	11.4	10	55.3
6	269	12.5	23	17.7	5	57.3	223	19.2	15	45.2	335	12.9	10	56.5
8	299	12.2	23	17.5	36	2.3	253	20.5	15	43.5	5	14.4	10	57.8
10	329	12.0	23	17.3	66	7.2	283	21.9	15	41.8	35	15.9	10	59.0
12	359	11.7	23	17.0	96	12.1	313	23.3	15	40.0	65	17.4	11	3
14	29	11.5	23	16.8	126	17.0	343	24.7	15	38.3	95	18.8	11	1.5
16	59	11.2	23	16.6	156	22.0	13	26.1	15	36.6	125	20.3	11	2.8
18	89	11.0	23	16.3	186	26.9	43	27.5	15	34.9	155	21.8	11	4.0
20	119	10.7	23	16.1	216	31.8	73	28.9	15	33.2	185	23.3	11	5.3
22	149	10.5	23	15.9	246	36.8	103	30.3	15	31.5	215	24.8	11	6.5
Δ		-1		-1			7			-9	7			6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 39	21 27	1 42	:::	20 59	2.7	..	.0
55	3 23	20 43	0 58	:::	19 47	2.5	0 50	1.5
50	3 53	20 13	0 44	:::	19 6	2.5	1 27	1.7
45	4 15	19 51	0 37	2 32	18 36	2.4	1 53	1.8
40	4 33	19 33	0 33	2 3	18 13	2.4	2 15	1.9
35	4 48	19 18	0 30	1 47	17 54	2.4	2 32	2.0
30	5 1	19 5	0 27	1 36	17 38	2.4	2 48	2.0
20	5 23	18 43	0 25	1 24	17 10	2.3	3 14	2.1
10	5 42	18 24	0 23	1 18	16 47	2.3	3 36	2.2
0	5 60	18 7	0 23	1 15	16 25	2.3	3 57	2.2
10	6 17	17 50	0 23	1 15	16 3	2.3	4 18	2.3
20	6 35	17 31	0 24	1 19	15 39	2.2	4 41	2.3
30	6 56	17 10	0 26	1 25	15 12	2.2	5 7	2.4
35	7 9	16 58	0 28	1 31	14 56	2.2	5 23	2.5
40	7 23	16 44	0 31	1 38	14 38	2.1	5 41	2.5
45	7 40	16 27	0 34	1 47	14 15	2.1	6 3	2.6
50	8 0	16 6	0 38	1 59	13 47	2.0	6 31	2.7
55	8 27	15 40	0 45	2 17	13 8	1.9	7 9	2.8
60	9 5	15 1	0 57	2 46	12 4	1.4	8 12	3.3
S								

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'				
0	32	38.7	98	-26	15.8	-56	24	51.5	-21	37.5	130	55.0	15	21.8
2	61	36.2	96	-26	26.9	-53	54	57.0	-21	37.5	160	59.4	15	21.6
4	90	33.5	95	-26	37.5	-51	85	2.5	-21	37.4	191	3.9	15	21.4
6	119	30.4	93	-26	47.7	-48	115	8.0	-21	37.4	221	8.3	15	21.3
8	148	27.0	92	-26	57.2	-45	145	13.5	-21	37.3	251	12.7	15	21.1
10	177	23.4	90	-27	6.3	-43	175	19.0	-21	37.3	281	17.2	15	20.9
12	206	19.4	89	-27	14.8	-40	205	24.5	-21	37.2	311	21.6	15	20.8
14	235	15.2	88	-27	22.7	-37	235	30.0	-21	37.1	341	26.0	15	20.6
16	264	10.7	86	-27	30.1	-34	265	35.5	-21	37.1	11	30.4	15	20.4
18	293	6.0	85	-27	36.9	-31	295	41.0	-21	37.0	41	34.9	15	20.3
20	322	1.0	84	-27	43.2	-28	325	46.4	-21	37.0	71	39.3	15	20.1
22	350	55.8	83	-27	48.9	-25	355	51.9	-21	36.9	101	43.7	15	19.9
Δ							27			0	22			-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	- 3	6.8	- .5	15.8	T _m	22 38	2.3	55.0	15.0
12	- 3	12.9	T _{m☉}	12 h 3,2 min	Starost	12.9 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♁	15 6	.3	218	-4.3	♄	22 16	.0	109	-2.4
♂	7 39	.1	329	.7	♅	15 14	.0	215	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	°	'	°	'	°	'			
0	179	10.2	23	15.6	276	41.7	133	31.7	15	29.8	245	26.3	11	7.8
2	209	9.9	23	15.4	306	46.6	163	33.2	15	28.1	275	27.8	11	9.0
4	239	9.7	23	15.1	336	51.5	193	34.6	15	26.4	305	29.3	11	10.3
6	269	9.4	23	14.8	6	56.5	223	36.1	15	24.7	335	30.8	11	11.5
8	299	9.2	23	14.6	37	1.4	253	37.5	15	23.0	5	32.3	11	12.8
10	329	8.9	23	14.3	67	6.3	283	39.0	15	21.2	35	33.7	11	14.0
12	359	8.7	23	14.1	97	11.3	313	40.5	15	19.5	65	35.2	11	15.2
14	29	8.4	23	13.8	127	16.2	343	41.9	15	17.8	95	36.7	11	16.5
16	59	8.2	23	13.5	157	21.1	13	43.4	15	16.1	125	38.2	11	17.7
18	89	7.9	23	13.3	187	26.0	43	44.9	15	14.4	155	39.7	11	19.0
20	119	7.7	23	13.0	217	31.0	73	46.4	15	12.7	185	41.2	11	20.2
22	149	7.4	23	12.7	247	35.9	103	47.9	15	11.0	215	42.7	11	21.4
Δ		-1		-1			7			-9	7			6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 40	21 27	1 41	:::	22 4	1.2	0 13	2.1
55	3 24	20 43	0 57	:::	20 48	1.8	1 25	2.2
50	3 54	20 13	0 44	:::	20 5	2.0	2 7	2.3
45	4 16	19 51	0 37	2 32	19 34	2.1	2 37	2.3
40	4 34	19 33	0 33	2 3	19 11	2.1	3 1	2.3
35	4 49	19 18	0 30	1 47	18 51	2.2	3 20	2.3
30	5 2	19 5	0 27	1 36	18 34	2.2	3 36	2.3
20	5 23	18 43	0 25	1 24	18 6	2.2	4 4	2.3
10	5 42	18 25	0 23	1 18	17 42	2.3	4 28	2.3
0	5 60	18 7	0 23	1 15	17 19	2.3	4 51	2.3
10	6 17	17 50	0 23	1 15	16 57	2.4	5 13	2.3
20	6 35	17 31	0 24	1 19	16 33	2.4	5 37	2.3
30	6 56	17 10	0 26	1 25	16 5	2.4	6 5	2.3
35	7 9	16 58	0 28	1 31	15 48	2.5	6 22	2.3
40	7 23	16 44	0 31	1 37	15 29	2.5	6 41	2.3
45	7 39	16 27	0 34	1 47	15 5	2.5	7 5	2.3
50	8 0	16 7	0 38	1 59	14 35	2.6	7 35	2.2
55	8 27	15 40	0 45	2 17	13 53	2.7	8 17	2.2
60	9 5	15 2	0 57	2 45	12 38	2.9	9 31	1.9
S								

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'				
0	19	50.3	82	-27	53.9	-22	25	57.4	-21	36.9	131	48.2	15	19.8
2	48	44.7	81	-27	58.4	-19	56	2.9	-21	36.8	161	52.6	15	19.6
4	77	38.8	80	-28	2.3	-16	86	8.4	-21	36.8	191	57.0	15	19.4
6	106	32.7	79	-28	5.6	-13	116	13.9	-21	36.7	222	1.4	15	19.3
8	135	26.5	78	-28	8.3	-10	146	19.4	-21	36.7	252	5.9	15	19.1
10	164	20.1	77	-28	10.4	-7	176	24.9	-21	36.6	282	10.3	15	18.9
12	193	13.5	76	-28	11.8	-4	206	30.4	-21	36.5	312	14.7	15	18.8
14	222	6.8	76	-28	12.7	-1	236	35.9	-21	36.5	342	19.1	15	18.6
16	250	59.9	75	-28	12.9	2	266	41.3	-21	36.4	12	23.6	15	18.4
18	279	53.0	75	-28	12.5	5	296	46.8	-21	36.4	42	28.0	15	18.3
20	308	45.9	74	-28	11.4	8	326	52.3	-21	36.3	72	32.4	15	18.1
22	337	38.8	74	-28	9.7	12	356	57.8	-21	36.3	102	36.8	15	17.9
Δ							27			0	22			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	- 3	19.0	- .5	15.8	T _m	23 33	2.3	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	7.2	23	12.4	277	40.8	133	49.5	15	9.3	245	44.2	11	22.7
2	209	6.9	23	12.1	307	45.8	163	51.0	15	7.5	275	45.7	11	23.9
4	239	6.7	23	11.9	337	50.7	193	52.5	15	5.8	305	47.1	11	25.2
6	269	6.5	23	11.6	7	55.6	223	54.1	15	4.1	335	48.6	11	26.4
8	299	6.2	23	11.3	38	5	253	55.6	15	2.4	5	50.1	11	27.6
10	329	6.0	23	11.0	68	5.5	283	57.2	15	0.7	35	51.6	11	28.9
12	359	5.7	23	10.7	98	10.4	313	58.7	14	59.0	65	53.1	11	30.1
14	29	5.5	23	10.4	128	15.3	344	59.3	14	57.3	95	54.6	11	31.3
16	59	5.2	23	10.1	158	20.3	14	1.9	14	55.5	125	56.1	11	32.5
18	89	5.0	23	9.8	188	25.2	44	3.5	14	53.8	155	57.6	11	33.8
20	119	4.7	23	9.5	218	30.1	74	5.1	14	52.1	185	59.1	11	35.0
22	149	4.5	23	9.1	248	35.0	104	6.7	14	50.4	216	59.5	11	36.2
Δ		-1		-1			8		-9		7			6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 41	21 26	1 40	:::	22 33	.4	1 3	3.7
55	3 24	20 42	0 57	:::	21 30	1.2	2 19	3.1
50	3 54	20 13	0 44	:::	20 52	1.5	3 2	2.9
45	4 16	19 51	0 37	2 31	20 24	1.6	3 32	2.7
40	4 34	19 33	0 33	2 2	20 1	1.8	3 56	2.7
35	4 49	19 18	0 30	1 47	19 43	1.9	4 15	2.6
30	5 2	19 5	0 27	1 36	19 27	2.0	4 32	2.5
20	5 24	18 43	0 25	1 24	19 0	2.1	4 60	2.5
10	5 43	18 25	0 23	1 18	18 37	2.2	5 24	2.4
0	5 60	18 7	0 22	1 15	18 15	2.3	5 46	2.3
10	6 17	17 50	0 23	1 15	17 54	2.4	6 9	2.3
20	6 36	17 32	0 24	1 19	17 30	2.5	6 33	2.2
30	6 57	17 11	0 26	1 25	17 3	2.6	7 0	2.1
35	7 9	16 59	0 28	1 31	16 47	2.7	7 17	2.0
40	7 23	16 45	0 30	1 37	16 28	2.8	7 36	1.9
45	7 39	16 28	0 34	1 47	16 6	2.9	7 59	1.8
50	7 60	16 8	0 38	1 59	15 37	3.1	8 28	1.7
55	8 27	15 41	0 45	2 17	14 57	3.3	9 9	1.5
60	9 5	15 3	0 57	2 45	13 48	4.0	10 17	1.8
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	6	31.6	74	-28	7.4	15	27	3.3	-21	36.2	132	41.3	15	17.7		
2	35	24.3	73	-28	4.5	18	57	8.8	-21	36.2	162	45.7	15	17.6		
4	64	17.0	73	-28	.9	21	87	14.2	-21	36.1	192	50.1	15	17.4		
6	93	9.7	73	-27	56.7	24	117	19.7	-21	36.1	222	54.5	15	17.2		
8	122	2.3	73	-27	51.8	27	147	25.2	-21	36.0	252	59.0	15	17.1		
10	150	55.0	73	-27	46.3	31	177	30.7	-21	36.0	283	3.4	15	16.9		
12	179	47.6	73	-27	40.2	34	207	36.1	-21	35.9	313	7.8	15	16.7		
14	208	40.3	74	-27	33.4	37	237	41.6	-21	35.9	343	12.2	15	16.6		
16	237	33.0	74	-27	26.0	40	267	47.1	-21	35.8	13	16.7	15	16.4		
18	266	25.8	74	-27	18.0	43	297	52.6	-21	35.7	43	21.1	15	16.2		
20	295	18.7	75	-27	9.3	46	327	58.0	-21	35.7	73	25.5	15	16.0		
22	324	11.6	75	-27	.0	50	358	3.5	-21	35.6	103	29.9	15	15.9		
Δ							27		0		22			-1		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	s	h min	min	'	'
00	- 3 31.0	-.5	15.8	T _m	1.0	56.0	15.3
12	- 3 37.0	T _{m☉}	12 h 3.6 min	Starost	14.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	°	h	min	'	°	°
♀	15 4	.3	216	-4.3	♃	22 8	.0	109	-2.4
♂	7 37	.1	328	.7	♄	15 7	.0	215	.6

1. JUL

NEDELJA

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	4.2	23	8.8	278	40.0	134	8.3	14	48.7	246	2.0	11	37.5
2	209	4.0	23	8.5	308	44.9	164	9.9	14	47.0	276	3.5	11	38.7
4	239	3.8	23	8.2	338	49.8	194	11.6	14	45.3	306	5.0	11	39.9
6	269	3.5	23	7.9	8	54.8	224	13.2	14	43.5	336	6.5	11	41.1
8	299	3.3	23	7.5	38	59.7	254	14.8	14	41.8	6	8.0	11	42.4
10	329	3.0	23	7.2	69	4.6	284	16.5	14	40.1	36	9.5	11	43.6
12	359	2.8	23	6.9	99	9.5	314	18.2	14	38.4	66	11.0	11	44.8
14	29	2.6	23	6.6	129	14.5	344	19.8	14	36.7	96	12.5	11	46.0
16	59	2.3	23	6.2	159	19.4	14	21.5	14	35.0	126	14.0	11	47.2
18	89	2.1	23	5.9	189	24.3	44	23.2	14	33.2	156	15.4	11	48.5
20	119	1.8	23	5.5	219	29.2	74	24.9	14	31.5	186	16.9	11	49.7
22	149	1.6	23	5.2	249	34.2	104	26.6	14	29.8	216	18.4	11	50.9
Δ		-1		-2			8		-9		7			6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 42	21 25	1 38	:::	22 44	.2	2 31	4.3
55	3 25	20 42	0 57	:::	21 58	.7	3 33	3.6
50	3 55	20 13	0 44	:::	21 27	1.1	4 11	3.2
45	4 17	19 51	0 37	2 31	21 3	1.3	4 38	3.0
40	4 35	19 33	0 33	2 2	20 44	1.5	4 60	2.9
35	4 49	19 18	0 30	1 46	20 28	1.6	5 18	2.8
30	5 2	19 5	0 27	1 36	20 14	1.7	5 33	2.7
20	5 24	18 43	0 24	1 24	19 51	1.9	5 59	2.5
10	5 43	18 25	0 23	1 17	19 30	2.1	6 21	2.4
0	6 0	18 7	0 22	1 15	19 11	2.2	6 42	2.3
10	6 17	17 50	0 23	1 15	18 51	2.4	7 3	2.1
20	6 36	17 32	0 24	1 19	18 30	2.5	7 25	2.0
30	6 57	17 11	0 26	1 25	18 6	2.7	7 50	1.8
35	7 9	16 59	0 28	1 31	17 52	2.8	8 5	1.7
40	7 23	16 45	0 30	1 37	17 35	2.9	8 22	1.6
45	7 39	16 28	0 34	1 47	17 16	3.1	8 43	1.5
50	7 60	16 8	0 38	1 59	16 51	3.3	9 9	1.3
55	8 26	15 42	0 45	2 17	16 17	3.7	9 44	.9
60	9 4	15 4	0 57	2 45	15 25	4.3	10 37	.3
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	353	4.6	76	-26	50.1	53	28	9.0	-21	35.6	133	34.3	15	15.7		
2	21	57.7	76	-26	39.6	56	58	14.5	-21	35.5	163	38.8	15	15.5		
4	50	51.0	77	-26	28.4	59	88	19.9	-21	35.5	193	43.2	15	15.4		
6	79	44.3	78	-26	16.6	62	118	25.4	-21	35.4	223	47.6	15	15.2		
8	108	37.8	78	-26	4.2	65	148	30.9	-21	35.4	253	52.0	15	15.0		
10	137	31.5	79	-25	51.2	68	178	36.3	-21	35.3	283	56.4	15	14.9		
12	166	25.3	80	-25	37.6	71	208	41.8	-21	35.3	314	.8	15	14.7		
14	195	19.3	81	-25	23.4	74	238	47.3	-21	35.2	344	5.3	15	14.5		
16	224	13.5	82	-25	8.7	77	268	52.7	-21	35.2	14	9.7	15	14.3		
18	253	7.8	83	-24	53.3	80	298	58.2	-21	35.1	44	14.1	15	14.2		
20	282	2.4	84	-24	37.4	82	329	3.7	-21	35.1	74	18.5	15	14.0		
22	310	57.1	85	-24	20.9	85	359	9.1	-21	35.0	104	22.9	15	13.8		
Δ							27		0		22			-1		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	s	h min	min	'	'
00							

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	1.4	23	4.8	279	39.1	134	28.3	14	28.1	246	19.9	11	52.1
2	209	1.1	23	4.5	309	44.0	164	30.0	14	26.4	276	21.4	11	53.3
4	239	.9	23	4.1	339	49.0	194	31.8	14	24.7	306	22.9	11	54.5
6	269	.6	23	3.8	9	53.9	224	33.5	14	22.9	336	24.4	11	55.8
8	299	.4	23	3.4	39	58.8	254	35.2	14	21.2	6	25.9	11	57.0
10	329	.2	23	3.1	70	3.7	284	37.0	14	19.5	36	27.4	11	58.2
12	358	59.9	23	2.7	100	8.7	314	38.7	14	17.8	66	28.8	11	59.4
14	28	59.7	23	2.3	130	13.6	344	40.5	14	16.1	96	30.3	12	.6
16	58	59.5	23	2.0	160	18.5	14	42.3	14	14.4	126	31.8	12	1.8
18	88	59.2	23	1.6	190	23.5	44	44.1	14	12.6	156	33.3	12	3.0
20	118	59.0	23	1.2	220	28.4	74	45.9	14	10.9	186	34.8	12	4.2
22	148	58.8	23	.8	250	33.3	104	47.7	14	9.2	216	36.3	12	5.4
Δ		-1		-2				9		-9		7		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 43	21 25	1 37	:::	22 48	.1	4 14	4.4
55	3 26	20 42	0 57	:::	22 16	.5	4 58	3.8
50	3 55	20 12	0 44	:::	21 53	.8	5 28	3.4
45	4 17	19 50	0 37	2 30	21 35	1.1	5 51	3.2
40	4 35	19 33	0 33	2 2	21 20	1.2	6 9	3.0
35	4 50	19 18	0 30	1 46	21 7	1.4	6 24	2.8
30	5 3	19 5	0 27	1 36	20 56	1.5	6 37	2.7
20	5 24	18 44	0 24	1 24	20 36	1.7	6 59	2.5
10	5 43	18 25	0 23	1 17	20 20	1.9	7 19	2.3
0	6 0	18 8	0 22	1 15	20 4	2.1	7 36	2.2
10	6 17	17 51	0 23	1 15	19 48	2.3	7 54	2.0
20	6 36	17 32	0 24	1 18	19 31	2.5	8 13	1.8
30	6 57	17 12	0 26	1 25	19 11	2.7	8 34	1.6
35	7 9	16 59	0 28	1 30	18 59	2.8	8 47	1.5
40	7 23	16 45	0 30	1 37	18 46	3.0	9 1	1.3
45	7 39	16 29	0 34	1 46	18 30	3.2	9 18	1.2
50	7 59	16 9	0 38	1 59	18 11	3.4	9 39	.9
55	8 26	15 42	0 45	2 17	17 45	3.8	10 6	.6
60	9 3	15 5	0 57	2 44	17 9	4.3	10 44	.1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	339	52.1	86	-24	3.8	88	29	14.6	-21	35.0	134	27.3	15	13.7		
2	8	47.3	87	-23	46.2	91	59	20.0	-21	34.9	164	31.8	15	13.5		
4	37	42.6	88	-23	28.0	94	89	25.5	-21	34.9	194	36.2	15	13.3		
6	66	38.3	89	-23	9.3	96	119	31.0	-21	34.8	224	40.6	15	13.1		
8	95	34.1	90	-22	50.1	99	149	36.4	-21	34.8	254	45.0	15	13.0		
10	124	30.2	92	-22	30.3	101	179	41.9	-21	34.7	284	49.4	15	12.8		
12	153	26.5	93	-22	10.0	104	209	47.3	-21	34.7	314	53.8	15	12.6		
14	182	23.1	94	-21	49.2	106	239	52.8	-21	34.6	344	58.2	15	12.4		
16	211	19.9	95	-21	28.0	109	269	58.2	-21	34.6	15	2.7	15	12.3		
18	240	17.0	97	-21	6.2	111	300	3.7	-21	34.5	45	7.1	15	12.1		
20	269	14.3	98	-20	43.9	114	330	9.1	-21	34.5	75	11.5	15	11.9		
22	298	11.8	99	-20	21.2	116	0	14.6	-21	34.4	105	15.9	15	11.8		
Δ								27		0		22		-1		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 3 54.4	-.5	15.8	T _m	1 24	2.2	57.0	15.5
12	- 4 .1	T _{m☉}	12 h 4.0 min	Starost	16.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
	h min	'	°	°		h min	'	°	°
♀	15 1	.3	215	-4.3	♃	21 59	.0	110	-2.4
♂	7 34	.1	327	.7	♄	14 60	.0	215	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	58.5	23	.4	280	38.2	134	49.5	14	7.5	246	37.8	12	6.6
2	208	58.3	23	.1	310	43.2	164	51.3	14	5.8	276	39.3	12	7.8
4	238	58.1	22	59.7	340	48.1	194	53.1	14	4.1	306	40.8	12	9.0
6	268	57.8	22	59.3	10	53.0	224	55.0	14	2.4	336	42.3	12	10.2
8	298	57.6	22	58.9	40	58.0	254	56.8	14	.6	6	43.7	12	11.5
10	328	57.4	22	58.5	71	2.9	284	58.7	13	58.9	36	45.2	12	12.7
12	358	57.1	22	58.1	101	7.8	315	.5	13	57.2	66	46.7	12	13.9
14	28	56.9	22	57.7	131	12.7	345	2.4	13	55.5	96	48.2	12	15.1
16	58	56.7	22	57.3	161	17.7	15	4.3	13	53.8	126	49.7	12	16.3
18	88	56.5	22	56.9	191	22.6	45	6.1	13	52.1	156	51.2	12	17.4
20	118	56.2	22	56.5	221	27.5	75	8.0	13	50.4	186	52.7	12	18.6
22	148	56.0	22	56.1	251	32.5	105	9.9	13	48.6	216	54.2	12	19.8
Δ		-1		-2				9		-9		7		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 44	21 24	1 35	:::	22 49	.0	5 58	4.2
55	3 27	20 41	0 57	:::	22 28	.4	6 28	3.7
50	3 56	20 12	0 44	:::	22 13	.7	6 50	3.4
45	4 18	19 50	0 37	2 30	21 60	.9	7 7	3.2
40	4 36	19 33	0 33	2 2	21 49	1.1	7 21	3.0
35	4 50	19 18	0 30	1 46	21 40	1.2	7 32	2.8
30	5 3	19 5	0 27	1 36	21 32	1.4	7 42	2.7
20	5 25	18 44	0 24	1 24	21 18	1.6	7 59	2.4
10	5 43	18 25	0 23	1 17	21 6	1.8	8 14	2.2
0	6 1	18 8	0 22	1 15	20 54	2.0	8 28	2.1
10	6 18	17 51	0 23	1 15	20 43	2.2	8 42	1.9
20	6 36	17 33	0 24	1 18	20 30	2.4	8 57	1.7
30	6 57	17 12	0 26	1 25	20 16	2.7	9 13	1.4
35	7 9	16 60	0 28	1 30	20 7	2.8	9 23	1.3
40	7 23	16 46	0 30	1 37	19 58	3.0	9 34	1.2
45	7 39	16 30	0 34	1 46	19 47	3.2	9 46	1.0
50	7 59	16 9	0 38	1 59	19 33	3.4	10 2	.7
55	8 25	15 43	0 45	2 17	19 15	3.7	10 21	.4
60	9 3	15 6	0 57	2 44	18 52	4.2	10 47	.0

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	327	9.6	100	-19	58.1	118	30	20.1	-21	34.4	135	20.3	15	11.6		
2	356	7.7	101	-19	34.4	120	60	25.5	-21	34.3	165	24.7	15	11.4		
4	25	6.0	103	-19	10.4	122	90	30.9	-21	34.3	195	29.1	15	11.2		
6	54	4.5	104	-18	45.9	125	120	36.4	-21	34.2	225	33.5	15	11.1		
8	83	3.3	105	-18	21.0	127	150	41.8	-21	34.2	255	38.0	15	10.9		
10	112	2.3	106	-17	55.6	129	180	47.3	-21	34.1	285	42.4	15	10.7		
12	141	1.5	107	-17	29.9	131	210	52.7	-21	34.1	315	46.8	15	10.5		
14	170	1.0	109	-17	3.8	132	240	58.2	-21	34.0	345	51.2	15	10.4		
16	199	.8	110	-16	37.3	134	271	3.6	-21	34.0	15	55.6	15	10.2		
18	228	.7	111	-16	10.4	136	301	9.1	-21	33.9	45	60.0	15	10.0		
20	257	.9	112	-15	43.2	138	331	14.5	-21	33.9	76	4.4	15	9.8		
22	286	1.3	113	-15	15.6	140	1	19.9	-21	33.8	106	8.8	15	9.7		
Δ								27		0		22		-1		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	- 4 5.7	-.5	15.8	T _m	2 16	2.1	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 55.8	22 55.7	281 37.4	135 11.9	13 46.9	246 55.7	12 21.0	
2	208 55.6	22 55.2	311 42.3	165 13.8	13 45.2	276 57.2	12 22.2	
4	238 55.3	22 54.8	341 47.2	195 15.7	13 43.5	306 58.6	12 23.4	
6	268 55.1	22 54.4	11 52.2	225 17.6	13 41.8	337 .1	12 24.6	
8	298 54.9	22 54.0	41 57.1	255 19.6	13 40.1	7 1.6	12 25.8	
10	328 54.7	22 53.5	72 2.0	285 21.5	13 38.4	37 3.1	12 27.0	
12	358 54.4	22 53.1	102 7.0	315 23.5	13 36.6	67 4.6	12 28.2	
14	28 54.2	22 52.7	132 11.9	345 25.5	13 34.9	97 6.1	12 29.4	
16	58 54.0	22 52.2	162 16.8	15 27.5	13 33.2	127 7.6	12 30.6	
18	88 53.8	22 51.8	192 21.7	45 29.4	13 31.5	157 9.1	12 31.7	
20	118 53.5	22 51.4	222 26.7	75 31.4	13 29.8	187 10.6	12 32.9	
22	148 53.3	22 50.9	252 31.6	105 33.4	13 28.1	217 12.0	12 34.1	
Δ	-1	-2		10	-9	7	6	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 45	21 23	1 34	:::	22 49	.0	7 40	4.1
55	3 28	20 40	0 56	:::	22 38	.3	7 58	3.7
50	3 57	20 12	0 44	:::	22 29	.6	8 12	3.4
45	4 19	19 50	0 37	2 29	22 21	.8	8 23	3.2
40	4 36	19 32	0 33	2 1	22 15	1.0	8 32	3.0
35	4 51	19 18	0 29	1 46	22 10	1.2	8 40	2.8
30	5 4	19 5	0 27	1 36	22 5	1.3	8 47	2.6
20	5 25	18 44	0 24	1 24	21 57	1.5	8 58	2.4
10	5 44	18 25	0 23	1 17	21 50	1.8	9 8	2.2
0	6 1	18 8	0 22	1 15	21 43	2.0	9 18	2.0
10	6 18	17 51	0 23	1 15	21 36	2.2	9 27	1.8
20	6 36	17 33	0 24	1 18	21 28	2.4	9 37	1.6
30	6 57	17 12	0 26	1 25	21 20	2.6	9 48	1.3
35	7 9	17 0	0 28	1 30	21 15	2.8	9 54	1.2
40	7 22	16 47	0 30	1 37	21 9	2.9	10 1	1.0
45	7 39	16 30	0 34	1 46	21 2	3.1	10 10	.8
50	7 59	16 10	0 38	1 59	20 54	3.4	10 20	.6
55	8 25	15 44	0 45	2 16	20 44	3.7	10 32	.4
60	9 2	15 7	0 56	2 44	20 31	4.1	10 48	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	315 1.9	114 -14	47.7	141	31 25.4	-21 33.8	136 13.2	15 9.5
2	344 2.7	115 -14	19.5	143	61 30.8	-21 33.7	166 17.6	15 9.3
4	13 3.7	116 -13	50.9	144	91 36.3	-21 33.7	196 22.0	15 9.1
6	42 4.9	117 -13	22.0	146	121 41.7	-21 33.6	226 26.4	15 9.0
8	71 6.3	118 -12	52.9	147	151 47.1	-21 33.6	256 30.9	15 8.8
10	100 7.8	119 -12	23.4	149	181 52.6	-21 33.5	286 35.3	15 8.6
12	129 9.6	120 -11	53.7	150	211 58.0	-21 33.5	316 39.7	15 8.4
14	158 11.5	120 -11	23.7	151	242 3.4	-21 33.4	346 44.1	15 8.3
16	187 13.6	121 -10	53.4	152	272 8.9	-21 33.4	16 48.5	15 8.1
18	216 15.8	122 -10	23.0	154	302 14.3	-21 33.3	46 52.9	15 7.9
20	245 18.1	122 -9	52.2	155	332 19.7	-21 33.3	76 57.3	15 7.7
22	274 20.6	123 -9	21.3	156	2 25.1	-21 33.2	107 1.7	15 7.6
Δ					27	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 4 16.7	.4	15.8	T _m	3 6	2.0	58.0 15.8		
12	- 4 22.1	T _{m☉}	12 h 4.4 min	Starost	18.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 58	.3	214	-4.3	♃	21 50	.0	110	-2.4
♂	7 32	.1	325	.7	♄	14 53	.0	215	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 53.1	22 50.5	282 36.5	135 35.5	13 26.4	247 13.5	12 35.3	
2	208 52.9	22 50.0	312 41.5	165 37.5	13 24.7	277 15.0	12 36.5	
4	238 52.7	22 49.6	342 46.4	195 39.5	13 23.0	307 16.5	12 37.7	
6	268 52.4	22 49.1	12 51.3	225 41.6	13 21.3	337 18.0	12 38.8	
8	298 52.2	22 48.6	42 56.2	255 43.6	13 19.6	7 19.5	12 40.0	
10	328 52.0	22 48.2	73 1.2	285 45.7	13 17.8	37 21.0	12 41.2	
12	358 51.8	22 47.7	103 6.1	315 47.7	13 16.1	67 22.5	12 42.4	
14	28 51.6	22 47.2	133 11.0	345 49.8	13 14.4	97 24.0	12 43.6	
16	58 51.4	22 46.8	163 15.9	15 51.9	13 12.7	127 25.5	12 44.7	
18	88 51.1	22 46.3	193 20.9	45 54.0	13 11.0	157 26.9	12 45.9	
20	118 50.9	22 45.8	223 25.8	75 56.1	13 9.3	187 28.4	12 47.1	
22	148 50.7	22 45.3	253 30.7	105 58.2	13 7.6	217 29.9	12 48.3	
Δ	-1	-2		10	-9	7	6	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 46	21 22	1 32	:::	22 49	.0	9 19	4.1
55	3 29	20 40	0 56	:::	22 46	.3	9 27	3.7
50	3 58	20 11	0 44	:::	22 43	.6	9 34	3.4
45	4 19	19 50	0 37	2 28	22 41	.8	9 39	3.1
40	4 37	19 32	0 32	2 1	22 39	1.0	9 43	2.9
35	4 51	19 18	0 29	1 46	22 38	1.1	9 47	2.8
30	5 4	19 5	0 27	1 36	22 36	1.3	9 50	2.6
20	5 25	18 44	0 24	1 23	22 34	1.5	9 56	2.4
10	5 44	18 25	0 23	1 17	22 32	1.8	10 1	2.2
0	6 1	18 8	0 22	1 15	22 30	2.0	10 5	1.9
10	6 18	17 51	0 23	1 15	22 28	2.2	10 10	1.7
20	6 36	17 33	0 24	1 18	22 25	2.4	10 14	1.5
30	6 56	17 13	0 26	1 25	22 23	2.6	10 20	1.3
35	7 8	17 1	0 28	1 30	22 21	2.8	10 23	1.1
40	7 22	16 47	0 30	1 37	22 20	3.0	10 26	1.0
45	7 38	16 31	0 34	1 46	22 18	3.2	10 30	.8
50	7 58	16 11	0 38	1 59	22 16	3.4	10 35	.6
55	8 24	15 45	0 45	2 16	22 13	3.7	10 40	.3
60	9 1	15 8	0 56	2 43	22 9	4.1	10 48	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	303 23.3	124 -8	50.1	157	32 30.6	-21 33.2	137 6.1	15 7.4
2	332 26.0	124 -8	18.8	158	62 36.0	-21 33.1	167 10.5	15 7.2
4	1 28.9	125 -7	47.2	159	92 41.4	-21 33.1	197 14.9	15 7.0
6	30 31.8	125 -7	15.5	160	122 46.8	-21 33.0	227 19.3	15 6.8
8	59 34.8	126 -6	43.6	160	152 52.3	-21 33.0	257 23.7	15 6.7
10	88 38.0	126 -6	11.5	161	182 57.7	-21 33.0	287 28.1	15 6.5
12	117 41.1	126 -5	39.3	162	213 3.1	-21 32.9	317 32.5	15 6.3
14	146 44.4	126 -5	7.0	162	243 8.5	-21 32.9	347 36.9	15 6.1
16	175 47.7	127 -4	34.5	163	273 14.0	-21 32.8	17 41.3	15 6.0
18	204 51.0	127 -4	1.9	163	303 19.4	-21 32.8	47 45.7	15 5.8
20	233 54.4	127 -3	29.2	164	333 24.8	-21 32.7	77 50.1	15 5.6
22	262 57.8	127 -2	56.4	164	3 30.2	-21 32.7	107 54.5	15 5.4
Δ					27	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 4 27.4	.4	15.8	T _m	3 54	2.0	58.4 15.9		
12	- 4 32.6	T _{m☉}	12 h 4.5 min	Starost	19.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 57	.3	213	-4.3	♃	21 46	.0	110	-2.4
♂	7 31	.1	325	.7	♄	14 49	.0	214	.6

UT	SUNCE		PROLEĆ. TAČKA S_{Υ}	VENERA		MARS		
	S_{\odot}	δ_{\odot}		S_{\vee}	δ_{\vee}	S_{\mars}	δ_{\mars}	
h	°	'	°	'	°	'	°	'
0	178 50.5	22 44.9	283 35.7	136 .3	13 5.9	247 31.4	12 49.4	
2	208 50.3	22 44.4	313 40.6	166 2.5	13 4.2	277 32.9	12 50.6	
4	238 50.1	22 43.9	343 45.5	196 4.6	13 2.5	307 34.4	12 51.8	
6	268 49.9	22 43.4	13 50.4	226 6.8	13 .8	337 35.9	12 52.9	
8	298 49.7	22 42.9	43 55.4	256 8.9	12 59.1	7 37.4	12 54.1	
10	328 49.4	22 42.4	74 .3	286 11.1	12 57.4	37 38.9	12 55.3	
12	358 49.2	22 41.9	104 5.2	316 13.3	12 55.7	67 40.4	12 56.4	
14	28 49.0	22 41.4	134 10.2	346 15.4	12 54.0	97 41.8	12 57.6	
16	58 48.8	22 40.9	164 15.1	16 17.6	12 52.3	127 43.3	12 58.8	
18	88 48.6	22 40.4	194 20.0	46 19.8	12 50.6	157 44.8	12 59.9	
20	118 48.4	22 39.9	224 24.9	76 22.1	12 48.9	187 46.3	13 1.1	
22	148 48.2	22 39.4	254 29.9	106 24.3	12 47.2	217 47.8	13 2.3	
Δ	-1	-2		11	-8	7	6	

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{\jup}	δ_{\jup}	S_{\sat}	δ_{\sat}
h	°	'	°	'	°	'	°	'
0	292 1.2	127 - 2	23.5	165	33 35.6	-21 32.6	137 58.9	15 5.3
2	321 4.6	127 - 1	50.6	165	63 41.0	-21 32.6	168 3.3	15 5.1
4	350 7.9	127 - 1	17.6	165	93 46.4	-21 32.5	198 7.7	15 4.9
6	19 11.3	127 - 0	44.5	166	123 51.9	-21 32.5	228 12.1	15 4.7
8	48 14.6	126 - 0	11.4	166	153 57.3	-21 32.4	258 16.5	15 4.5
10	77 17.9	126 0	21.8	166	184 2.7	-21 32.4	288 20.9	15 4.4
12	106 21.1	126 0	54.9	166	214 8.1	-21 32.4	318 25.3	15 4.2
14	135 24.3	125 1	28.1	166	244 13.5	-21 32.3	348 29.7	15 4.0
16	164 27.4	125 2	1.2	166	274 18.9	-21 32.3	18 34.1	15 3.8
18	193 30.4	124 2	34.4	166	304 24.3	-21 32.2	48 38.5	15 3.6
20	222 33.3	124 3	7.5	165	334 29.7	-21 32.2	78 42.9	15 3.5
22	251 36.1	123 3	40.6	165	4 35.1	-21 32.1	108 47.3	15 3.3
Δ					27	0	22	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	2 48	21 21	1 31	:::	22 48	.0	10 56	4.1
55	3 30	20 39	0 56	:::	22 53	.4	10 55	3.7
50	3 58	20 11	0 44	:::	22 57	.6	10 55	3.4
45	4 20	19 49	0 37	2 28	23 0	.9	10 54	3.2
40	4 37	19 32	0 32	2 1	23 3	1.0	10 54	3.0
35	4 52	19 17	0 29	1 45	23 5	1.2	10 53	2.8
30	5 4	19 5	0 27	1 35	23 7	1.3	10 53	2.7
20	5 26	18 44	0 24	1 23	23 11	1.6	10 53	2.4
10	5 44	18 25	0 23	1 17	23 14	1.8	10 52	2.2
0	6 1	18 8	0 22	1 15	23 17	2.0	10 52	2.0
10	6 18	17 52	0 23	1 15	23 20	2.2	10 51	1.8
20	6 36	17 34	0 24	1 18	23 23	2.4	10 51	1.5
30	6 56	17 13	0 26	1 25	23 26	2.7	10 50	1.3
35	7 8	17 1	0 28	1 30	23 28	2.9	10 50	1.2
40	7 22	16 48	0 30	1 37	23 31	3.0	10 50	1.0
45	7 38	16 32	0 34	1 46	23 34	3.2	10 49	.8
50	7 58	16 12	0 38	1 58	23 37	3.5	10 49	.6
55	8 24	15 46	0 45	2 16	23 41	3.8	10 48	.3
60	9 0	15 9	0 56	2 43	23 46	4.2	10 47	.0

SUNCE				MESEC				
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r	
h	min	s	s	h min	min	'	'	
00	- 4 37.8	-.4	15.8	$T_{\overline{m}}$	4 41	2.0	58.8	16.0
12	- 4 42.9	$T_{\overline{m}_{\odot}}$	12 h 4.7 min	Starost	20.9 d	Faza	☉	

PLANETE									
Pl.	$T_{\overline{m}}$	π	$360 - \alpha$	Vel.	Pl.	$T_{\overline{m}}$	π	$360 - \alpha$	Vel.
	h min	'	°			h min	'	°	
♀	14 55	.3	212	-4.3	♀	21 42	.0	110	-2.4
♂	7 30	.1	324	.7	♂	14 46	.0	214	.6

UT	SUNCE		PROLEĆ. TAČKA S_{Υ}	VENERA		MARS		
	S_{\odot}	δ_{\odot}		S_{\vee}	δ_{\vee}	S_{\mars}	δ_{\mars}	
h	°	'	°	'	°	'	°	'
0	178 48.0	22 38.9	284 34.8	136 26.5	12 45.5	247 49.3	13 3.4	
2	208 47.8	22 38.4	314 39.7	166 28.8	12 43.8	277 50.8	13 4.6	
4	238 47.6	22 37.8	344 44.7	196 31.0	12 42.1	307 52.3	13 5.7	
6	268 47.4	22 37.3	14 49.6	226 33.3	12 40.4	337 53.8	13 6.9	
8	298 47.2	22 36.8	44 54.5	256 35.5	12 38.7	7 55.3	13 8.1	
10	328 47.0	22 36.3	74 59.4	286 37.8	12 37.0	37 56.7	13 9.2	
12	358 46.8	22 35.7	105 4.4	316 40.1	12 35.3	67 58.2	13 10.4	
14	28 46.6	22 35.2	135 9.3	346 42.4	12 33.7	97 59.7	13 11.5	
16	58 46.4	22 34.7	165 14.2	16 44.7	12 32.0	128 1.2	13 12.7	
18	88 46.2	22 34.1	195 19.2	46 47.0	12 30.3	158 2.7	13 13.8	
20	118 45.9	22 33.6	225 24.1	76 49.3	12 28.6	188 4.2	13 15.0	
22	148 45.7	22 33.0	255 29.0	106 51.7	12 26.9	218 5.7	13 16.1	
Δ	-1	-3		11	-8	7	6	

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{\jup}	δ_{\jup}	S_{\sat}	δ_{\sat}
h	°	'	°	'	°	'	°	'
0	280 38.7	123 4	13.6	165	34 40.5	-21 32.1	138 51.7	15 3.1
2	309 41.3	122 4	46.6	165	64 45.9	-21 32.0	168 56.1	15 2.9
4	338 43.7	121 5	19.5	164	94 51.3	-21 32.0	199 .5	15 2.8
6	7 45.9	120 5	52.3	164	124 56.7	-21 31.9	229 4.9	15 2.6
8	36 48.0	119 6	25.0	163	155 2.1	-21 31.9	259 9.3	15 2.4
10	65 49.9	119 6	57.7	163	185 7.5	-21 31.9	289 13.7	15 2.2
12	94 51.6	118 7	30.2	162	215 12.9	-21 31.8	319 18.0	15 2.0
14	123 53.1	117 8	2.5	161	245 18.3	-21 31.8	349 22.4	15 1.9
16	152 54.4	115 8	34.8	160	275 23.7	-21 31.7	19 26.8	15 1.7
18	181 55.5	114 9	6.8	160	305 29.1	-21 31.7	49 31.2	15 1.5
20	210 56.4	113 9	38.7	159	335 34.5	-21 31.6	79 35.6	15 1.3
22	239 57.0	112 10	10.5	158	5 39.9	-21 31.6	109 40.0	15 1.1
Δ					27	0	22	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	2 49	21 20	1 29	:::	22 48	.0	12 34	4.3
55	3 31	20 38	0 55	:::	23 2	.4	12 24	3.8
50	3 59	20 10	0 43	:::	23 12	.7	12 17	3.5
45	4 21	19 49	0 37	2 27	23 21	1.0	12 11	3.3
40	4 38	19 32	0 32	2 0	23 28	1.2	12 5	3.1
35	4 52	19 17	0 29	1 45	23 34	1.3	12 1	2.9
30	5 5	19 5	0 27	1 35	23 39	1.5	11 57	2.7
20	5 26	18 44	0 24	1 23	23 49	1.7	11 51	2.5
10	5 44	18 25	0 23	1 17	23 57	1.9	11 45	2.3
0	6 1	18 9	0 22	1 15	..	.0	11 39	2.1
10	6 18	17 52	0 23	1 15	..	.0	11 34	1.9
20	6 36	17 34	0 24	1 18	..	.0	11 28	1.6
30	6 56	17 14	0 26	1 25	..	.0	11 22	1.4
35	7 8	17 2	0 28	1 30	..	.0	11 18	1.2
40	7 22	16 48	0 30	1 37	..	.0	11 14	1.1
45	7 38	16 32	0 33	1 46	..	.0	11 9	.9
50	7 57	16 13	0 38	1 58	..	.0	11 3	.7
55	8 23	15 47	0 45	2 16	..	.0	10 56	.4
60	8 59	15 11	0 56	2 43	..	.0	10 47	.0

SUNCE				MESEC				
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r	
h	min	s	s	h min	min	'	'	
00	- 4 47.9	-.4	15.8	$T_{\overline{m}}$	5 28	2.0	59.1	16.1
12	- 4 52.8	$T_{\overline{m}_{\odot}}$	12 h 4.9 min	Starost	21.9 d	Faza	☉	

PLANETE									
Pl.	$T_{\overline{m}}$	π	$360 - \alpha$	Vel.	Pl.	$T_{\overline{m}}$	π	$360 - \alpha$	Vel.
	h min	'	°			h min	'	°	
♀	14 53	.3	212	-4.4	♀	21 37	.0	110	-2.4
♂	7 28	.1	323	.7	♂	14 42	.0	214	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 45.6	22 32.5	285 33.9	136 54.0	12 25.2	248 7.2	13 17.3
2	208 45.4	22 31.9	315 38.9	166 56.4	12 23.5	278 8.7	13 18.4
4	238 45.2	22 31.4	345 43.8	196 58.7	12 21.8	308 10.2	13 19.6
6	268 45.0	22 30.8	15 48.7	227 1.1	12 20.2	338 11.7	13 20.7
8	298 44.8	22 30.3	45 53.7	257 3.5	12 18.5	8 13.1	13 21.9
10	328 44.6	22 29.7	75 58.6	287 5.9	12 16.8	38 14.6	13 23.0
12	358 44.4	22 29.2	106 3.5	317 8.3	12 15.1	68 16.1	13 24.2
14	28 44.2	22 28.6	136 8.4	347 10.7	12 13.4	98 17.6	13 25.3
16	58 44.0	22 28.0	166 13.4	17 13.1	12 11.7	128 19.1	13 26.4
18	88 43.8	22 27.4	196 18.3	47 15.5	12 10.1	158 20.6	13 27.6
20	118 43.6	22 26.9	226 23.2	77 18.0	12 8.4	188 22.1	13 28.7
22	148 43.4	22 26.3	256 28.1	107 20.4	12 6.7	218 23.6	13 29.9
Δ	-1	-3		12	-8	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 51	21 18	1 28	:::	22 49	.1	14 17	4.5
55	3 32	20 38	0 55	:::	23 12	.6	13 56	4.0
50	4 0	20 10	0 43	:::	23 30	1.0	13 41	3.6
45	4 21	19 48	0 37	2 26	23 44	1.2	13 29	3.4
40	4 39	19 31	0 32	1 60	23 56	1.4	13 19	3.2
35	4 53	19 17	0 29	1 45	...	.0	13 10	3.0
30	5 5	19 5	0 27	1 35	...	.0	13 3	2.8
20	5 26	18 44	0 24	1 23	...	.0	12 50	2.6
10	5 45	18 25	0 23	1 17	...	.0	12 39	2.4
0	6 1	18 9	0 22	1 15	0 5	2.1	12 29	2.2
10	6 18	17 52	0 23	1 15	0 13	2.3	12 18	2.0
20	6 36	17 34	0 24	1 18	0 21	2.5	12 7	1.8
30	6 56	17 14	0 26	1 25	0 31	2.8	11 55	1.6
35	7 8	17 2	0 28	1 30	0 37	2.9	11 48	1.4
40	7 21	16 49	0 30	1 37	0 44	3.1	11 40	1.3
45	7 37	16 33	0 33	1 46	0 52	3.3	11 30	1.1
50	7 57	16 13	0 38	1 58	1 1	3.6	11 19	.8
55	8 22	15 48	0 44	2 15	1 13	3.9	11 5	.5
60	8 58	15 12	0 56	2 42	1 28	4.4	10 47	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	268 57.3	111 10	42.0	157	35 45.3	-21 31.5	139 44.4	15 .9
2	297 57.5	109 11	13.3	156	65 50.7	-21 31.5	169 48.8	15 .8
4	326 57.3	108 11	44.4	154	95 56.1	-21 31.5	199 53.2	15 .6
6	355 56.9	106 12	15.3	153	126 1.4	-21 31.4	229 57.6	15 .4
8	24 56.1	105 12	46.0	152	156 6.8	-21 31.4	260 2.0	15 .2
10	53 55.1	103 13	16.3	151	186 12.2	-21 31.3	290 6.4	15 .0
12	82 53.8	102 13	46.5	149	216 17.6	-21 31.3	320 10.7	14 59.9
14	111 52.1	100 14	16.3	148	246 23.0	-21 31.2	350 15.1	14 59.7
16	140 50.2	99 14	45.8	146	276 28.4	-21 31.2	20 19.5	14 59.5
18	169 47.9	97 15	15.0	145	306 33.7	-21 31.2	50 23.9	14 59.3
20	198 45.2	95 15	43.9	143	336 39.1	-21 31.1	80 28.3	14 59.1
22	227 42.3	93 16	12.5	141	6 44.5	-21 31.1	110 32.7	14 59.0
Δ					27	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	- 4 57.6	-.4	15.8	T _m	6 17	2.2	59.3 16.2		
12	- 5 2.3	T _{m☉}	12 h 5.0 min	Starost	22.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♁	14 51	.3	211	-4.4	♃	21 33	.0	110	-2.4
♂	7 27	.1	323	.7	♄	14 39	.0	214	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 43.2	22 25.7	286 33.1	137 22.9	12 5.0	248 25.1	13 31.0
2	208 43.0	22 25.1	316 38.0	167 25.4	12 3.4	278 26.6	13 32.1
4	238 42.8	22 24.6	346 42.9	197 27.8	12 1.7	308 28.1	13 33.3
6	268 42.6	22 24.0	16 47.9	227 30.3	12 .0	338 29.5	13 34.4
8	298 42.4	22 23.4	46 52.8	257 32.8	11 58.3	8 31.0	13 35.5
10	328 42.3	22 22.8	76 57.7	287 35.3	11 56.7	38 32.5	13 36.7
12	358 42.1	22 22.2	107 2.6	317 37.9	11 55.0	68 34.0	13 37.8
14	28 41.9	22 21.6	137 7.6	347 40.4	11 53.3	98 35.5	13 38.9
16	58 41.7	22 21.0	167 12.5	17 42.9	11 51.7	128 37.0	13 40.1
18	88 41.5	22 20.4	197 17.4	47 45.5	11 50.0	158 38.5	13 41.2
20	118 41.3	22 19.8	227 22.4	77 48.0	11 48.3	188 40.0	13 42.3
22	148 41.1	22 19.2	257 27.3	107 50.6	11 46.7	218 41.5	13 43.4
Δ	-1	-3		13	-8	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 52	21 17	1 26	:::	22 52	.3	16 5	4.7
55	3 33	20 37	0 55	:::	23 27	1.0	15 32	4.0
50	4 1	20 9	0 43	:::	23 53	1.3	15 8	3.6
45	4 22	19 48	0 37	2 25	...	.0	14 50	3.4
40	4 39	19 31	0 32	1 60	...	.0	14 35	3.2
35	4 53	19 17	0 29	1 45	0 6	1.5	14 22	3.1
30	5 6	19 4	0 27	1 35	0 15	1.7	14 11	2.9
20	5 27	18 44	0 24	1 23	0 30	1.9	13 53	2.7
10	5 45	18 26	0 23	1 17	0 43	2.1	13 37	2.5
0	6 2	18 9	0 22	1 14	0 56	2.3	13 22	2.4
10	6 18	17 52	0 23	1 15	1 9	2.5	13 7	2.2
20	6 36	17 35	0 24	1 18	1 23	2.7	12 51	2.0
30	6 56	17 15	0 26	1 25	1 39	2.9	12 33	1.8
35	7 8	17 3	0 28	1 30	1 48	3.0	12 22	1.7
40	7 21	16 50	0 30	1 37	1 59	3.2	12 10	1.5
45	7 37	16 34	0 33	1 46	2 11	3.4	11 56	1.3
50	7 56	16 14	0 38	1 58	2 27	3.7	11 39	1.1
55	8 22	15 49	0 44	2 15	2 47	4.0	11 17	.7
60	8 57	15 14	0 55	2 42	3 14	4.7	10 48	.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	256 38.9	92 16	40.7	139	36 49.9	-21 31.0	140 37.1	14 58.8
2	285 35.2	90 17	8.6	137	66 55.3	-21 31.0	170 41.5	14 58.6
4	314 31.2	88 17	36.0	135	97 .6	-21 31.0	200 45.9	14 58.4
6	343 26.7	86 18	3.1	133	127 6.0	-21 30.9	230 50.2	14 58.2
8	12 21.9	84 18	29.8	131	157 11.4	-21 30.9	260 54.6	14 58.0
10	41 16.8	82 18	56.0	129	187 16.8	-21 30.8	290 59.0	14 57.9
12	70 11.2	80 19	21.8	127	217 22.1	-21 30.8	321 3.4	14 57.7
14	99 5.2	78 19	47.2	125	247 27.5	-21 30.7	351 7.8	14 57.5
16	127 58.9	76 20	12.1	122	277 32.9	-21 30.7	21 12.2	14 57.3
18	156 52.2	74 20	36.5	120	307 38.2	-21 30.7	51 16.6	14 57.1
20	185 45.0	72 21	.4	117	337 43.6	-21 30.6	81 21.0	14 56.9
22	214 37.5	70 21	23.9	115	7 49.0	-21 30.6	111 25.3	14 56.8
Δ					27	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	- 5 7.0	-.4	15.8	T _m	7 9	2.3	59.4 16.2		
12	- 5 11.5	T _{m☉}	12 h 5.2 min	Starost	23.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♁	14 49	.3	211	-4.4	♃	21 29	.0	110	-2.4
♂	7 26	.1	322	.7	♄	14 35	.0	214	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 41.0	22 18.6	287 32.2	137 53.2	11 45.0	248 43.0	13 44.6	
2	208 40.8	22 17.9	317 37.1	167 55.8	11 43.3	278 44.5	13 45.7	
4	238 40.6	22 17.3	347 42.1	197 58.4	11 41.7	308 46.0	13 46.8	
6	268 40.4	22 16.7	17 47.0	228 1.0	11 40.0	338 47.4	13 47.9	
8	298 40.2	22 16.1	47 51.9	258 3.6	11 38.4	8 48.9	13 49.1	
10	328 40.1	22 15.5	77 56.9	288 6.2	11 36.7	38 50.4	13 50.2	
12	358 39.9	22 14.8	108 1.8	318 8.9	11 35.0	68 51.9	13 51.3	
14	28 39.7	22 14.2	138 6.7	348 11.5	11 33.4	98 53.4	13 52.4	
16	58 39.5	22 13.6	168 11.6	18 14.2	11 31.7	128 54.9	13 53.5	
18	88 39.3	22 12.9	198 16.6	48 16.8	11 30.1	158 56.4	13 54.7	
20	118 39.2	22 12.3	228 21.5	78 19.5	11 28.4	188 57.9	13 55.8	
22	148 39.0	22 11.7	258 26.4	108 22.2	11 26.8	218 59.4	13 56.9	
Δ	-1	-3		13	-8	7	6	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 54	21 16	1 25	:::	22 59	.9	17 58	4.5
55	3 34	20 36	0 54	:::	23 51	1.6	17 8	3.7
50	4 2	20 8	0 43	:::	...	.0	16 35	3.4
45	4 23	19 47	0 36	2 25	0 13	1.5	16 11	3.2
40	4 40	19 31	0 32	1 59	0 29	1.7	15 52	3.1
35	4 54	19 16	0 29	1 44	0 43	1.9	15 36	3.0
30	5 6	19 4	0 27	1 35	0 55	2.0	15 22	2.9
20	5 27	18 43	0 24	1 23	1 16	2.2	14 58	2.8
10	5 45	18 26	0 23	1 17	1 34	2.3	14 37	2.6
0	6 2	18 9	0 22	1 14	1 51	2.5	14 18	2.5
10	6 18	17 53	0 23	1 15	2 8	2.6	13 60	2.4
20	6 36	17 35	0 24	1 18	2 27	2.8	13 39	2.3
30	6 56	17 15	0 26	1 25	2 48	2.9	13 16	2.1
35	7 7	17 3	0 28	1 30	3 1	3.0	13 2	2.0
40	7 21	16 50	0 30	1 37	3 15	3.2	12 47	1.9
45	7 36	16 34	0 33	1 46	3 33	3.3	12 28	1.8
50	7 56	16 15	0 38	1 58	3 55	3.6	12 5	1.6
55	8 21	15 50	0 44	2 15	4 24	3.9	11 35	1.2
60	8 56	15 15	0 55	2 41	5 6	4.7	10 51	.4

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	243 29.6	68	21 46.8	112	37 54.3	-21 30.5	141 29.7	14 56.6
2	272 21.3	67	22 9.1	109	67 59.7	-21 30.5	171 34.1	14 56.4
4	301 12.6	65	22 31.0	106	98 5.1	-21 30.5	201 38.5	14 56.2
6	330 3.5	63	22 52.2	103	128 10.4	-21 30.4	231 42.9	14 56.0
8	358 54.1	61	23 12.9	101	158 15.8	-21 30.4	261 47.3	14 55.8
10	27 44.2	59	23 33.0	98	188 21.1	-21 30.3	291 51.6	14 55.7
12	56 34.0	57	23 52.5	94	218 26.5	-21 30.3	321 56.0	14 55.5
14	85 23.4	55	24 11.4	91	248 31.9	-21 30.3	352 .4	14 55.3
16	114 12.5	54	24 29.7	88	278 37.2	-21 30.2	22 4.8	14 55.1
18	143 1.2	52	24 47.3	85	308 42.6	-21 30.2	52 9.2	14 54.9
20	171 49.6	50	25 4.3	82	338 47.9	-21 30.1	82 13.6	14 54.7
22	200 37.6	49	25 20.6	78	8 53.3	-21 30.1	112 17.9	14 54.5
Δ					27	0	22	-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 5 16.0	-.4	15.8	T _m	8 5	2.5	59.5	16.2
12	- 5 20.3	T _{m☉}	12 h 5.3 min	Starost	24.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 47	.3	210	-4.4	♃	21 25	.0	110	-2.3
♂	7 25	.1	321	.7	♄	14 32	.0	214	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 38.8	22 11.0	288 31.4	138 24.9	11 25.1	249 .9	13 58.0	
2	208 38.6	22 10.4	318 36.3	168 27.6	11 23.5	279 2.4	13 59.1	
4	238 38.5	22 9.7	348 41.2	198 30.3	11 21.8	309 3.9	14 .2	
6	268 38.3	22 9.1	18 46.1	228 33.1	11 20.2	339 5.4	14 1.3	
8	298 38.1	22 8.4	48 51.1	258 35.8	11 18.5	9 6.9	14 2.4	
10	328 37.9	22 7.7	78 56.0	288 38.6	11 16.9	39 8.3	14 3.6	
12	358 37.8	22 7.1	109 .9	318 41.3	11 15.3	69 9.8	14 4.7	
14	28 37.6	22 6.4	139 5.9	348 44.1	11 13.6	99 11.3	14 5.8	
16	58 37.4	22 5.8	169 10.8	18 46.9	11 12.0	129 12.8	14 6.9	
18	88 37.3	22 5.1	199 15.7	48 49.7	11 10.4	159 14.3	14 8.0	
20	118 37.1	22 4.4	229 20.6	78 52.5	11 8.7	189 15.8	14 9.1	
22	148 36.9	22 3.8	259 25.6	108 55.3	11 7.1	219 17.3	14 10.2	
Δ	-1	-3		14	-8	7	6	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 55	21 14	1 23	:::	23 20	2.3	19 46	3.3
55	3 35	20 35	0 54	:::	...	.0	18 38	3.0
50	4 3	20 8	0 43	:::	0 25	1.9	17 58	2.9
45	4 24	19 47	0 36	2 24	0 50	2.0	17 29	2.8
40	4 40	19 30	0 32	1 59	1 11	2.1	17 6	2.8
35	4 55	19 16	0 29	1 44	1 28	2.2	16 47	2.8
30	5 7	19 4	0 27	1 35	1 42	2.3	16 31	2.7
20	5 27	18 43	0 24	1 23	2 8	2.4	16 4	2.7
10	5 45	18 26	0 23	1 17	2 29	2.5	15 41	2.7
0	6 2	18 9	0 22	1 14	2 50	2.6	15 19	2.6
10	6 18	17 53	0 23	1 15	3 10	2.7	14 57	2.6
20	6 36	17 35	0 24	1 18	3 33	2.7	14 34	2.5
30	6 56	17 16	0 26	1 25	3 58	2.8	14 7	2.5
35	7 7	17 4	0 28	1 30	4 14	2.9	13 51	2.4
40	7 20	16 51	0 30	1 36	4 32	3.0	13 33	2.4
45	7 36	16 35	0 33	1 45	4 53	3.1	13 11	2.3
50	7 55	16 16	0 38	1 57	5 21	3.2	12 43	2.2
55	8 20	15 51	0 44	2 15	5 58	3.4	12 4	2.0
60	8 55	15 17	0 55	2 41	6 60	4.1	11 2	1.3

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	229 25.3	47	25 36.2	75	38 58.6	-21 30.1	142 22.3	14 54.4
2	258 12.7	46	25 51.2	71	69 4.0	-21 30.0	172 26.7	14 54.2
4	286 59.8	44	26 5.5	68	99 9.3	-21 30.0	202 31.1	14 54.0
6	315 46.6	43	26 19.0	64	129 14.7	-21 29.9	232 35.5	14 53.8
8	344 33.2	41	26 31.9	61	159 20.0	-21 29.9	262 39.8	14 53.6
10	13 19.5	40	26 44.0	57	189 25.4	-21 29.9	292 44.2	14 53.4
12	42 5.5	39	26 55.4	53	219 30.7	-21 29.8	322 48.6	14 53.2
14	70 51.4	38	27 6.0	50	249 36.0	-21 29.8	352 53.0	14 53.1
16	99 37.0	37	27 16.0	46	279 41.4	-21 29.8	22 57.4	14 52.9
18	128 22.5	36	27 25.1	42	309 46.7	-21 29.7	53 1.7	14 52.7
20	157 7.7	36	27 33.5	38	339 52.1	-21 29.7	83 6.1	14 52.5
22	185 52.9	35	27 41.1	34	9 57.4	-21 29.6	113 10.5	14 52.3
Δ					27	0	22	-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 5 24.6	-.3	15.8	T _m	9 4	2.6	59.4	16.2
12	- 5 28.7	T _{m☉}	12 h 5.5 min	Starost	25.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 45	.3	210	-4.4	♃	21 20	.0	110	-2.3
♂	7 24	.1	320	.6	♄	14 28	.0	214	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	36.8	22	3.1	289	30.5	138	58.1	11	5.5	249	18.8	14	11.3
2	208	36.6	22	2.4	319	35.4	169	1.0	11	3.8	279	20.3	14	12.4
4	238	36.4	22	1.7	349	40.4	199	3.8	11	2.2	309	21.8	14	13.5
6	268	36.3	22	1.0		19 45.3	229	6.7	11	.6	339	23.3	14	14.6
8	298	36.1	22	.3		49 50.2	259	9.5	10	58.9	9	24.8	14	15.7
10	328	35.9	21	59.7		79 55.1	289	12.4	10	57.3	39	26.3	14	16.8
12	358	35.8	21	59.0		110 .1	319	15.3	10	55.7	69	27.8	14	17.9
14	28	35.6	21	58.3		140 5.0	349	18.2	10	54.1	99	29.3	14	19.0
16	58	35.5	21	57.6		170 9.9	19	21.1	10	52.5	129	30.8	14	20.1
18	88	35.3	21	56.9		200 14.8	49	24.0	10	50.8	159	32.3	14	21.2
20	118	35.1	21	56.2		230 19.8	79	27.0	10	49.2	189	33.7	14	22.2
22	148	35.0	21	55.5		260 24.7	109	29.9	10	47.6	219	35.2	14	23.3
Δ		-1		-3				14		-8		7		5

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	214	37.9	35	27	48.0	30	40	2.7	-21	29.6	143	14.9	14	52.1		
2	243	22.8	34	27	54.1	27	70	8.1	-21	29.6	173	19.3	14	51.9		
4	272	7.6	34	27	59.4	23	100	13.4	-21	29.5	203	23.6	14	51.8		
6	300	52.4	34	28	4.0	19	130	18.8	-21	29.5	233	28.0	14	51.6		
8	329	37.1	34	28	7.7	15	160	24.1	-21	29.5	263	32.4	14	51.4		
10	358	21.8	34	28	10.7	11	190	29.4	-21	29.4	293	36.8	14	51.2		
12	27	6.5	34	28	12.9	7	220	34.7	-21	29.4	323	41.1	14	51.0		
14	55	51.2	34	28	14.3	3	250	40.1	-21	29.4	353	45.5	14	50.8		
16	84	36.0	34	28	14.9	-1	280	45.4	-21	29.3	23	49.9	14	50.6		
18	113	20.9	35	28	14.8	-5	310	50.7	-21	29.3	53	54.3	14	50.5		
20	142	5.8	35	28	13.8	-8	340	56.1	-21	29.2	83	58.6	14	50.3		
22	170	50.9	36	28	12.1	-12	11	1.4	-21	29.2	114	3.0	14	50.1		
Δ								27		0		22		-1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 57	21 13	1 22	:::	. . .	.0	21 4	1.4
55	3 37	20 34	0 54	:::	0 29	2.5	19 50	2.0
50	4 4	20 7	0 43	3 43	1 10	2.5	19 7	2.2
45	4 25	19 46	0 36	2 23	1 39	2.6	18 37	2.3
40	4 41	19 30	0 32	1 58	2 2	2.6	18 13	2.3
35	4 55	19 16	0 29	1 44	2 21	2.6	17 54	2.4
30	5 7	19 4	0 27	1 34	2 38	2.6	17 37	2.4
20	5 28	18 43	0 24	1 23	3 5	2.6	17 9	2.5
10	5 46	18 26	0 23	1 17	3 29	2.6	16 45	2.5
0	6 2	18 9	0 22	1 14	3 52	2.6	16 22	2.6
10	6 18	17 53	0 23	1 15	4 14	2.6	15 59	2.6
20	6 36	17 36	0 24	1 18	4 39	2.6	15 35	2.7
30	6 55	17 16	0 26	1 25	5 7	2.6	15 6	2.7
35	7 7	17 5	0 28	1 30	5 23	2.6	14 49	2.7
40	7 20	16 52	0 30	1 36	5 43	2.6	14 30	2.8
45	7 35	16 36	0 33	1 45	6 7	2.6	14 6	2.8
50	7 54	16 17	0 37	1 57	6 37	2.5	13 35	2.9
55	8 19	15 53	0 44	2 14	7 21	2.5	12 52	2.9
60	8 53	15 18	0 55	2 40	8 39	2.2	11 34	3.2

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 5 32.7	-.3	15.8	T _m	10 7	2.6	59.2	16.1
12	- 5 36.6			T _{m☉}	12 h 5.6 min		Starost 26.9 d	Faza ●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♀	14 43	.3	209	-4.4	♃	21 16	.0	111	-2.3
♂	7 22	.1	320	.6	♄	14 25	.0	214	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	34.8	21	54.8	290	29.6	139	32.9	10	46.0	249	36.7	14	24.4
2	208	34.7	21	54.1	320	34.6	169	35.8	10	44.4	279	38.2	14	25.5
4	238	34.5	21	53.3	350	39.5	199	38.8	10	42.8	309	39.7	14	26.6
6	268	34.4	21	52.6		20 44.4	229	41.8	10	41.2	339	41.2	14	27.7
8	298	34.2	21	51.9		50 49.3	259	44.8	10	39.6	9	42.7	14	28.8
10	328	34.1	21	51.2		80 54.3	289	47.8	10	37.9	39	44.2	14	29.9
12	358	33.9	21	50.5		110 59.2	319	50.8	10	36.3	69	45.7	14	30.9
14	28	33.8	21	49.7		141 4.1	349	53.8	10	34.7	99	47.2	14	32.0
16	58	33.6	21	49.0		171 9.1	19	56.9	10	33.1	129	48.7	14	33.1
18	88	33.5	21	48.3		201 14.0	49	59.9	10	31.5	159	50.2	14	34.2
20	118	33.3	21	47.6		231 18.9	80	3.0	10	30.0	189	51.7	14	35.3
22	148	33.2	21	46.8		261 23.8	110	6.1	10	28.4	219	53.2	14	36.3
Δ		-1		-4				15		-8		7		5

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	199	36.1	37	28	9.6	-16	41	6.7	-21	29.2	144	7.4	14	49.9		
2	228	21.4	38	28	6.4	-20	71	12.0	-21	29.1	174	11.8	14	49.7		
4	257	7.0	39	28	2.4	-24	101	17.4	-21	29.1	204	16.1	14	49.5		
6	285	52.7	40	27	57.6	-27	131	22.7	-21	29.1	234	20.5	14	49.3		
8	314	38.7	41	27	52.1	-31	161	28.0	-21	29.0	264	24.9	14	49.1		
10	343	24.9	42	27	45.9	-35	191	33.3	-21	29.0	294	29.3	14	48.9		
12	12	11.4	44	27	38.9	-38	221	38.6	-21	29.0	324	33.6	14	48.8		
14	40	58.1	45	27	31.2	-42	251	43.9	-21	28.9	354	38.0	14	48.6		
16	69	45.2	47	27	22.8	-46	281	49.3	-21	28.9	24	42.4	14	48.4		
18	98	32.5	48	27	13.7	-49	311	54.6	-21	28.9	54	46.7	14	48.2		
20	127	20.2	50	27	3.8	-53	341	59.9	-21	28.8	84	51.1	14	48.0		
22	156	8.3	52	26	53.3	-56	12	5.2	-21	28.8	114	55.5	14	47.8		
Δ								27		0		22		-1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 59	21 11	1 21	:::	0 14	3.9	21 38	.5
55	3 38	20 33	0 53	:::	1 28	3.3	20 37	1.2
50	4 5	20 6	0 42	3 34	2 10	3.1	19 59	1.5
45	4 25	19 46	0 36	2 22	2 40	3.0	19 32	1.7
40	4 42	19 29	0 32	1 58	3 4	2.9	19 10	1.9
35	4 56	19 15	0 29	1 44	3 23	2.8	18 51	2.0
30	5 8	19 3	0 27	1 34	3 40	2.8	18 35	2.1
20	5 28	18 43	0 24	1 23	4 8	2.7	18 9	2.2
10	5 46	18 26	0 23	1 17	4 32	2.6	17 45	2.3
0	6 2	18 9	0 22	1 14	4 54	2.5	17 24	2.4
10	6 18	17 53	0 23	1 15	5 17	2.4	17 2	2.5
20	6 35	17 36	0 24	1 18	5 41	2.4	16 38	2.7
30	6 55	17 17	0 26	1 24	6 9	2.2	16 11	2.8
35	7 6	17 5	0 28	1 30	6 26	2.2	15 55	2.9
40	7 19	16 52	0 30	1 36	6 45	2.1	15 36	3.0
45	7 35	16 37	0 33	1 45	7 8	2.0	15 13	3.1
50	7 54	16 18	0 37	1 57	7 38	1.8	14 43	3.3
55	8 18	15 54	0 44	2 14	8 20	1.5	14 2	3.6
60	8 52	15 20	0 54	2 40	9 32	.8	12 51	4.4

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00							

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 33.0	21 46.1	291 28.8	140 9.2	10 26.8	249 54.7	14 37.4	
2	208 32.9	21 45.3	321 33.7	170 12.3	10 25.2	279 56.2	14 38.5	
4	238 32.7	21 44.6	351 38.6	200 15.4	10 23.6	309 57.7	14 39.6	
6	268 32.6	21 43.9	21 43.6	230 18.5	10 22.0	339 59.2	14 40.6	
8	298 32.4	21 43.1	51 48.5	260 21.6	10 20.4	10 .7	14 41.7	
10	328 32.3	21 42.4	81 53.4	290 24.8	10 18.8	40 2.2	14 42.8	
12	358 32.2	21 41.6	111 58.3	320 27.9	10 17.3	70 3.7	14 43.9	
14	28 32.0	21 40.8	142 3.3	350 31.1	10 15.7	100 5.2	14 44.9	
16	58 31.9	21 40.1	172 8.2	20 34.3	10 14.1	130 6.7	14 46.0	
18	88 31.7	21 39.3	202 13.1	50 37.5	10 12.5	160 8.2	14 47.1	
20	118 31.6	21 38.6	232 18.1	80 40.7	10 11.0	190 9.7	14 48.1	
22	148 31.5	21 37.8	262 23.0	110 43.9	10 9.4	220 11.2	14 49.2	
Δ	-1	-4		16	-8	7	5	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 1	21 10	1 19	:	1 48	4.5	21 50	.2
55	3 39	20 32	0 53	:	2 48	3.7	21 6	.7
50	4 6	20 5	0 42	3 27	3 25	3.4	20 36	1.1
45	4 26	19 45	0 36	2 21	3 52	3.2	20 13	1.3
40	4 43	19 29	0 32	1 57	4 13	3.0	19 54	1.5
35	4 56	19 15	0 29	1 43	4 31	2.9	19 39	1.6
30	5 8	19 3	0 27	1 34	4 46	2.8	19 25	1.7
20	5 29	18 43	0 24	1 22	5 12	2.6	19 2	1.9
10	5 46	18 26	0 23	1 17	5 34	2.5	18 41	2.1
0	6 2	18 9	0 22	1 14	5 55	2.3	18 22	2.2
10	6 18	17 53	0 23	1 15	6 15	2.2	18 3	2.4
20	6 35	17 36	0 24	1 18	6 37	2.1	17 42	2.6
30	6 55	17 17	0 26	1 24	7 3	1.9	17 18	2.7
35	7 6	17 6	0 28	1 29	7 18	1.8	17 4	2.9
40	7 19	16 53	0 30	1 36	7 35	1.6	16 47	3.0
45	7 34	16 38	0 33	1 45	7 56	1.5	16 28	3.2
50	7 53	16 19	0 37	1 57	8 22	1.3	16 2	3.4
55	8 17	15 55	0 44	2 14	8 57	.9	15 29	3.8
60	8 51	15 22	0 54	2 39	9 50	.3	14 36	4.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	184 56.7	54 26 42.2	-59	42 10.5	-21 28.8	144 59.9	14 47.6	
2	213 45.5	56 26 30.3	-62	72 15.8	-21 28.7	175 4.2	14 47.4	
4	242 34.6	58 26 17.8	-66	102 21.1	-21 28.7	205 8.6	14 47.3	
6	271 24.2	60 26 4.7	-69	132 26.4	-21 28.7	235 13.0	14 47.1	
8	300 14.2	62 25 50.9	-72	162 31.7	-21 28.6	265 17.3	14 46.9	
10	329 4.6	64 25 36.5	-75	192 37.0	-21 28.6	295 21.7	14 46.7	
12	357 55.4	66 25 21.5	-78	222 42.3	-21 28.6	325 26.1	14 46.5	
14	26 46.7	69 25 5.9	-81	252 47.6	-21 28.5	355 30.5	14 46.3	
16	55 38.4	71 24 49.8	-84	282 52.9	-21 28.5	25 34.8	14 46.1	
18	84 30.6	73 24 33.1	-86	312 58.2	-21 28.5	55 39.2	14 45.9	
20	113 23.2	75 24 15.8	-89	343 3.5	-21 28.4	85 43.6	14 45.7	
22	142 16.3	78 23 58.0	-92	13 8.8	-21 28.4	115 47.9	14 45.5	
Δ				27	0	22	-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 5 47.8	-.3	15.8	T _m	12 9	2.3	58.4 15.9		
12	- 5 51.2	T _{m☉}	12 h 5.9 min	Starost	28.9 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 38	.3	209	-4.4	♃	21 8	.0	111	-2.3
♂	7 20	.1	318	.6	♄	14 18	.0	214	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 31.3	21 37.0	292 27.9	140 47.1	10 7.8	250 12.7	14 50.3	
2	208 31.2	21 36.3	322 32.8	170 50.4	10 6.3	280 14.2	14 51.3	
4	238 31.0	21 35.5	352 37.8	200 53.6	10 4.7	310 15.7	14 52.4	
6	268 30.9	21 34.7	22 42.7	230 56.9	10 3.1	340 17.2	14 53.4	
8	298 30.8	21 33.9	52 47.6	261 .1	10 1.6	10 18.7	14 54.5	
10	328 30.6	21 33.1	82 52.6	291 3.4	10 .0	40 20.2	14 55.6	
12	358 30.5	21 32.4	112 57.5	321 6.7	9 58.5	70 21.7	14 56.6	
14	28 30.4	21 31.6	143 2.4	351 10.0	9 56.9	100 23.2	14 57.7	
16	58 30.3	21 30.8	173 7.3	21 13.3	9 55.3	130 24.7	14 58.7	
18	88 30.1	21 30.0	203 12.3	51 16.7	9 53.8	160 26.2	14 59.8	
20	118 30.0	21 29.2	233 17.2	81 20.0	9 52.3	190 27.7	15 .8	
22	148 29.9	21 28.4	263 22.1	111 23.4	9 50.7	220 29.1	15 1.9	
Δ	-1	-4		17	-8	7	5	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 3	21 8	1 18	:	3 35	4.3	21 54	.1
55	3 41	20 30	0 53	:	4 17	3.7	21 24	.5
50	4 7	20 4	0 42	3 22	4 46	3.4	21 2	.8
45	4 27	19 44	0 36	2 20	5 8	3.1	20 44	1.0
40	4 43	19 28	0 32	1 57	5 25	3.0	20 30	1.2
35	4 57	19 15	0 29	1 43	5 40	2.8	20 17	1.3
30	5 9	19 3	0 27	1 34	5 53	2.7	20 6	1.5
20	5 29	18 43	0 24	1 22	6 15	2.5	19 48	1.7
10	5 46	18 26	0 23	1 16	6 33	2.3	19 31	1.9
0	6 2	18 10	0 22	1 14	6 51	2.1	19 16	2.0
10	6 18	17 54	0 23	1 14	7 8	2.0	19 0	2.2
20	6 35	17 37	0 24	1 18	7 27	1.8	18 44	2.4
30	6 54	17 18	0 26	1 24	7 48	1.6	18 24	2.6
35	7 6	17 6	0 28	1 29	8 0	1.5	18 13	2.7
40	7 18	16 54	0 30	1 36	8 15	1.3	17 60	2.9
45	7 34	16 39	0 33	1 45	8 32	1.1	17 44	3.1
50	7 52	16 20	0 37	1 57	8 52	.9	17 25	3.3
55	8 16	15 56	0 43	2 13	9 19	.6	16 59	3.7
60	8 49	15 23	0 54	2 39	9 57	.1	16 23	4.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	171 9.8	80 23 39.7	-94	43 14.1	-21 28.4	145 52.3	14 45.4	
2	200 3.9	83 23 20.9	-97	73 19.4	-21 28.3	175 56.7	14 45.2	
4	228 58.4	85 23 1.5	-99	103 24.7	-21 28.3	206 1.0	14 45.0	
6	257 53.3	87 22 41.7	-101	133 30.0	-21 28.3	236 5.4	14 44.8	
8	286 48.8	90 22 21.5	-104	163 35.3	-21 28.2	266 9.8	14 44.6	
10	315 44.7	92 22 .8	-106	193 40.6	-21 28.2	296 14.1	14 44.4	
12	344 41.1	94 21 39.6	-108	223 45.9	-21 28.2	326 18.5	14 44.2	
14	13 38.0	97 21 18.0	-110	253 51.2	-21 28.2	356 22.9	14 44.0	
16	42 35.3	99 20 56.0	-112	283 56.4	-21 28.1	26 27.2	14 43.8	
18	71 33.2	101 20 33.7	-114	314 1.7	-21 28.1	56 31.6	14 43.6	
20	100 31.5	104 20 10.9	-116	344 7.0	-21 28.1	86 36.0	14 43.4	
22	129 30.2	106 19 47.7	-117	14 12.3	-21 28.0	116 40.3	14 43.3	
Δ				26	0	22	-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 5 54.5	-.3	15.8	T _m	13 3	2.1	57.8 15.7		
12	- 5 57.7	T _{m☉}	12 h 6.0 min	Starost	.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 35	.3	208	-4.4	♃	21 3	.0	111	-2.3
♂	7 19	.1	318	.6	♄	14 14	.0	213	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 29.7	21 27.6	293 27.0	141 26.7	9 49.2	250 30.7	15 2.9	
2	208 29.6	21 26.8	323 32.0	171 30.1	9 47.6	280 32.2	15 4.0	
4	238 29.5	21 26.0	353 36.9	201 33.5	9 46.1	310 33.7	15 5.0	
6	268 29.4	21 25.2	23 41.8	231 36.9	9 44.6	340 35.2	15 6.1	
8	298 29.2	21 24.4	53 46.8	261 40.3	9 43.0	10 36.7	15 7.1	
10	328 29.1	21 23.6	83 51.7	291 43.7	9 41.5	40 38.2	15 8.2	
12	358 29.0	21 22.7	113 56.6	321 47.2	9 40.0	70 39.7	15 9.2	
14	28 28.9	21 21.9	144 1.5	351 50.6	9 38.4	100 41.2	15 10.3	
16	58 28.8	21 21.1	174 6.5	21 54.1	9 36.9	130 42.7	15 11.3	
18	88 28.7	21 20.3	204 11.4	51 57.6	9 35.4	160 44.2	15 12.4	
20	118 28.5	21 19.5	234 16.3	82 1.1	9 33.9	190 45.7	15 13.4	
22	148 28.4	21 18.6	264 21.3	112 4.6	9 32.4	220 47.2	15 14.4	
Δ	-1	-4		17	-8	8	5	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 5	21 6	1 17	:::	5 18	4.0	21 56	.0
55	3 42	20 29	0 52	:::	5 47	3.5	21 36	.4
50	4 8	20 3	0 42	3 18	6 7	3.2	21 20	.6
45	4 28	19 44	0 36	2 19	6 23	3.0	21 8	.8
40	4 44	19 28	0 32	1 57	6 36	2.8	20 58	1.0
35	4 58	19 14	0 29	1 43	6 48	2.7	20 49	1.1
30	5 9	19 2	0 27	1 34	6 57	2.5	20 41	1.3
20	5 29	18 43	0 24	1 22	7 14	2.3	20 28	1.5
10	5 47	18 26	0 23	1 16	7 28	2.1	20 16	1.7
0	6 2	18 10	0 22	1 14	7 42	1.9	20 5	1.9
10	6 18	17 54	0 22	1 14	7 55	1.8	19 53	2.0
20	6 35	17 37	0 24	1 18	8 10	1.6	19 41	2.2
30	6 54	17 18	0 26	1 24	8 26	1.3	19 27	2.5
35	7 5	17 7	0 28	1 29	8 35	1.2	19 19	2.6
40	7 18	16 54	0 30	1 36	8 46	1.1	19 9	2.8
45	7 33	16 40	0 33	1 45	8 59	.9	18 58	2.9
50	7 51	16 21	0 37	1 56	9 14	.7	18 44	3.2
55	8 15	15 58	0 43	2 13	9 33	.4	18 27	3.5
60	8 47	15 25	0 53	2 38	9 58	.0	18 4	3.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	158 29.4	108	19 24.3	-119	44 17.6	-21 28.0	146 44.7	14 43.1
2	187 29.1	111	19 .4	-121	74 22.9	-21 28.0	176 49.1	14 42.9
4	216 29.2	113	18 36.2	-122	104 28.1	-21 27.9	206 53.4	14 42.7
6	245 29.7	115	18 11.8	-124	134 33.4	-21 27.9	236 57.8	14 42.5
8	274 30.7	117	17 47.0	-125	164 38.7	-21 27.9	267 2.2	14 42.3
10	303 32.2	119	17 21.9	-127	194 44.0	-21 27.9	297 6.5	14 42.1
12	332 34.0	121	16 56.5	-128	224 49.2	-21 27.8	327 10.9	14 41.9
14	1 36.3	123	16 30.9	-129	254 54.5	-21 27.8	357 15.2	14 41.7
16	30 39.0	125	16 5.0	-131	284 59.8	-21 27.8	27 19.6	14 41.5
18	59 42.1	127	15 38.9	-132	315 5.0	-21 27.7	57 24.0	14 41.3
20	88 45.6	129	15 12.6	-133	345 10.3	-21 27.7	87 28.3	14 41.1
22	117 49.4	131	14 46.0	-134	15 15.6	-21 27.7	117 32.7	14 41.0
Δ					26	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 6 .8	-.2	15.8	T _m	13 53	1.9	57.1	15.6	
12	- 6 3.7	T _m ☉	12 h 6.1 min	Starost	1.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	'	°	h min	'	°
♂	14 33	.3	208	-4.4	♃	20 59	.0	111	-2.3
♂	7 18	.1	317	.6	♄	14 11	.0	213	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 28.3	21 17.8	294 26.2	142 8.1	9 30.8	250 48.7	15 15.5	
2	208 28.2	21 17.0	324 31.1	172 11.6	9 29.3	280 50.2	15 16.5	
4	238 28.1	21 16.1	354 36.0	202 15.1	9 27.8	310 51.7	15 17.5	
6	268 28.0	21 15.3	24 41.0	232 18.7	9 26.3	340 53.2	15 18.6	
8	298 27.9	21 14.5	54 45.9	262 22.2	9 24.8	10 54.7	15 19.6	
10	328 27.7	21 13.6	84 50.8	292 25.8	9 23.3	40 56.2	15 20.6	
12	358 27.6	21 12.8	114 55.8	322 29.4	9 21.8	70 57.7	15 21.7	
14	28 27.5	21 11.9	145 .7	352 33.0	9 20.3	100 59.2	15 22.7	
16	58 27.4	21 11.1	175 5.6	22 36.6	9 18.8	131 .7	15 23.7	
18	88 27.3	21 10.2	205 10.5	52 40.2	9 17.3	161 2.2	15 24.8	
20	118 27.2	21 9.4	235 15.5	82 43.9	9 15.8	191 3.7	15 25.8	
22	148 27.1	21 8.5	265 20.4	112 47.5	9 14.4	221 5.2	15 26.8	
Δ	-1	-4		18	-7	8	5	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 7	21 4	1 15	:::	6 54	3.7	21 56	.0
55	3 43	20 28	0 52	:::	7 12	3.4	21 44	.3
50	4 9	20 2	0 42	3 14	7 25	3.1	21 35	.5
45	4 29	19 43	0 36	2 19	7 35	2.9	21 28	.7
40	4 45	19 27	0 32	1 56	7 44	2.7	21 22	.9
35	4 58	19 14	0 29	1 42	7 52	2.5	21 17	1.0
30	5 10	19 2	0 27	1 33	7 58	2.4	21 12	1.2
20	5 30	18 42	0 24	1 22	8 9	2.2	21 4	1.4
10	5 47	18 25	0 23	1 16	8 19	2.0	20 56	1.6
0	6 3	18 10	0 22	1 14	8 28	1.8	20 49	1.7
10	6 18	17 54	0 22	1 14	8 38	1.6	20 42	1.9
20	6 35	17 38	0 24	1 17	8 47	1.4	20 35	2.1
30	6 54	17 19	0 26	1 24	8 58	1.2	20 26	2.3
35	7 5	17 8	0 28	1 29	9 5	1.1	20 21	2.5
40	7 17	16 55	0 30	1 36	9 12	.9	20 15	2.6
45	7 32	16 40	0 33	1 44	9 20	.8	20 9	2.8
50	7 50	16 22	0 37	1 56	9 30	.6	20 0	3.0
55	8 14	15 59	0 43	2 13	9 42	.3	19 50	3.3
60	8 46	15 27	0 53	2 37	9 59	.0	19 37	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	146 53.7	133	14 19.2	-135	45 20.8	-21 27.7	147 37.1	14 40.8
2	175 58.3	135	13 52.2	-136	75 26.1	-21 27.6	177 41.4	14 40.6
4	205 3.3	137	13 25.0	-137	105 31.4	-21 27.6	207 45.8	14 40.4
6	234 8.6	138	12 57.7	-138	135 36.6	-21 27.6	237 50.1	14 40.2
8	263 14.3	140	12 30.2	-138	165 41.9	-21 27.5	267 54.5	14 40.0
10	292 20.3	142	12 2.5	-139	195 47.2	-21 27.5	297 58.9	14 39.8
12	321 26.7	143	11 34.7	-140	225 52.4	-21 27.5	328 3.2	14 39.6
14	350 33.3	145	11 6.7	-140	255 57.7	-21 27.5	358 7.6	14 39.4
16	19 40.3	146	10 38.6	-141	286 2.9	-21 27.4	28 12.0	14 39.2
18	48 47.6	148	10 10.4	-142	316 8.2	-21 27.4	58 16.3	14 39.0
20	77 55.2	149	9 42.1	-142	346 13.4	-21 27.4	88 20.7	14 38.8
22	107 3.0	151	9 13.7	-143	16 18.7	-21 27.4	118 25.0	14 38.6
Δ					26	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 6 6.6	-.2	15.8	T _m	14 39	1.8	56.4	15.4	
12	- 6 9.2	T _m ☉	12 h 6.2 min	Starost	2.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	'	°	h min	'	°
♂	14 30	.4	208	-4.4	♃	20 55	.0	111	-2.3
♂	7 16	.1	316	.6	♄	14 7	.0	213	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	27.0	21	7.6	295	25.3	142	51.2	9	12.9	251	6.7	15	27.8
2	208	26.9	21	6.8	325	30.3	172	54.9	9	11.4	281	8.2	15	28.9
4	238	26.8	21	5.9	355	35.2	202	58.5	9	9.9	311	9.7	15	29.9
6	268	26.7	21	5.1	25	40.1	233	2.2	9	8.4	341	11.2	15	30.9
8	298	26.6	21	4.2	55	45.0	263	6.0	9	7.0	11	12.7	15	31.9
10	328	26.5	21	3.3	85	50.0	293	9.7	9	5.5	41	14.2	15	33.0
12	358	26.4	21	2.4	115	54.9	323	13.4	9	4.0	71	15.7	15	34.0
14	28	26.3	21	1.6	145	59.8	353	17.2	9	2.6	101	17.2	15	35.0
16	58	26.2	21	.7	176	4.8	23	20.9	9	1.1	131	18.7	15	36.0
18	88	26.1	20	59.8	206	9.7	53	24.7	8	59.6	161	20.2	15	37.0
20	118	26.0	20	58.9	236	14.6	83	28.5	8	58.2	191	21.7	15	38.0
22	148	25.9	20	58.0	266	19.5	113	32.3	8	56.7	221	23.2	15	39.1
Δ	0		-4				19		-7		8			5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 9	21 2	1 14	:::	8 23	3.5	21 55	.0
55	3 45	20 27	0 51	:::	8 32	3.2	21 51	.3
50	4 10	20 1	0 41	3 10	8 39	2.9	21 48	.5
45	4 30	19 42	0 36	2 18	8 44	2.7	21 45	.7
40	4 46	19 26	0 32	1 56	8 48	2.6	21 43	.8
35	4 59	19 13	0 29	1 42	8 52	2.4	21 41	1.0
30	5 11	19 2	0 27	1 33	8 56	2.3	21 39	1.1
20	5 30	18 42	0 24	1 22	9 1	2.1	21 36	1.3
10	5 47	18 25	0 23	1 16	9 7	1.9	21 34	1.5
0	6 3	18 10	0 22	1 14	9 11	1.7	21 31	1.7
10	6 18	17 54	0 22	1 14	9 16	1.5	21 28	1.9
20	6 35	17 38	0 24	1 17	9 21	1.3	21 26	2.0
30	6 53	17 19	0 26	1 24	9 27	1.1	21 22	2.3
35	7 4	17 8	0 28	1 29	9 30	1.0	21 20	2.4
40	7 17	16 56	0 30	1 36	9 34	.8	21 18	2.5
45	7 31	16 41	0 33	1 44	9 38	.7	21 16	2.7
50	7 49	16 24	0 37	1 56	9 43	.5	21 13	2.9
55	8 12	16 1	0 43	2 12	9 50	.3	21 9	3.2
60	8 44	15 29	0 53	2 37	9 58	.0	21 4	3.5

UT	MESEC				JUPITER			SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	136	11.1	152	8 45.2	-143	46	23.9	-21	27.3	148	29.4	14	38.4
2	165	19.5	153	8 16.6	-143	76	29.2	-21	27.3	178	33.7	14	38.3
4	194	28.1	154	7 47.9	-144	106	34.4	-21	27.3	208	38.1	14	38.1
6	223	36.9	155	7 19.2	-144	136	39.7	-21	27.3	238	42.5	14	37.9
8	252	46.0	157	6 50.4	-144	166	44.9	-21	27.2	268	46.8	14	37.7
10	281	55.3	158	6 21.6	-144	196	50.2	-21	27.2	298	51.2	14	37.5
12	311	4.8	159	5 52.7	-145	226	55.4	-21	27.2	328	55.5	14	37.3
14	340	14.6	160	5 23.7	-145	257	.7	-21	27.2	358	59.9	14	37.1
16	9	24.5	160	4 54.8	-145	287	5.9	-21	27.1	29	4.3	14	36.9
18	38	34.6	161	4 25.8	-145	317	11.2	-21	27.1	59	8.6	14	36.7
20	67	44.8	162	3 56.8	-145	347	16.4	-21	27.1	89	13.0	14	36.5
22	96	55.3	163	3 27.8	-145	17	21.6	-21	27.1	119	17.3	14	36.3
Δ						26		0		22			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	- 6 11.8	-.2	15.8	T _m	15 21	1.7	55.8	15.2
12	- 6 14.2	T _{m☉}	12 h 6.2 min	Starost	3.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 27	.4	207	-4.4	♄	20 51	.0	111	-2.3
♂	7 15	.1	316	.6	♄	14 4	.0	213	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	25.8	20	57.1	296	24.5	143	36.1	8	55.3	251	24.7	15	40.1
2	208	25.7	20	56.2	326	29.4	173	39.9	8	53.8	281	26.3	15	41.1
4	238	25.6	20	55.4	356	34.3	203	43.8	8	52.4	311	27.8	15	42.1
6	268	25.6	20	54.5	26	39.3	233	47.6	8	51.0	341	29.3	15	43.1
8	298	25.5	20	53.6	56	44.2	263	51.5	8	49.5	11	30.8	15	44.1
10	328	25.4	20	52.7	86	49.1	293	55.4	8	48.1	41	32.3	15	45.1
12	358	25.3	20	51.8	116	54.0	323	59.3	8	46.7	71	33.8	15	46.1
14	28	25.2	20	50.8	146	59.0	354	3.2	8	45.2	101	35.3	15	47.1
16	58	25.1	20	49.9	177	3.9	24	7.1	8	43.8	131	36.8	15	48.1
18	88	25.0	20	49.0	207	8.8	54	11.0	8	42.4	161	38.3	15	49.1
20	118	25.0	20	48.1	237	13.7	84	15.0	8	41.0	191	39.8	15	50.1
22	148	24.9	20	47.2	267	18.7	114	18.9	8	39.5	221	41.3	15	51.1
Δ	0		-5				20		-7		8			5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 11	21 1	1 13	:::	9 48	3.5	21 54	.0
55	3 46	20 25	0 51	:::	9 49	3.1	21 57	.3
50	4 12	20 0	0 41	3 6	9 49	2.9	21 59	.5
45	4 31	19 41	0 35	2 17	9 50	2.7	22 1	.7
40	4 47	19 26	0 31	1 55	9 50	2.5	22 3	.8
35	4 60	19 13	0 29	1 42	9 51	2.4	22 4	1.0
30	5 11	19 1	0 27	1 33	9 51	2.2	22 6	1.1
20	5 30	18 42	0 24	1 22	9 51	2.0	22 8	1.3
10	5 47	18 25	0 23	1 16	9 52	1.8	22 10	1.5
0	6 3	18 10	0 22	1 14	9 52	1.7	22 11	1.7
10	6 18	17 55	0 22	1 14	9 53	1.5	22 13	1.8
20	6 34	17 38	0 24	1 17	9 53	1.3	22 15	2.0
30	6 53	17 20	0 26	1 24	9 54	1.1	22 17	2.2
35	7 4	17 9	0 27	1 29	9 54	1.0	22 18	2.4
40	7 16	16 57	0 30	1 35	9 54	.8	22 19	2.5
45	7 31	16 42	0 33	1 44	9 55	.7	22 21	2.7
50	7 48	16 25	0 37	1 56	9 55	.5	22 23	2.9
55	8 11	16 2	0 43	2 12	9 56	.2	22 25	3.1
60	8 42	15 31	0 52	2 36	9 57	.0	22 28	3.5

UT	MESEC				JUPITER			SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	126	5.8	164	2 58.8	-145	47	26.9	-21	27.0	149	21.7	14	36.1
2	155	16.5	164	2 29.8	-145	77	32.1	-21	27.0	179	26.0	14	35.9
4	184	27.4	165	2 .8	-145	107	37.3	-21	27.0	209	30.4	14	35.7
6	213	38.4	165	1 31.8	-145	137	42.6	-21	27.0	239	34.8	14	35.5
8	242	49.5	166	1 2.9	-145	167	47.8	-21	26.9	269	39.1	14	35.3
10	272	.6	166	0 34.0	-144	197	53.0	-21	26.9	299	43.5	14	35.1
12	301	11.9	167	0 5.1	-144	227	58.3	-21	26.9	329	47.8	14	34.9
14	330	23.3	167	- 0 23.7	-144	258	3.5	-21	26.9	359	52.2	14	34.8
16	359	34.7	168	- 0 52.5	-144	288	8.7	-21	26.8	29	56.5	14	34.6
18	28	46.2	168	- 1 21.3	-143	318	13.9	-21	26.8	60	.9	14	34.4
20	57	57.8	168	- 1 49.9	-143	348	19.2	-21	26.8	90	5.2	14	34.2
22	87	9.4	168	- 2 18.5	-143	18	24.4	-21	26.8	120	9.6	14	34.0
Δ						26		0		22			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	- 6 16.5	-.2	15.8	T _m	16 2	1.6	55.2	15.0
12	- 6 18.6	T _{m☉}	12 h 6.3 min	Starost	4.5 d	Faza	☉	

PLANETE							
Pl.	T _m	π	360-α	Vel.			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 24.8	20 46.3	297 23.6	144 22.9	8 38.1	251 42.8	15 52.1
2	208 24.7	20 45.4	327 28.5	174 26.9	8 36.7	281 44.3	15 53.1
4	238 24.6	20 44.4	357 33.5	204 30.9	8 35.3	311 45.8	15 54.1
6	268 24.6	20 43.5	27 38.4	234 34.9	8 33.9	341 47.4	15 55.1
8	298 24.5	20 42.6	57 43.3	264 38.9	8 32.5	11 48.9	15 56.1
10	328 24.4	20 41.6	87 48.2	294 43.0	8 31.1	41 50.4	15 57.1
12	358 24.3	20 40.7	117 53.2	324 47.0	8 29.7	71 51.9	15 58.1
14	28 24.3	20 39.8	147 58.1	354 51.1	8 28.3	101 53.4	15 59.1
16	58 24.2	20 38.8	178 3.0	24 55.2	8 26.9	131 54.9	16 .1
18	88 24.1	20 37.9	208 8.0	54 59.3	8 25.6	161 56.4	16 1.1
20	118 24.0	20 37.0	238 12.9	85 3.4	8 24.2	191 57.9	16 2.1
22	148 24.0	20 36.0	268 17.8	115 7.5	8 22.8	221 59.4	16 3.0
Δ	0	-5		20	-7	8	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 13	20 59	1 12	:::	11 11	3.5	21 53	.0
55	3 48	20 24	0 51	:::	11 4	3.1	22 3	.3
50	4 13	19 59	0 41	3 3	10 59	2.9	22 11	.5
45	4 32	19 40	0 35	2 16	10 54	2.7	22 18	.7
40	4 47	19 25	0 31	1 55	10 51	2.5	22 23	.9
35	5 0	19 12	0 29	1 42	10 47	2.4	22 28	1.0
30	5 12	19 1	0 27	1 33	10 45	2.2	22 32	1.1
20	5 31	18 42	0 24	1 22	10 40	2.0	22 39	1.3
10	5 47	18 25	0 23	1 16	10 36	1.8	22 45	1.5
0	6 3	18 10	0 22	1 14	10 32	1.7	22 51	1.7
10	6 18	17 55	0 22	1 14	10 28	1.5	22 57	1.9
20	6 34	17 39	0 24	1 17	10 24	1.3	23 3	2.0
30	6 53	17 20	0 26	1 24	10 20	1.1	23 11	2.3
35	7 3	17 10	0 27	1 29	10 17	1.0	23 15	2.4
40	7 15	16 58	0 30	1 35	10 14	.8	23 19	2.5
45	7 30	16 43	0 33	1 44	10 11	.7	23 25	2.7
50	7 47	16 26	0 37	1 55	10 7	.5	23 32	2.9
55	8 10	16 3	0 43	2 12	10 2	.3	23 40	3.2
60	8 41	15 33	0 52	2 36	9 56	.0	23 50	3.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	116 21.1	168 - 2	47.1 -142	48 29.6	-21 26.7	150 13.9	14 33.8	
2	145 32.7	168 - 3	15.5 -142	78 34.8	-21 26.7	180 18.3	14 33.6	
4	174 44.4	168 - 3	43.9 -141	108 40.0	-21 26.7	210 22.7	14 33.4	
6	203 56.1	168 - 4	12.2 -141	138 45.3	-21 26.7	240 27.0	14 33.2	
8	233 7.8	168 - 4	40.4 -140	168 50.5	-21 26.7	270 31.4	14 33.0	
10	262 19.5	168 - 5	8.5 -140	198 55.7	-21 26.6	300 35.7	14 32.8	
12	291 31.2	168 - 5	36.5 -139	229 .9	-21 26.6	330 40.1	14 32.6	
14	320 42.8	168 - 6	4.4 -139	259 6.1	-21 26.6	0 44.4	14 32.4	
16	349 54.4	168 - 6	32.1 -138	289 11.3	-21 26.6	30 48.8	14 32.2	
18	19 6.0	167 - 6	59.8 -138	319 16.5	-21 26.6	60 53.1	14 32.0	
20	48 17.5	167 - 7	27.3 -137	349 21.7	-21 26.5	90 57.5	14 31.8	
22	77 28.9	167 - 7	54.7 -136	19 26.9	-21 26.5	121 1.8	14 31.6	
Δ				26	0	22	-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "		h min	min	' / "	' / "		
00	- 6 20.6	-.1 15.8	T _m	16 41	1.7	54.7	14.9		
12	- 6 22.4	T _{m☉} 12 h 6.4 min		Starost 5.5 d	Faza ●				
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	.	°	h min / ' / "	♃	h min / ' / "	.	°	h min / ' / "
♂	14 21	.4	207	-4.4	♃	20 42	.0	111	-2.3
	7 13	.1	314	.6	♄	13 57	.0	213	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 23.9	20 35.1	298 22.7	145 11.6	8 21.4	252 .9	16 4.0
2	208 23.8	20 34.1	328 27.7	175 15.8	8 20.0	282 2.4	16 5.0
4	238 23.8	20 33.2	358 32.6	205 20.0	8 18.7	312 4.0	16 6.0
6	268 23.7	20 32.2	28 37.5	235 24.1	8 17.3	342 5.5	16 7.0
8	298 23.6	20 31.2	58 42.5	265 28.3	8 16.0	12 7.0	16 8.0
10	328 23.6	20 30.3	88 47.4	295 32.5	8 14.6	42 8.5	16 8.9
12	358 23.5	20 29.3	118 52.3	325 36.7	8 13.2	72 10.0	16 9.9
14	28 23.5	20 28.4	148 57.2	355 41.0	8 11.9	102 11.5	16 10.9
16	58 23.4	20 27.4	179 2.2	25 45.2	8 10.6	132 13.0	16 11.9
18	88 23.3	20 26.4	209 7.1	55 49.5	8 9.2	162 14.5	16 12.9
20	118 23.3	20 25.5	239 12.0	85 53.8	8 7.9	192 16.1	16 13.8
22	148 23.2	20 24.5	269 17.0	115 58.0	8 6.5	222 17.6	16 14.8
Δ	0	-5		21	-7	8	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 15	20 57	1 11	:::	12 35	3.6	21 52	.0
55	3 49	20 22	0 50	:::	12 19	3.2	22 10	.4
50	4 14	19 58	0 41	3 0	12 8	2.9	22 24	.6
45	4 33	19 39	0 35	2 15	11 58	2.7	22 35	.8
40	4 48	19 24	0 31	1 54	11 51	2.5	22 44	1.0
35	5 1	19 11	0 29	1 41	11 44	2.4	22 52	1.1
30	5 12	19 0	0 27	1 32	11 38	2.3	22 59	1.2
20	5 31	18 41	0 24	1 21	11 29	2.1	23 11	1.4
10	5 48	18 25	0 23	1 16	11 20	1.9	23 22	1.6
0	6 3	18 10	0 22	1 13	11 12	1.7	23 32	1.8
10	6 18	17 55	0 22	1 14	11 4	1.6	23 42	1.9
20	6 34	17 39	0 23	1 17	10 56	1.4	23 52	2.1
30	6 52	17 21	0 26	1 24	10 46	1.2	...	.0
35	7 3	17 10	0 27	1 29	10 41	1.1	...	.0
40	7 15	16 58	0 30	1 35	10 34	.9	...	.0
45	7 29	16 44	0 33	1 44	10 27	.8	...	.0
50	7 46	16 27	0 37	1 55	10 19	.6	...	.0
55	8 8	16 5	0 42	2 11	10 8	.3	...	.0
60	8 39	15 35	0 52	2 35	9 55	.0	...	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	106 40.2	166 - 8	21.9 -136	49 32.1	-21 26.5	151 6.2	14 31.4	
2	135 51.5	166 - 8	49.1 -135	79 37.4	-21 26.5	181 10.5	14 31.2	
4	165 2.7	165 - 9	16.0 -134	109 42.6	-21 26.5	211 14.9	14 31.0	
6	194 13.8	165 - 9	42.8 -133	139 47.8	-21 26.4	241 19.2	14 30.8	
8	223 24.8	164 -10	9.5 -132	169 53.0	-21 26.4	271 23.6	14 30.6	
10	252 35.6	164 -10	36.0 -132	199 58.2	-21 26.4	301 27.9	14 30.4	
12	281 46.4	163 -11	2.3 -131	230 3.4	-21 26.4	331 32.3	14 30.2	
14	310 57.0	162 -11	28.5 -130	260 8.6	-21 26.4	1 36.6	14 30.0	
16	340 7.4	162 -11	54.4 -129	290 13.7	-21 26.3	31 41.0	14 29.8	
18	9 17.8	161 -12	20.2 -128	320 18.9	-21 26.3	61 45.3	14 29.6	
20	38 27.9	160 -12	45.8 -127	350 24.1	-21 26.3	91 49.7	14 29.4	
22	67 37.9	159 -13	11.2 -126	20 29.3	-21 26.3	121 54.0	14 29.2	
Δ				26	0	22	-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "		h min	min	' / "	' / "		
00	- 6 24.2	-.1 15.8	T _m	17 22	1.8	54.4	14.8		
12	- 6 25.7	T _{m☉} 12 h 6.4 min		Starost 6.5 d	Faza ●				
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	.	°	h min / ' / "	♃	h min / ' / "	.	°	h min / ' / "
♂	14 17	.4	207	-4.4	♃	20 38	.0	111	-2.3
	7 12	.1	314	.6	♄	13 54	.0	213	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	23.2	20	23.5	299	21.9	146	2.3	8	5.2	252	19.1	16	15.8	
2	208	23.1	20	22.5	329	26.8	176	6.7	8	3.9	282	20.6	16	16.7	
4	238	23.1	20	21.5	359	31.7	206	11.0	8	2.5	312	22.1	16	17.7	
6	268	23.0	20	20.6		29	36.7	236	15.3	8	1.2	342	23.6	16	18.7
8	298	22.9	20	19.6		59	41.6	266	19.7	7	59.9	12	25.1	16	19.7
10	328	22.9	20	18.6		89	46.5	296	24.1	7	58.6	42	26.6	16	20.6
12	358	22.8	20	17.6		119	51.5	326	28.4	7	57.3	72	28.2	16	21.6
14	28	22.8	20	16.6		149	56.4	356	32.8	7	56.0	102	29.7	16	22.5
16	58	22.7	20	15.6		180	1.3	26	37.3	7	54.7	132	31.2	16	23.5
18	88	22.7	20	14.6		210	6.2	56	41.7	7	53.4	162	32.7	16	24.5
20	118	22.7	20	13.6		240	11.2	86	46.1	7	52.1	192	34.2	16	25.4
22	148	22.6	20	12.6		270	16.1	116	50.6	7	50.8	222	35.7	16	26.4
Δ		0		-5					22		-7		8		5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 17	20 54	1 9	:::	14 0	3.7	21 52	.1
55	3 51	20 21	0 50	:::	13 36	3.3	22 19	.5
50	4 15	19 57	0 41	2 57	13 18	3.0	22 39	.8
45	4 34	19 38	0 35	2 14	13 3	2.8	22 55	1.0
40	4 49	19 23	0 31	1 54	12 52	2.6	23 8	1.2
35	5 2	19 11	0 28	1 41	12 42	2.5	23 19	1.3
30	5 13	18 60	0 26	1 32	12 33	2.3	23 29	1.4
20	5 32	18 41	0 24	1 21	12 18	2.1	23 46	1.6
10	5 48	18 25	0 23	1 16	12 5	2.0	...	.0
0	6 3	18 10	0 22	1 13	11 53	1.8	...	.0
10	6 18	17 55	0 22	1 14	11 41	1.7	...	.0
20	6 34	17 39	0 23	1 17	11 29	1.5	...	.0
30	6 52	17 21	0 26	1 24	11 14	1.3	0 5	2.3
35	7 2	17 11	0 27	1 29	11 6	1.2	0 12	2.4
40	7 14	16 59	0 30	1 35	10 57	1.1	0 20	2.6
45	7 28	16 45	0 32	1 44	10 46	.9	0 30	2.7
50	7 45	16 28	0 36	1 55	10 33	.7	0 41	2.9
55	8 7	16 6	0 42	2 11	10 16	.4	0 56	3.2
60	8 37	15 37	0 52	2 35	9 55	.0	1 16	3.6

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	96	47.7	158	-13	36.4	-125	50	34.5	-21	26.3	151	58.4	14	29.1		
2	125	57.3	157	-14	1.4	-124	80	39.7	-21	26.2	182	2.7	14	28.9		
4	155	6.8	156	-14	26.2	-123	110	44.9	-21	26.2	212	7.1	14	28.7		
6	184	16.0	155	-14	50.7	-122	140	50.1	-21	26.2	242	11.4	14	28.5		
8	213	25.0	154	-15	15.1	-120	170	55.3	-21	26.2	272	15.8	14	28.3		
10	242	33.8	153	-15	39.2	-119	201	.4	-21	26.2	302	20.1	14	28.1		
12	271	42.4	152	-16	3.0	-118	231	5.6	-21	26.2	332	24.5	14	27.9		
14	300	50.8	151	-16	26.6	-117	261	10.8	-21	26.1	2	28.8	14	27.7		
16	329	58.9	149	-16	50.0	-116	291	16.0	-21	26.1	32	33.2	14	27.5		
18	359	6.8	148	-17	13.1	-114	321	21.2	-21	26.1	62	37.5	14	27.3		
20	28	14.4	147	-17	35.9	-113	351	26.3	-21	26.1	92	41.9	14	27.1		
22	57	21.8	146	-17	58.5	-111	21	31.5	-21	26.1	122	46.2	14	26.9		
Δ								26		0			22		-1	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 6 27.2	.1	15.8	T _m	18 4	1.8	54.3 14.8
12	- 6 28.4	T _{m☉}	12 h 6.5 min	Starost	7.5 d	Faza	☾

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	14 14	.4	207	-4.3	♃	20 34	.0	111	-2.3
♂	7 10	.1	313	.6	♄	13 50	.0	213	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	22.6	20	11.6	300	21.0	146	55.1	7	49.5	252	37.2	16	27.4
2	208	22.5	20	10.6	330	25.9	176	59.5	7	48.2	282	38.8	16	28.3
4	238	22.5	20	9.6	0	30.9	207	4.0	7	46.9	312	40.3	16	29.3
6	268	22.4	20	8.6	30	35.8	237	8.6	7	45.7	342	41.8	16	30.2
8	298	22.4	20	7.6	60	40.7	267	13.1	7	44.4	12	43.3	16	31.2
10	328	22.4	20	6.5	90	45.7	297	17.6	7	43.1	42	44.8	16	32.1
12	358	22.3	20	5.5	120	50.6	327	22.2	7	41.9	72	46.3	16	33.1
14	28	22.3	20	4.5	150	55.5	357	26.8	7	40.6	102	47.9	16	34.0
16	58	22.2	20	3.5	181	.4	27	31.3	7	39.3	132	49.4	16	35.0
18	88	22.2	20	2.5	211	5.4	57	35.9	7	38.1	162	50.9	16	35.9
20	118	22.2	20	1.4	241	10.3	87	40.6	7	36.8	192	52.4	16	36.9
22	148	22.1	20	.4	271	15.2	117	45.2	7	35.6	222	53.9	16	37.8
Δ		0		-5				23		-6		8		5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 19	20 52	1 8	:::	15 30	3.9	21 54	.2
55	3 53	20 19	0 50	:::	14 54	3.3	22 32	.8
50	4 17	19 56	0 40	2 55	14 29	3.0	22 58	1.1
45	4 35	19 37	0 35	2 13	14 10	2.8	23 19	1.3
40	4 50	19 23	0 31	1 53	13 54	2.6	23 36	1.4
35	5 2	19 10	0 28	1 41	13 41	2.5	23 50	1.5
30	5 13	18 59	0 26	1 32	13 29	2.4	...	.0
20	5 32	18 41	0 24	1 21	13 10	2.2	...	.0
10	5 48	18 25	0 22	1 16	12 53	2.1	0 0	1.7
0	6 3	18 10	0 22	1 13	12 37	2.0	0 14	1.9
10	6 18	17 55	0 22	1 14	12 22	1.8	0 28	2.0
20	6 33	17 40	0 23	1 17	12 5	1.7	0 43	2.2
30	6 51	17 22	0 26	1 23	11 46	1.5	1 0	2.4
35	7 2	17 12	0 27	1 28	11 35	1.4	1 10	2.5
40	7 13	17 0	0 29	1 35	11 22	1.3	1 22	2.6
45	7 27	16 46	0 32	1 43	11 8	1.1	1 35	2.8
50	7 44	16 29	0 36	1 55	10 50	.9	1 52	3.0
55	8 6	16 8	0 42	2 11	10 27	.6	2 14	3.3
60	8 35	15 39	0 51	2 34	9 55	.1	2 43	3.8

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	86	28.9	144	-18	20.8	-110	51	36.7	-21	26.1	152	50.6	14	26.7		
2	115	35.7	143	-18	42.8	-109	81	41.9	-21	26.0	182	54.9	14	26.5		
4	144	42.3	141	-19	4.6	-107	111	47.0	-21	26.0	212	59.3	14	26.3		
6	173	48.6	140	-19	26.0	-106	141	52.2	-21	26.0	243	3.6	14	26.1		
8	202	54.6	139	-19	47.1	-104	171	57.4	-21	26.0	273	7.9	14	25.9		
10	232	.3	137	-20	7.9	-102	202	2.5	-21	26.0	303	12.3	14	25.7		
12	261	5.7	135	-20	28.4	-101	232	7.7	-21	26.0	333	16.6	14	25.5		
14	290	10.8	134	-20	48.6	-99	262	12.9	-21	25.9	3	21.0	14	25.3		
16	319	15.6	132	-21	8.4	-97	292	18.0	-21	25.9	33	25.3	14	25.1		
18	348	20.0	131	-21	27.9	-96	322	23.2	-21	25.9	63	29.7	14	24.9		
20	17	24.2	129	-21	47.0	-94	352	28.4	-21	25.9	93	34.0	14	24.7		
22	46	28.0	128	-22	5.8	-92	22	33.5	-21	25.9	123	38.4	14	24.5		
Δ								26		0			22		-1	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 22.1	19 59.4	301 20.2	147 49.8	7 34.4	252 55.4	16 38.8	
2	208 22.1	19 58.3	331 25.1	177 54.5	7 33.1	282 57.0	16 39.7	
4	238 22.1	19 57.3	1 30.0	207 59.2	7 31.9	312 58.5	16 40.7	
6	268 22.0	19 56.3	31 34.9	238 3.9	7 30.7	342 60.0	16 41.6	
8	298 22.0	19 55.2	61 39.9	268 8.6	7 29.4	13 1.5	16 42.5	
10	328 22.0	19 54.2	91 44.8	298 13.3	7 28.2	43 3.0	16 43.5	
12	358 21.9	19 53.1	121 49.7	328 18.0	7 27.0	73 4.5	16 44.4	
14	28 21.9	19 52.1	151 54.7	358 22.8	7 25.8	103 6.1	16 45.4	
16	58 21.9	19 51.0	181 59.6	28 27.5	7 24.6	133 7.6	16 46.3	
18	88 21.9	19 50.0	212 4.5	58 32.3	7 23.4	163 9.1	16 47.2	
20	118 21.9	19 48.9	242 9.4	88 37.1	7 22.2	193 10.6	16 48.2	
22	148 21.8	19 47.9	272 14.4	118 41.9	7 21.0	223 12.1	16 49.1	
Δ	0	-5		24	-6	8	5	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 21	20 50	1 7	:::	17 4	3.9	21 58	.5
55	3 54	20 18	0 49	:::	16 14	3.2	22 50	1.2
50	4 18	19 54	0 40	2 52	15 41	2.9	23 24	1.5
45	4 36	19 36	0 35	2 12	15 17	2.7	23 49	1.6
40	4 51	19 22	0 31	1 53	14 57	2.6	...	.0
35	5 3	19 10	0 28	1 40	14 41	2.5	...	.0
30	5 14	18 59	0 26	1 32	14 27	2.4	0 2	1.6
20	5 32	18 41	0 24	1 21	14 3	2.3	0 24	1.8
10	5 48	18 25	0 22	1 15	13 43	2.2	0 42	1.9
0	6 3	18 10	0 22	1 13	13 24	2.1	0 59	2.0
10	6 18	17 56	0 22	1 14	13 5	2.0	1 17	2.1
20	6 33	17 40	0 23	1 17	12 45	1.9	1 35	2.3
30	6 51	17 23	0 26	1 23	12 22	1.8	1 57	2.4
35	7 1	17 12	0 27	1 28	12 9	1.7	2 10	2.5
40	7 13	17 1	0 29	1 35	11 53	1.6	2 24	2.6
45	7 26	16 47	0 32	1 43	11 35	1.4	2 42	2.8
50	7 43	16 31	0 36	1 54	11 12	1.3	3 4	3.0
55	8 4	16 10	0 42	2 10	10 42	1.0	3 33	3.3
60	8 33	15 41	0 51	2 33	9 59	.4	4 15	3.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	75 31.6	126 -22	24.2	-90	52 38.7	-21 25.9	153 42.7	14 24.3
2	104 34.8	124 -22	42.3	-88	82 43.8	-21 25.9	183 47.0	14 24.1
4	133 37.6	123 -23	.0	-86	112 49.0	-21 25.8	213 51.4	14 23.9
6	162 40.1	121 -23	17.2	-84	142 54.2	-21 25.8	243 55.7	14 23.7
8	191 42.3	119 -23	34.1	-82	172 59.3	-21 25.8	274 .1	14 23.5
10	220 44.2	118 -23	50.6	-80	203 4.5	-21 25.8	304 4.4	14 23.3
12	249 45.7	116 -24	6.7	-78	233 9.6	-21 25.8	334 8.8	14 23.1
14	278 46.9	114 -24	22.3	-76	263 14.8	-21 25.8	4 13.1	14 22.9
16	307 47.7	112 -24	37.6	-74	293 19.9	-21 25.8	34 17.5	14 22.7
18	336 48.2	111 -24	52.3	-72	323 25.1	-21 25.8	64 21.8	14 22.5
20	5 48.3	109 -25	6.7	-69	353 30.2	-21 25.7	94 26.1	14 22.3
22	34 48.2	107 -25	20.6	-67	23 35.3	-21 25.7	124 30.5	14 22.1
Δ					26	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 6 31.4	.0	15.8	T _m	19 36	2.1	54.5 14.8		
12	- 6 32.0	T _{m☉}	12 h 6.5 min	Starost	9.5 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	'	°			
♂	14 6	.4	206	-4.3	♀	20 26	.0	111	-2.3
♂	7 8	.1	312	.6	♂	13 43	.0	212	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 21.8	19 46.8	302 19.3	148 46.7	7 19.8	253 13.7	16 50.0	
2	208 21.8	19 45.7	332 24.2	178 51.6	7 18.6	283 15.2	16 51.0	
4	238 21.8	19 44.7	2 29.2	208 56.4	7 17.4	313 16.7	16 51.9	
6	268 21.8	19 43.6	32 34.1	239 1.3	7 16.3	343 18.2	16 52.8	
8	298 21.7	19 42.5	62 39.0	269 6.2	7 15.1	13 19.8	16 53.8	
10	328 21.7	19 41.5	92 43.9	299 11.1	7 13.9	43 21.3	16 54.7	
12	358 21.7	19 40.4	122 48.9	329 16.0	7 12.8	73 22.8	16 55.6	
14	28 21.7	19 39.3	152 53.8	359 20.9	7 11.6	103 24.3	16 56.5	
16	58 21.7	19 38.2	182 58.7	29 25.8	7 10.4	133 25.8	16 57.5	
18	88 21.7	19 37.2	213 3.7	59 30.8	7 9.3	163 27.4	16 58.4	
20	118 21.7	19 36.1	243 8.6	89 35.8	7 8.2	193 28.9	16 59.3	
22	148 21.7	19 35.0	273 13.5	119 40.7	7 7.0	223 30.4	17 .2	
Δ	0	-5		25	-6	8	5	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 24	20 48	1 6	:::	18 38	3.3	22 11	1.5
55	3 56	20 16	0 49	:::	17 31	2.8	23 19	1.9
50	4 19	19 53	0 40	2 50	16 51	2.6	23 60	2.0
45	4 37	19 35	0 35	2 11	16 22	2.6	...	.0
40	4 52	19 21	0 31	1 52	16 0	2.5	0 10	1.7
35	5 4	19 9	0 28	1 40	15 42	2.4	0 27	1.8
30	5 15	18 58	0 26	1 31	15 26	2.4	0 41	1.9
20	5 33	18 40	0 24	1 21	14 59	2.3	1 6	2.0
10	5 48	18 25	0 22	1 15	14 36	2.3	1 28	2.1
0	6 3	18 10	0 22	1 13	14 15	2.2	1 48	2.2
10	6 17	17 56	0 22	1 14	13 53	2.2	2 8	2.3
20	6 33	17 41	0 23	1 17	13 31	2.1	2 30	2.3
30	6 50	17 23	0 26	1 23	13 4	2.1	2 55	2.4
35	7 0	17 13	0 27	1 28	12 49	2.0	3 10	2.5
40	7 12	17 2	0 29	1 35	12 31	1.9	3 28	2.6
45	7 25	16 48	0 32	1 43	12 9	1.9	3 49	2.7
50	7 42	16 32	0 36	1 54	11 42	1.8	4 15	2.8
55	8 3	16 11	0 42	2 10	11 5	1.5	4 51	3.0
60	8 31	15 43	0 51	2 33	10 7	.9	5 49	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	63 47.6	106 -25	34.0	-65	53 40.5	-21 25.7	154 34.8	14 21.9
2	92 46.8	104 -25	47.0	-62	83 45.6	-21 25.7	184 39.2	14 21.7
4	121 45.6	102 -25	59.5	-60	113 50.8	-21 25.7	214 43.5	14 21.5
6	150 44.1	101 -26	11.5	-58	143 55.9	-21 25.7	244 47.8	14 21.3
8	179 42.2	99 -26	23.0	-55	174 1.0	-21 25.7	274 52.2	14 21.1
10	208 40.1	98 -26	34.0	-52	204 6.2	-21 25.7	304 56.5	14 20.9
12	237 37.6	96 -26	44.5	-50	234 11.3	-21 25.7	335 .9	14 20.7
14	266 34.8	94 -26	54.4	-47	264 16.4	-21 25.6	5 5.2	14 20.5
16	295 31.7	93 -27	3.9	-45	294 21.6	-21 25.6	35 9.6	14 20.3
18	324 28.3	91 -27	12.8	-42	324 26.7	-21 25.6	65 13.9	14 20.1
20	353 24.6	90 -27	21.2	-39	354 31.8	-21 25.6	95 18.2	14 19.9
22	22 20.6	89 -27	29.0	-36	24 37.0	-21 25.6	125 22.6	14 19.7
Δ					26	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 6 32.6	.0	15.8	T _m	20 27	2.3	54.8 14.9		
12	- 6 32.9	T _{m☉}	12 h 6.6 min	Starost	10.5 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	'	°			
♂	14 3	.4	206	-4.3	♀	20 22	.0	111	-2.3
♂	7 7	.1	311	.6	♂	13 40	.0	212	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 21.7	19 33.9	303 18.4	149 45.8	7 5.9	253 31.9	17 1.1	
2	208 21.7	19 32.8	333 23.4	179 50.8	7 4.7	283 33.5	17 2.1	
4	238 21.7	19 31.7	3 28.3	209 55.8	7 3.6	313 35.0	17 3.0	
6	268 21.7	19 30.6	33 33.2	240 .8	7 2.5	343 36.5	17 3.9	
8	298 21.7	19 29.5	63 38.2	270 5.9	7 1.4	13 38.0	17 4.8	
10	328 21.6	19 28.4	93 43.1	300 11.0	7 .3	43 39.5	17 5.7	
12	358 21.6	19 27.3	123 48.0	330 16.1	6 59.2	73 41.1	17 6.6	
14	28 21.7	19 26.2	153 52.9	0 21.2	6 58.1	103 42.6	17 7.5	
16	58 21.7	19 25.1	183 57.9	30 26.3	6 57.0	133 44.1	17 8.4	
18	88 21.7	19 24.0	214 2.8	60 31.4	6 55.9	163 45.6	17 9.4	
20	118 21.7	19 22.9	244 7.7	90 36.6	6 54.8	193 47.2	17 10.3	
22	148 21.7	19 21.8	274 12.6	120 41.8	6 53.7	223 48.7	17 11.2	
Δ	0	-6		26	-6	8	5	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 26	20 46	1 5	:::	19 56	1.7	22 47	3.1
55	3 58	20 14	0 48	:::	18 38	2.1	...	.0
50	4 20	19 52	0 40	2 47	17 54	2.2	...	.0
45	4 38	19 34	0 34	2 10	17 24	2.2	0 29	2.1
40	4 52	19 20	0 31	1 52	16 60	2.2	0 52	2.1
35	5 5	19 8	0 28	1 39	16 40	2.3	1 11	2.2
30	5 15	18 58	0 26	1 31	16 23	2.3	1 27	2.2
20	5 33	18 40	0 24	1 21	15 55	2.3	1 54	2.2
10	5 49	18 24	0 22	1 15	15 31	2.3	2 18	2.3
0	6 3	18 10	0 22	1 13	15 8	2.3	2 40	2.3
10	6 17	17 56	0 22	1 13	14 46	2.3	3 2	2.3
20	6 32	17 41	0 23	1 17	14 22	2.3	3 26	2.3
30	6 50	17 24	0 25	1 23	13 54	2.3	3 54	2.4
35	6 60	17 14	0 27	1 28	13 37	2.4	4 10	2.4
40	7 11	17 3	0 29	1 34	13 18	2.4	4 29	2.4
45	7 24	16 49	0 32	1 43	12 54	2.4	4 52	2.4
50	7 40	16 33	0 36	1 54	12 24	2.4	5 22	2.4
55	8 1	16 13	0 42	2 10	11 43	2.3	6 3	2.4
60	8 29	15 45	0 50	2 32	10 30	2.3	7 16	2.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	51 16.3	87 -27	36.3	-34	54 42.1	-21 25.6	155 26.9	14 19.5
2	80 11.8	86 -27	43.0	-31	84 47.2	-21 25.6	185 31.3	14 19.3
4	109 7.0	85 -27	49.1	-28	114 52.3	-21 25.6	215 35.6	14 19.0
6	138 1.9	83 -27	54.7	-25	144 57.5	-21 25.6	245 39.9	14 18.8
8	166 56.6	82 -27	59.7	-22	175 2.6	-21 25.6	275 44.3	14 18.6
10	195 51.1	81 -28	4.1	-19	205 7.7	-21 25.5	305 48.6	14 18.4
12	224 45.3	80 -28	7.9	-16	235 12.8	-21 25.5	335 53.0	14 18.2
14	253 39.3	79 -28	11.1	-13	265 17.9	-21 25.5	5 57.3	14 18.0
16	282 33.1	78 -28	13.7	-10	295 23.1	-21 25.5	36 1.6	14 17.8
18	311 26.8	77 -28	15.6	-7	325 28.2	-21 25.5	66 6.0	14 17.6
20	340 20.2	76 -28	17.0	-4	355 33.3	-21 25.5	96 10.3	14 17.4
22	9 13.5	76 -28	17.8	-1	25 38.4	-21 25.5	126 14.6	14 17.2
Δ					26	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	'	h min	min	'	'
00	- 6 33.1	.0	15.8	T _m	21 22	2.3	55.3 15.1
12	- 6 33.1	T _{m☉}	12 h 6.6 min	Starost	11.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	'	°	h min	h min	'	°	h min	'
♄	13 59	.4	206	-4.3	♃	20 18	.0	111	-2.3
♅	7 6	.1	310	.6	♄	13 36	.0	212	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 21.7	19 20.7	304 17.6	150 47.0	6 52.6	253 50.2	17 12.1	
2	208 21.7	19 19.6	334 22.5	180 52.2	6 51.5	283 51.8	17 13.0	
4	238 21.7	19 18.5	4 27.4	210 57.4	6 50.5	313 53.3	17 13.9	
6	268 21.7	19 17.3	34 32.4	241 2.6	6 49.4	343 54.8	17 14.8	
8	298 21.7	19 16.2	64 37.3	271 7.8	6 48.3	13 56.3	17 15.7	
10	328 21.7	19 15.1	94 42.2	301 13.1	6 47.3	43 57.9	17 16.6	
12	358 21.7	19 14.0	124 47.1	331 18.4	6 46.2	73 59.4	17 17.5	
14	28 21.7	19 12.8	154 52.1	1 23.7	6 45.2	104 .9	17 18.4	
16	58 21.8	19 11.7	184 57.0	31 29.0	6 44.2	134 2.4	17 19.3	
18	88 21.8	19 10.6	215 1.9	61 34.3	6 43.1	164 4.0	17 20.2	
20	118 21.8	19 9.4	245 6.9	91 39.6	6 42.1	194 5.5	17 21.1	
22	148 21.8	19 8.3	275 11.8	121 45.0	6 41.1	224 7.0	17 22.0	
Δ	0	-6		26	-5	8	4	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 28	20 43	1 4	:::	20 38	.6	...	.0
55	3 59	20 13	0 48	:::	19 28	1.4	0 5	2.8
50	4 22	19 50	0 40	2 45	18 46	1.7	0 49	2.7
45	4 39	19 33	0 34	2 10	18 17	1.8	1 19	2.6
40	4 53	19 19	0 31	1 51	17 54	1.9	1 43	2.5
35	5 5	19 7	0 28	1 39	17 35	2.0	2 3	2.5
30	5 16	18 57	0 26	1 31	17 18	2.1	2 20	2.5
20	5 33	18 39	0 24	1 20	16 50	2.2	2 48	2.4
10	5 49	18 24	0 22	1 15	16 26	2.3	3 12	2.4
0	6 3	18 10	0 22	1 13	16 4	2.3	3 35	2.3
10	6 17	17 56	0 22	1 13	15 42	2.4	3 58	2.3
20	6 32	17 41	0 23	1 17	15 18	2.5	4 22	2.2
30	6 49	17 24	0 25	1 23	14 50	2.6	4 50	2.2
35	6 59	17 15	0 27	1 28	14 33	2.6	5 7	2.1
40	7 10	17 3	0 29	1 34	14 14	2.7	5 26	2.1
45	7 23	16 50	0 32	1 43	13 51	2.8	5 50	2.0
50	7 39	16 35	0 36	1 54	13 21	2.9	6 20	1.9
55	7 59	16 14	0 41	2 9	12 39	3.1	7 2	1.7
60	8 27	15 47	0 50	2 32	11 25	3.8	8 16	1.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	38 6.6	75 -28	17.9	3	55 43.5	-21 25.5	156 19.0	14 17.0
2	66 59.6	74 -28	17.4	6	85 48.6	-21 25.5	186 23.3	14 16.8
4	95 52.5	74 -28	16.2	9	115 53.7	-21 25.5	216 27.7	14 16.6
6	124 45.2	73 -28	14.5	12	145 58.8	-21 25.5	246 32.0	14 16.4
8	153 37.8	73 -28	12.1	15	176 4.0	-21 25.5	276 36.3	14 16.2
10	182 30.4	72 -28	9.0	18	206 9.1	-21 25.4	306 40.7	14 16.0
12	211 22.9	72 -28	5.3	22	236 14.2	-21 25.4	336 45.0	14 15.8
14	240 15.3	72 -28	1.0	25	266 19.3	-21 25.4	6 49.3	14 15.6
16	269 7.6	72 -27	56.0	28	296 24.4	-21 25.4	36 53.7	14 15.4
18	298 .0	72 -27	50.4	31	326 29.5	-21 25.4	66 58.0	14 15.2
20	326 52.3	72 -27	44.1	35	356 34.6	-21 25.4	97 2.4	14 15.0
22	355 44.6	72 -27	37.2	38	26 39.7	-21 25.4	127 6.7	14 14.8
Δ					26	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	'	h min	min	'	'
00	- 6 33.1	.0	15.8	T _m	22 18	2.3	55.9 15.2
12	- 6 32.8	T _{m☉}	12 h 6.6 min	Starost	12.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	'	°	h min	h min	'	°	h min	'
♄	13 54	.4	206	-4.3	♃	20 14	.0	111	-2.3
♅	7 4	.1	310	.6	♄	13 33	.0	212	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	21.8	19	7.2	305	16.7	151	50.4	6	40.0	254	8.6	17	22.8
2	208	21.8	19	6.0	335	21.6	181	55.7	6	39.0	284	10.1	17	23.7
4	238	21.9	19	4.9	5	26.6	212	1.1	6	38.0	314	11.6	17	24.6
6	268	21.9	19	3.7	35	31.5	242	6.6	6	37.0	344	13.2	17	25.5
8	298	21.9	19	2.6	65	36.4	272	12.0	6	36.0	14	14.7	17	26.4
10	328	21.9	19	1.4	95	41.4	302	17.4	6	35.0	44	16.2	17	27.3
12	358	22.0	19	.3	125	46.3	332	22.9	6	34.0	74	17.7	17	28.2
14	28	22.0	18	59.1	155	51.2	2	28.4	6	33.1	104	19.3	17	29.0
16	58	22.0	18	58.0	185	56.1	32	33.9	6	32.1	134	20.8	17	29.9
18	88	22.0	18	56.8	216	1.1	62	39.4	6	31.1	164	22.3	17	30.8
20	118	22.1	18	55.6	246	6.0	92	44.9	6	30.1	194	23.9	17	31.7
22	148	22.1	18	54.5	276	10.9	122	50.4	6	29.2	224	25.4	17	32.6
Δ	0		-6				27		-5		8		4	

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	24	36.9	72	-27	29.6	41	56	44.7	-21	25.4	157	11.0	14	14.6		
2	53	29.3	72	-27	21.4	44	86	49.8	-21	25.4	187	15.4	14	14.4		
4	82	21.6	72	-27	12.5	47	116	54.9	-21	25.4	217	19.7	14	14.2		
6	111	14.1	72	-27	3.0	51	147	.0	-21	25.4	247	24.0	14	14.0		
8	140	6.6	73	-26	52.9	54	177	5.1	-21	25.4	277	28.4	14	13.8		
10	168	59.1	73	-26	42.1	57	207	10.2	-21	25.4	307	32.7	14	13.6		
12	197	51.8	74	-26	30.7	60	237	15.3	-21	25.4	337	37.0	14	13.4		
14	226	44.5	74	-26	18.6	63	267	20.4	-21	25.4	7	41.4	14	13.2		
16	255	37.3	75	-26	6.0	66	297	25.5	-21	25.4	37	45.7	14	13.0		
18	284	30.3	75	-25	52.7	70	327	30.5	-21	25.4	67	50.0	14	12.8		
20	313	23.4	76	-25	38.8	73	357	35.6	-21	25.4	97	54.4	14	12.5		
22	342	16.6	77	-25	24.2	76	27	40.7	-21	25.4	127	58.7	14	12.3		
Δ							25		0		22		-1			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 30	20 41	1 4	:::	20 53	.2	0 2	4.2
55	4 1	20 11	0 48	:::	20 1	.9	1 12	3.5
50	4 23	19 49	0 39	2 43	19 26	1.2	1 52	3.2
45	4 40	19 32	0 34	2 9	19 0	1.4	2 22	3.0
40	4 54	19 18	0 31	1 50	18 40	1.6	2 44	2.8
35	5 6	19 7	0 28	1 39	18 23	1.7	3 3	2.7
30	5 16	18 56	0 26	1 31	18 8	1.8	3 19	2.7
20	5 34	18 39	0 24	1 20	17 43	2.0	3 46	2.5
10	5 49	18 24	0 22	1 15	17 21	2.2	4 10	2.4
0	6 3	18 10	0 22	1 13	17 0	2.3	4 31	2.3
10	6 17	17 56	0 22	1 13	16 40	2.4	4 53	2.2
20	6 32	17 42	0 23	1 16	16 18	2.6	5 16	2.1
30	6 48	17 25	0 25	1 23	15 52	2.7	5 42	2.0
35	6 58	17 15	0 27	1 28	15 37	2.8	5 58	1.9
40	7 9	17 4	0 29	1 34	15 19	2.9	6 16	1.8
45	7 22	16 51	0 32	1 42	14 58	3.1	6 38	1.6
50	7 38	16 36	0 36	1 53	14 31	3.3	7 6	1.4
55	7 58	16 16	0 41	2 9	13 54	3.6	7 43	1.1
60	8 25	15 49	0 50	2 31	12 55	4.4	8 44	.4

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 6 32.5	.1	15.8	T _m	23 14	2.2	56.6	15.4
12	- 6 31.9	T _{m☉}	12 h 6.5 min	Starost	13.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	♃	h min	'	°	h min
♀	13 50	.4	207	-4.3	♃	20 10	.0	111	-2.2
♂	7 3	.1	309	.5	♄	13 29	.0	212	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	22.1	18	53.3	306	15.9	152	56.0	6	28.2	254	26.9	17	33.4
2	208	22.2	18	52.1	336	20.8	183	1.6	6	27.3	284	28.5	17	34.3
4	238	22.2	18	51.0	6	25.7	213	7.1	6	26.3	314	30.0	17	35.2
6	268	22.2	18	49.8	36	30.6	243	12.7	6	25.4	344	31.5	17	36.1
8	298	22.3	18	48.6	66	35.6	273	18.4	6	24.4	14	33.1	17	36.9
10	328	22.3	18	47.4	96	40.5	303	24.0	6	23.5	44	34.6	17	37.8
12	358	22.3	18	46.3	126	45.4	333	29.6	6	22.6	74	36.1	17	38.7
14	28	22.4	18	45.1	156	50.4	3	35.3	6	21.7	104	37.7	17	39.6
16	58	22.4	18	43.9	186	55.3	33	41.0	6	20.8	134	39.2	17	40.4
18	88	22.5	18	42.7	217	.2	63	46.7	6	19.9	164	40.7	17	41.3
20	118	22.5	18	41.5	247	5.1	93	52.4	6	18.9	194	42.3	17	42.2
22	148	22.5	18	40.3	277	10.1	123	58.1	6	18.1	224	43.8	17	43.0
Δ	0		-6				28		-5		8		4	

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	11	10.0	78	-25	9.1	79	57	45.8	-21	25.4	158	3.0	14	12.1		
2	40	3.6	79	-24	53.4	82	87	50.9	-21	25.3	188	7.4	14	11.9		
4	68	57.3	79	-24	37.0	85	117	55.9	-21	25.3	218	11.7	14	11.7		
6	97	51.2	80	-24	20.1	88	148	1.0	-21	25.3	248	16.0	14	11.5		
8	126	45.3	81	-24	2.6	90	178	6.1	-21	25.3	278	20.4	14	11.3		
10	155	39.5	82	-23	44.5	93	208	11.2	-21	25.3	308	24.7	14	11.1		
12	184	34.0	83	-23	25.8	96	238	16.2	-21	25.3	338	29.0	14	10.9		
14	213	28.7	84	-23	6.6	99	268	21.3	-21	25.3	8	33.4	14	10.7		
16	242	23.5	85	-22	46.8	102	298	26.4	-21	25.3	38	37.7	14	10.5		
18	271	18.6	87	-22	26.5	104	328	31.4	-21	25.3	68	42.0	14	10.3		
20	300	13.9	88	-22	5.7	107	358	36.5	-21	25.3	98	46.4	14	10.1		
22	329	9.5	89	-21	44.3	110	28	41.6	-21	25.3	128	50.7	14	9.9		
Δ							25		0		22		-1			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 33	20 39	1 3	:::	20 59	.1	1 43	4.5
55	4 3	20 9	0 47	:::	20 22	.6	2 35	3.8
50	4 24	19 48	0 39	2 41	19 56	.9	3 8	3.4
45	4 41	19 31	0 34	2 8	19 35	1.2	3 33	3.2
40	4 55	19 17	0 31	1 50	19 18	1.3	3 53	3.0
35	5 7	19 6	0 28	1 38	19 4	1.5	4 9	2.9
30	5 17	18 56	0 26	1 30	18 52	1.6	4 23	2.8
20	5 34	18 39	0 24	1 20	18 31	1.8	4 47	2.6
10	5 49	18 24	0 22	1 15	18 12	2.0	5 8	2.4
0	6 3	18 10	0 22	1 13	17 55	2.2	5 27	2.2
10	6 17	17 56	0 22	1 13	17 38	2.4	5 46	2.1
20	6 31	17 42	0 23	1 16	17 19	2.5	6 6	1.9
30	6 48	17 26	0 25	1 23	16 57	2.8	6 29	1.7
35	6 57	17 16	0 27	1 28	16 45	2.9	6 43	1.6
40	7 8	17 5	0 29	1 34	16 30	3.0	6 59	1.5
45	7 21	16 53	0 32	1 42	16 13	3.2	7 17	1.3
50	7 36	16 37	0 36	1 53	15 51	3.5	7 40	1.1
55	7 56	16 18	0 41	2 8	15 22	3.8	8 10	.7
60	8 22	15 51	0 49	2 30	14 40	4.4	8 54	.2

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	- 6 31						

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 22.6	18 39.1	307 15.0	154 3.8	6 17.2	254 45.4	17 43.9
2	208 22.6	18 38.0	337 19.9	184 9.6	6 16.3	284 46.9	17 44.8
4	238 22.7	18 36.8	7 24.9	214 15.4	6 15.4	314 48.4	17 45.6
6	268 22.7	18 35.6	37 29.8	244 21.2	6 14.5	344 50.0	17 46.5
8	298 22.8	18 34.4	67 34.7	274 27.0	6 13.7	14 51.5	17 47.3
10	328 22.8	18 33.2	97 39.6	304 32.8	6 12.8	44 53.0	17 48.2
12	358 22.9	18 32.0	127 44.6	334 38.6	6 11.9	74 54.6	17 49.0
14	28 22.9	18 30.7	157 49.5	4 44.5	6 11.1	104 56.1	17 49.9
16	58 23.0	18 29.5	187 54.4	34 50.3	6 10.2	134 57.7	17 50.8
18	88 23.0	18 28.3	217 59.3	64 56.2	6 9.4	164 59.2	17 51.6
20	118 23.1	18 27.1	248 4.3	95 2.1	6 8.6	195 .7	17 52.5
22	148 23.1	18 25.9	278 9.2	125 8.0	6 7.7	225 2.3	17 53.3
Δ	0	-6		29	-4	8	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 35	20 36	1 2	:::	21 1	.0	3 31	4.4
55	4 4	20 7	0 47	:::	20 36	.4	4 6	3.9
50	4 26	19 46	0 39	2 39	20 18	.7	4 30	3.5
45	4 42	19 30	0 34	2 7	20 3	1.0	4 50	3.3
40	4 56	19 16	0 30	1 49	19 51	1.2	5 5	3.1
35	5 8	19 5	0 28	1 38	19 40	1.3	5 18	2.9
30	5 18	18 55	0 26	1 30	19 31	1.5	5 29	2.8
20	5 35	18 38	0 24	1 20	19 15	1.7	5 49	2.5
10	5 49	18 24	0 22	1 15	19 1	1.9	6 5	2.3
0	6 3	18 10	0 22	1 13	18 48	2.1	6 21	2.1
10	6 17	17 57	0 22	1 13	18 34	2.3	6 36	2.0
20	6 31	17 42	0 23	1 16	18 20	2.5	6 52	1.8
30	6 47	17 26	0 25	1 23	18 4	2.7	7 11	1.5
35	6 57	17 17	0 27	1 27	17 54	2.9	7 22	1.4
40	7 7	17 6	0 29	1 34	17 43	3.1	7 34	1.2
45	7 20	16 54	0 32	1 42	17 30	3.3	7 48	1.1
50	7 35	16 38	0 36	1 53	17 14	3.5	8 6	.8
55	7 54	16 19	0 41	2 8	16 54	3.8	8 28	.5
60	8 20	15 53	0 49	2 30	16 26	4.3	8 58	.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	358 5.2	90 -21	22.4	112	58 46.6	-21 25.3	158 55.0	14 9.7
2	27 1.2	91 -21	.0	115	88 51.7	-21 25.3	188 59.4	14 9.5
4	55 57.4	92 -20	37.0	117	118 56.8	-21 25.3	219 3.7	14 9.3
6	84 53.9	93 -20	13.6	119	149 1.8	-21 25.3	249 8.0	14 9.1
8	113 50.6	95 -19	49.7	122	179 6.9	-21 25.3	279 12.4	14 8.9
10	142 47.5	96 -19	25.4	124	209 11.9	-21 25.3	309 16.7	14 8.7
12	171 44.6	97 -19	.6	126	239 17.0	-21 25.3	339 21.0	14 8.5
14	200 42.0	98 -18	35.3	129	269 22.0	-21 25.3	9 25.4	14 8.2
16	229 39.6	99 -18	9.6	131	299 27.1	-21 25.3	39 29.7	14 8.0
18	258 37.4	100 -17	43.4	133	329 32.1	-21 25.3	69 34.0	14 7.8
20	287 35.5	101 -17	16.9	135	359 37.2	-21 25.3	99 38.4	14 7.6
22	316 33.8	103 -16	49.9	137	29 42.2	-21 25.3	129 42.7	14 7.4
Δ					25	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 6 29.4	.1	15.8	T _m	0 8	2.2	57.9 15.8
12	- 6 28.2	T _{m☉}	12 h 6.5 min	Starost	15.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	13 41	.4	207	-4.3	♃	20 2	.0	112	-2.2
♂	7 1	.1	307	.5	♄	13 22	.0	212	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 23.2	18 24.7	308 14.1	155 13.9	6 6.9	255 3.8	17 54.2
2	208 23.3	18 23.5	338 19.1	185 19.9	6 6.1	285 5.4	17 55.0
4	238 23.3	18 22.2	8 24.0	215 25.9	6 5.3	315 6.9	17 55.9
6	268 23.4	18 21.0	38 28.9	245 31.8	6 4.5	345 8.4	17 56.7
8	298 23.4	18 19.8	68 33.8	275 37.8	6 3.7	15 10.0	17 57.6
10	328 23.5	18 18.6	98 38.8	305 43.8	6 2.9	45 11.5	17 58.4
12	358 23.6	18 17.3	128 43.7	335 49.8	6 2.1	75 13.1	17 59.2
14	28 23.6	18 16.1	158 48.6	5 55.9	6 1.3	105 14.6	18 .1
16	58 23.7	18 14.9	188 53.6	36 1.9	6 .5	135 16.1	18 .9
18	88 23.8	18 13.6	218 58.5	66 8.0	5 59.8	165 17.7	18 1.8
20	118 23.8	18 12.4	249 3.4	96 14.1	5 59.0	195 19.2	18 2.6
22	148 23.9	18 11.2	279 8.3	126 20.2	5 58.2	225 20.8	18 3.4
Δ	0	-6		30	-4	8	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 37	20 34	1 1	:::	21 1	.0	5 16	4.3
55	4 6	20 5	0 47	:::	20 47	.3	5 38	3.8
50	4 27	19 45	0 39	2 37	20 35	.6	5 55	3.5
45	4 44	19 29	0 34	2 6	20 26	.9	6 8	3.2
40	4 57	19 15	0 30	1 49	20 18	1.0	6 18	3.0
35	5 8	19 4	0 28	1 38	20 12	1.2	6 27	2.9
30	5 18	18 54	0 26	1 30	20 6	1.3	6 35	2.7
20	5 35	18 38	0 24	1 20	19 56	1.6	6 49	2.5
10	5 49	18 23	0 22	1 15	19 46	1.8	7 1	2.3
0	6 3	18 10	0 22	1 12	19 38	2.0	7 12	2.0
10	6 16	17 57	0 22	1 13	19 29	2.2	7 23	1.8
20	6 30	17 43	0 23	1 16	19 20	2.4	7 34	1.6
30	6 46	17 27	0 25	1 23	19 10	2.7	7 47	1.4
35	6 56	17 17	0 27	1 27	19 3	2.9	7 55	1.3
40	7 6	17 7	0 29	1 34	18 56	3.0	8 4	1.1
45	7 19	16 55	0 32	1 42	18 48	3.2	8 13	.9
50	7 34	16 40	0 35	1 53	18 38	3.5	8 25	.7
55	7 52	16 21	0 41	2 8	18 26	3.8	8 40	.4
60	8 18	15 56	0 49	2 29	18 9	4.2	8 59	.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	345 32.3	104 -16	22.5	139	59 47.3	-21 25.3	159 47.0	14 7.2
2	14 31.1	105 -15	54.8	141	89 52.3	-21 25.3	189 51.4	14 7.0
4	43 30.0	106 -15	26.7	142	119 57.4	-21 25.3	219 55.7	14 6.8
6	72 29.2	107 -14	58.2	144	150 2.4	-21 25.3	250 .0	14 6.6
8	101 28.6	108 -14	29.3	146	180 7.5	-21 25.3	280 4.3	14 6.4
10	130 28.2	109 -14	.2	147	210 12.5	-21 25.3	310 8.7	14 6.2
12	159 27.9	110 -13	30.7	149	240 17.5	-21 25.3	340 13.0	14 6.0
14	188 27.9	111 -13	.8	151	270 22.6	-21 25.3	10 17.3	14 5.8
16	217 28.1	112 -12	30.7	152	300 27.6	-21 25.3	40 21.7	14 5.6
18	246 28.4	113 -12	.3	153	330 32.6	-21 25.3	70 26.0	14 5.4
20	275 28.9	113 -11	29.6	155	0 37.7	-21 25.3	100 30.3	14 5.2
22	304 29.6	114 -10	58.6	156	30 42.7	-21 25.3	130 34.6	14 4.9
Δ					25	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 6 27.0	.1	15.8	T _m	0 60	2.1	58.4 15.9
12	- 6 25.5	T _{m☉}	12 h 6.4 min	Starost	16.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	13 36	.4	207	-4.2	♃	19 57	.0	112	-2.2
♂	6 59	.1	307	.5	♄	13 19	.0	212	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 24.0	18 9.9	309 13.3	156 26.3	5 57.5	255 22.3	18 4.3	
2	208 24.0	18 8.7	339 18.2	186 32.4	5 56.7	285 23.9	18 5.1	
4	238 24.1	18 7.4	9 23.1	216 38.6	5 56.0	315 25.4	18 5.9	
6	268 24.2	18 6.2	39 28.1	246 44.7	5 55.3	345 26.9	18 6.8	
8	298 24.3	18 4.9	69 33.0	276 50.9	5 54.5	15 28.5	18 7.6	
10	328 24.3	18 3.7	99 37.9	306 57.1	5 53.8	45 30.0	18 8.4	
12	358 24.4	18 2.4	129 42.8	337 3.3	5 53.1	75 31.6	18 9.3	
14	28 24.5	18 1.2	159 47.8	7 9.5	5 52.4	105 33.1	18 10.1	
16	58 24.6	17 59.9	189 52.7	37 15.7	5 51.7	135 34.7	18 10.9	
18	88 24.6	17 58.6	219 57.6	67 22.0	5 51.0	165 36.2	18 11.7	
20	118 24.7	17 57.4	250 2.6	97 28.2	5 50.3	195 37.8	18 12.6	
22	148 24.8	17 56.1	280 7.5	127 34.5	5 49.6	225 39.3	18 13.4	
Δ	0	-6		31	-4	8	4	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 40	20 31	1 0	:::	21 1	.0	6 58	4.2
55	4 8	20 4	0 46	:::	20 55	.3	7 9	3.8
50	4 29	19 43	0 39	2 35	20 50	.6	7 18	3.5
45	4 45	19 27	0 34	2 5	20 47	.8	7 25	3.2
40	4 58	19 14	0 30	1 48	20 43	1.0	7 31	3.0
35	5 9	19 3	0 28	1 37	20 41	1.2	7 36	2.8
30	5 19	18 54	0 26	1 30	20 38	1.3	7 41	2.7
20	5 35	18 37	0 23	1 20	20 34	1.6	7 48	2.4
10	5 50	18 23	0 22	1 14	20 30	1.8	7 55	2.2
0	6 3	18 10	0 22	1 12	20 26	2.0	8 1	2.0
10	6 16	17 57	0 22	1 13	20 23	2.2	8 7	1.8
20	6 30	17 43	0 23	1 16	20 19	2.4	8 14	1.6
30	6 46	17 27	0 25	1 22	20 14	2.7	8 21	1.3
35	6 55	17 18	0 27	1 27	20 12	2.8	8 25	1.2
40	7 5	17 8	0 29	1 33	20 9	3.0	8 30	1.0
45	7 17	16 56	0 32	1 42	20 6	3.2	8 35	.8
50	7 32	16 41	0 35	1 52	20 1	3.5	8 41	.6
55	7 51	16 23	0 41	2 7	19 56	3.8	8 49	.3
60	8 16	15 58	0 48	2 29	19 50	4.1	8 59	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	333 30.4	115 -10	27.4	157	60 47.7	-21 25.4	160 39.0	14 4.7
2	2 31.4	116 -9	56.0	158	90 52.8	-21 25.4	190 43.3	14 4.5
4	31 32.6	116 -9	24.3	160	120 57.8	-21 25.4	220 47.6	14 4.3
6	60 33.9	117 -8	52.4	161	151 2.8	-21 25.4	250 52.0	14 4.1
8	89 35.3	118 -8	20.2	162	181 7.9	-21 25.4	280 56.3	14 3.9
10	118 36.8	118 -7	47.9	163	211 12.9	-21 25.4	311 .6	14 3.7
12	147 38.4	119 -7	15.4	163	241 17.9	-21 25.4	341 5.0	14 3.5
14	176 40.2	119 -6	42.7	164	271 22.9	-21 25.4	11 9.3	14 3.3
16	205 42.0	120 -6	9.9	165	301 27.9	-21 25.4	41 13.6	14 3.1
18	234 43.9	120 -5	36.9	166	331 33.0	-21 25.4	71 17.9	14 2.9
20	263 46.0	120 -5	3.8	166	1 38.0	-21 25.4	101 22.3	14 2.7
22	292 48.0	121 -4	30.6	167	31 43.0	-21 25.4	131 26.6	14 2.5
Δ					25	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 6 23.9	.2	15.8	T _m	1 50	2.0	58.9 16.0		
12	- 6 22.1	T _{m☉}	12 h 6.4 min	Starost	17.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	'	°	h min	'	°
♂	13 31	.4	207	-4.2	♀	19 53	.0	112	-2.2
♂	6 58	.1	306	.5	♂	13 15	.0	211	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 24.9	17 54.9	310 12.4	157 40.8	5 48.9	255 40.9	18 14.2	
2	208 25.0	17 53.6	340 17.3	187 47.1	5 48.3	285 42.4	18 15.0	
4	238 25.1	17 52.3	10 22.3	217 53.5	5 47.6	315 44.0	18 15.9	
6	268 25.1	17 51.0	40 27.2	247 59.8	5 46.9	345 45.5	18 16.7	
8	298 25.2	17 49.8	70 32.1	278 6.2	5 46.3	15 47.1	18 17.5	
10	328 25.3	17 48.5	100 37.1	308 12.5	5 45.6	45 48.6	18 18.3	
12	358 25.4	17 47.2	130 42.0	338 18.9	5 45.0	75 50.2	18 19.1	
14	28 25.5	17 45.9	160 46.9	8 25.3	5 44.3	105 51.7	18 19.9	
16	58 25.6	17 44.6	190 51.8	38 31.7	5 43.7	135 53.3	18 20.7	
18	88 25.7	17 43.4	220 56.8	68 38.2	5 43.1	165 54.8	18 21.6	
20	118 25.8	17 42.1	251 1.7	98 44.6	5 42.5	195 56.4	18 22.4	
22	148 25.9	17 40.8	281 6.6	128 51.1	5 41.9	225 57.9	18 23.2	
Δ	0	-6		32	-3	8	4	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 42	20 29	0 59	:::	21 0	.0	8 38	4.2
55	4 10	20 2	0 46	:::	21 3	.3	8 40	3.8
50	4 30	19 42	0 38	2 33	21 5	.6	8 41	3.5
45	4 46	19 26	0 34	2 4	21 6	.8	8 43	3.2
40	4 59	19 13	0 30	1 48	21 7	1.0	8 44	3.0
35	5 10	19 2	0 28	1 37	21 8	1.2	8 45	2.8
30	5 19	18 53	0 26	1 29	21 9	1.3	8 45	2.7
20	5 36	18 37	0 23	1 19	21 11	1.6	8 47	2.4
10	5 50	18 23	0 22	1 14	21 13	1.8	8 48	2.2
0	6 3	18 10	0 22	1 12	21 14	2.0	8 49	2.0
10	6 16	17 57	0 22	1 13	21 16	2.2	8 50	1.8
20	6 29	17 43	0 23	1 16	21 17	2.5	8 51	1.6
30	6 45	17 28	0 25	1 22	21 19	2.7	8 52	1.3
35	6 54	17 19	0 27	1 27	21 20	2.9	8 53	1.2
40	7 4	17 9	0 29	1 33	21 21	3.0	8 54	1.0
45	7 16	16 57	0 32	1 41	21 23	3.2	8 55	.8
50	7 31	16 43	0 35	1 52	21 24	3.5	8 56	.6
55	7 49	16 24	0 40	2 7	21 26	3.8	8 57	.3
60	8 13	15 60	0 48	2 28	21 29	4.2	8 59	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	321 50.2	121 -3	57.2	167	61 48.0	-21 25.4	161 30.9	14 2.3
2	350 52.3	121 -3	23.8	168	91 53.0	-21 25.4	191 35.2	14 2.0
4	19 54.6	121 -2	50.2	168	121 58.0	-21 25.4	221 39.6	14 1.8
6	48 56.8	121 -2	16.6	168	152 3.0	-21 25.4	251 43.9	14 1.6
8	77 59.1	121 -1	43.0	169	182 8.1	-21 25.4	281 48.2	14 1.4
10	107 1.3	121 -1	9.2	169	212 13.1	-21 25.4	311 52.6	14 1.2
12	136 3.6	121 -0	35.5	169	242 18.1	-21 25.4	341 56.9	14 1.0
14	165 5.9	121 -0	1.7	169	272 23.1	-21 25.4	12 1.2	14 .8
16	194 8.1	121 -0	32.1	169	302 28.1	-21 25.4	42 5.5	14 .6
18	223 10.4	121 1	5.9	169	332 33.1	-21 25.5	72 9.9	14 .4
20	252 12.5	121 1	39.7	169	2 38.1	-21 25.5	102 14.2	14 .2
22	281 14.7	120 2	13.4	169	32 43.1	-21 25.5	132 18.5	13 60.0
Δ					25	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 6 20.3	.2	15.8	T _m	2 38	2.0	59.2 16.1		
12	- 6 18.1	T _{m☉}	12 h 6.3 min	Starost	18.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	'	°	h min	'	°
♂	13 26	.4	207	-4.2	♀	19 49	.0	112	-2.2
♂	6 57	.1	305	.5	♂	13 12	.0	211	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 25.9	17 39.5	311 11.5	158 57.5	5 41.3	255 59.5	18 24.0
2	208 26.0	17 38.2	341 16.5	189 4.0	5 40.7	286 1.0	18 24.8
4	238 26.1	17 36.9	11 21.4	219 10.5	5 40.1	316 2.6	18 25.6
6	268 26.2	17 35.6	41 26.3	249 17.1	5 39.5	346 4.1	18 26.4
8	298 26.3	17 34.3	71 31.3	279 23.6	5 38.9	16 5.7	18 27.2
10	328 26.4	17 33.0	101 36.2	309 30.1	5 38.3	46 7.2	18 28.0
12	358 26.5	17 31.7	131 41.1	339 36.7	5 37.8	76 8.8	18 28.8
14	28 26.6	17 30.4	161 46.0	9 43.3	5 37.2	106 10.3	18 29.6
16	58 26.7	17 29.1	191 51.0	39 49.9	5 36.7	136 11.9	18 30.4
18	88 26.8	17 27.8	221 55.9	69 56.5	5 36.1	166 13.5	18 31.2
20	118 26.9	17 26.5	252 .8	100 3.1	5 35.6	196 15.0	18 32.0
22	148 27.1	17 25.2	282 5.8	130 9.7	5 35.0	226 16.6	18 32.8
Δ	1	-7		33	-3	8	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 44	20 26	0 59	:	20 60	.0	10 17	4.3
55	4 12	19 60	0 45	:	21 11	.4	10 10	3.8
50	4 31	19 40	0 38	2 32	21 19	.7	10 4	3.5
45	4 47	19 25	0 33	2 4	21 26	.9	9 60	3.3
40	4 60	19 12	0 30	1 47	21 32	1.1	9 56	3.1
35	5 11	19 1	0 28	1 37	21 37	1.3	9 53	2.9
30	5 20	18 52	0 26	1 29	21 41	1.4	9 50	2.7
20	5 36	18 36	0 23	1 19	21 49	1.7	9 45	2.5
10	5 50	18 22	0 22	1 14	21 56	1.9	9 41	2.3
0	6 3	18 10	0 22	1 12	22 3	2.1	9 37	2.0
10	6 16	17 57	0 22	1 13	22 9	2.3	9 33	1.8
20	6 29	17 44	0 23	1 16	22 16	2.5	9 29	1.6
30	6 44	17 28	0 25	1 22	22 24	2.8	9 24	1.4
35	6 53	17 20	0 27	1 27	22 29	2.9	9 21	1.2
40	7 3	17 10	0 29	1 33	22 34	3.1	9 18	1.1
45	7 15	16 58	0 31	1 41	22 41	3.3	9 14	.9
50	7 29	16 44	0 35	1 52	22 48	3.6	9 10	.6
55	7 47	16 26	0 40	2 7	22 57	3.9	9 5	.4
60	8 11	16 2	0 48	2 28	23 10	4.3	8 58	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	310 16.7	120	2 47.2	168	62 48.1	-21 25.5	162 22.8	13 59.8
2	339 18.7	120	3 20.8	168	92 53.1	-21 25.5	192 27.2	13 59.6
4	8 20.6	119	3 54.4	168	122 58.1	-21 25.5	222 31.5	13 59.3
6	37 22.4	119	4 28.0	167	153 3.1	-21 25.5	252 35.8	13 59.1
8	66 24.1	118	5 1.4	167	183 8.1	-21 25.5	282 40.1	13 58.9
10	95 25.7	117	5 34.8	166	213 13.1	-21 25.5	312 44.5	13 58.7
12	124 27.2	117	6 8.0	166	243 18.0	-21 25.5	342 48.8	13 58.5
14	153 28.6	116	6 41.1	165	273 23.0	-21 25.5	12 53.1	13 58.3
16	182 29.8	115	7 14.1	164	303 28.0	-21 25.5	42 57.4	13 58.1
18	211 30.8	114	7 47.0	163	333 33.0	-21 25.6	73 1.8	13 57.9
20	240 31.7	114	8 19.6	163	3 38.0	-21 25.6	103 6.1	13 57.7
22	269 32.4	113	8 52.1	162	33 43.0	-21 25.6	133 10.4	13 57.5
Δ					25	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 6 16.0	.2	15.8	T _m	3 26	2.0	59.4 16.2		
12	- 6 13.6	T _{m☉}	12 h 6.2 min	Starost	19.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	'	°	'	°	'
♂	13 21	.5	208	-4.2	♀	19 46	.0	112	-2.2
♂	6 56	.1	305	.5	♂	13 9	.0	211	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 27.2	17 23.9	312 10.7	160 16.4	5 34.5	256 18.1	18 33.6
2	208 27.3	17 22.5	342 15.6	190 23.1	5 34.0	286 19.7	18 34.4
4	238 27.4	17 21.2	12 20.5	220 29.7	5 33.5	316 21.2	18 35.2
6	268 27.5	17 19.9	42 25.5	250 36.4	5 33.0	346 22.8	18 36.0
8	298 27.6	17 18.6	72 30.4	280 43.2	5 32.5	16 24.4	18 36.8
10	328 27.7	17 17.3	102 35.3	310 49.9	5 32.0	46 25.9	18 37.5
12	358 27.8	17 15.9	132 40.3	340 56.6	5 31.5	76 27.5	18 38.3
14	28 27.9	17 14.6	162 45.2	11 3.4	5 31.0	106 29.0	18 39.1
16	58 28.0	17 13.3	192 50.1	41 10.1	5 30.5	136 30.6	18 39.9
18	88 28.2	17 11.9	222 55.0	71 16.9	5 30.1	166 32.2	18 40.7
20	118 28.3	17 10.6	253 .0	101 23.7	5 29.6	196 33.7	18 41.5
22	148 28.4	17 9.3	283 4.9	131 30.5	5 29.2	226 35.3	18 42.2
Δ	1	-7		34	-2	8	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 47	20 24	0 58	:	20 60	.1	11 59	4.4
55	4 13	19 58	0 45	:	21 20	.5	11 42	3.9
50	4 33	19 38	0 38	2 30	21 36	.9	11 29	3.6
45	4 48	19 23	0 33	2 3	21 48	1.1	11 18	3.3
40	5 1	19 11	0 30	1 47	21 59	1.3	11 10	3.1
35	5 11	19 1	0 28	1 36	22 8	1.5	11 2	3.0
30	5 21	18 51	0 26	1 29	22 16	1.6	10 56	2.8
20	5 36	18 36	0 23	1 19	22 29	1.8	10 45	2.6
10	5 50	18 22	0 22	1 14	22 41	2.0	10 35	2.4
0	6 3	18 10	0 22	1 12	22 53	2.2	10 26	2.2
10	6 15	17 57	0 22	1 13	23 4	2.4	10 17	2.0
20	6 29	17 44	0 23	1 16	23 17	2.6	10 8	1.7
30	6 44	17 29	0 25	1 22	23 31	2.9	9 57	1.5
35	6 52	17 20	0 27	1 27	23 39	3.0	9 51	1.4
40	7 2	17 11	0 29	1 33	23 49	3.2	9 43	1.2
45	7 14	16 59	0 31	1 41	23 60	3.4	9 35	1.0
50	7 28	16 45	0 35	1 52	...	.0	9 26	.8
55	7 45	16 28	0 40	2 6	...	.0	9 14	.5
60	8 9	16 4	0 48	2 27	...	.0	8 58	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	298 32.9	112	9 24.5	161	63 48.0	-21 25.6	163 14.7	13 57.3
2	327 33.3	111	9 56.6	160	93 52.9	-21 25.6	193 19.1	13 57.0
4	356 33.4	110	10 28.5	158	123 57.9	-21 25.6	223 23.4	13 56.8
6	25 33.3	108	11 .2	157	154 2.9	-21 25.6	253 27.7	13 56.6
8	54 33.0	107	11 31.6	156	184 7.9	-21 25.6	283 32.0	13 56.4
10	83 32.5	106	12 2.8	155	214 12.8	-21 25.6	313 36.4	13 56.2
12	112 31.7	105	12 33.7	153	244 17.8	-21 25.6	343 40.7	13 56.0
14	141 30.7	104	13 4.4	152	274 22.8	-21 25.7	13 45.0	13 55.8
16	170 29.4	102	13 34.8	150	304 27.8	-21 25.7	43 49.3	13 55.6
18	199 27.9	101	14 4.8	149	334 32.7	-21 25.7	73 53.7	13 55.4
20	228 26.1	100	14 34.6	147	4 37.7	-21 25.7	103 58.0	13 55.2
22	257 24.0	98	15 4.0	145	34 42.7	-21 25.7	134 2.3	13 55.0
Δ					25	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 6 11.2	.2	15.8	T _m	4 14	2.1	59.4 16.2		
12	- 6 8.5	T _{m☉}	12 h 6.1 min	Starost	20.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	'	°	'	°	'
♂	13 16	.5	208	-4.2	♀	19 42	.0	112	-2.2
♂	6 54	.1	304	.5	♂	13 5	.0	211	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	28.5	17	7.9	313	9.8	161	37.3	5	28.7	256	36.8	18	43.0	
2	208	28.6	17	6.6	343	14.8	191	44.2	5	28.3	286	38.4	18	43.8	
4	238	28.8	17	5.2	13	19.7	221	51.0	5	27.8	316	40.0	18	44.6	
6	268	28.9	17	3.9	43	24.6	251	57.9	5	27.4	346	41.5	18	45.4	
8	298	29.0	17	2.6	73	29.5	282	4.8	5	27.0	16	43.1	18	46.1	
10	328	29.1	17	1.2	103	34.5	312	11.7	5	26.6	46	44.7	18	46.9	
12	358	29.3	16	59.9	133	39.4	342	18.6	5	26.2	76	46.2	18	47.7	
14	28	29.4	16	58.5	163	44.3	12	25.5	5	25.8	106	47.8	18	48.4	
16	58	29.5	16	57.2	193	49.3	42	32.4	5	25.4	136	49.3	18	49.2	
18	88	29.6	16	55.8	223	54.2	72	39.4	5	25.0	166	50.9	18	50.0	
20	118	29.8	16	54.4	253	59.1	102	46.3	5	24.6	196	52.5	18	50.7	
22	148	29.9	16	53.1	284	4.0	132	53.3	5	24.2	226	54.0	18	51.5	
Δ		1		-7				35		-2			8		4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 49	20 21	0 57	:	21 2	.2	13 46	4.6
55	4 15	19 56	0 45	3 49	21 34	.8	13 16	4.0
50	4 34	19 37	0 38	2 28	21 57	1.2	12 55	3.6
45	4 49	19 22	0 33	2 2	22 15	1.4	12 38	3.4
40	5 2	19 10	0 30	1 46	22 30	1.6	12 25	3.2
35	5 12	18 60	0 27	1 36	22 43	1.7	12 13	3.0
30	5 21	18 51	0 26	1 28	22 54	1.8	12 3	2.9
20	5 37	18 35	0 23	1 19	23 13	2.0	11 46	2.7
10	5 50	18 22	0 22	1 14	23 30	2.2	11 32	2.5
0	6 3	18 10	0 22	1 12	23 46	2.4	11 18	2.3
10	6 15	17 57	0 22	1 12	...	.0	11 4	2.1
20	6 28	17 44	0 23	1 16	...	.0	10 49	1.9
30	6 43	17 30	0 25	1 22	...	.0	10 33	1.7
35	6 51	17 21	0 27	1 27	...	.0	10 23	1.6
40	7 1	17 11	0 29	1 33	...	.0	10 12	1.4
45	7 12	17 0	0 31	1 41	...	.0	9 59	1.2
50	7 26	16 47	0 35	1 52	0 14	3.6	9 44	1.0
55	7 43	16 30	0 40	2 6	0 32	4.0	9 24	.6
60	8 6	16 7	0 47	2 27	0 56	4.6	8 58	.1

UT	MESEC				JUPITER			SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	286	21.6	97	15	33.1	144	64	47.6	-21	25.7	164	6.6	13	54.7	
2	315	18.9	95	16	1.9	142	94	52.6	-21	25.7	194	10.9	13	54.5	
4	344	16.0	94	16	30.3	140	124	57.6	-21	25.7	224	15.3	13	54.3	
6	13	12.7	92	16	58.3	138	155	2.5	-21	25.8	254	19.6	13	54.1	
8	42	9.1	91	17	25.9	136	185	7.5	-21	25.8	284	23.9	13	53.9	
10	71	5.2	89	17	53.1	134	215	12.4	-21	25.8	314	28.2	13	53.7	
12	100	1.0	87	18	19.9	132	245	17.4	-21	25.8	344	32.6	13	53.5	
14	128	56.4	86	18	46.2	130	275	22.4	-21	25.8	14	36.9	13	53.3	
16	157	51.6	84	19	12.2	127	305	27.3	-21	25.8	44	41.2	13	53.1	
18	186	46.4	82	19	37.6	125	335	32.3	-21	25.8	74	45.5	13	52.9	
20	215	40.8	81	20	2.6	123	5	37.2	-21	25.8	104	49.8	13	52.6	
22	244	35.0	79	20	27.2	120	35	42.2	-21	25.9	134	54.2	13	52.4	
Δ								25		0			22		-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 6	5.7	.3	15.8	T _m	5 5	2.2	59.4	16.2
12	- 6	2.7	T _{m☉}	12 h 6.0 min	Starost	21.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	13 10	.5	208	-4.1	♃	19 38	.0	112	-2.2
♂	6 53	.1	303	.5	♄	13 2	.0	211	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	30.0	16	51.7	314	9.0	163	.3	5	23.9	256	55.6	18	52.3	
2	208	30.2	16	50.4	344	13.9	193	7.3	5	23.5	286	57.2	18	53.0	
4	238	30.3	16	49.0	14	18.8	223	14.3	5	23.1	316	58.7	18	53.8	
6	268	30.4	16	47.6	44	23.8	253	21.3	5	22.8	347	.3	18	54.6	
8	298	30.6	16	46.3	74	28.7	283	28.3	5	22.5	17	1.9	18	55.3	
10	328	30.7	16	44.9	104	33.6	313	35.4	5	22.1	47	3.5	18	56.1	
12	358	30.8	16	43.5	134	38.5	343	42.5	5	21.8	77	5.0	18	56.8	
14	28	31.0	16	42.1	164	43.5	13	49.5	5	21.5	107	6.6	18	57.6	
16	58	31.1	16	40.8	194	48.4	43	56.6	5	21.2	137	8.2	18	58.4	
18	88	31.2	16	39.4	224	53.3	74	3.7	5	20.9	167	9.7	18	59.1	
20	118	31.4	16	38.0	254	58.2	104	10.9	5	20.6	197	11.3	18	59.9	
22	148	31.5	16	36.6	285	3.2	134	18.0	5	20.3	227	12.9	19	.6	
Δ		1		-7				35		-2			8		4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 51	20 19	0 56	:	21 7	.6	15 37	4.6
55	4 17	19 54	0 44	3 36	21 53	1.3	14 52	3.8
50	4 36	19 35	0 38	2 27	22 25	1.6	14 22	3.5
45	4 50	19 21	0 33	2 1	22 49	1.8	13 59	3.3
40	5 3	19 9	0 30	1 46	23 8	2.0	13 41	3.1
35	5 13	18 59	0 27	1 36	23 24	2.1	13 26	3.0
30	5 22	18 50	0 26	1 28	23 39	2.2	13 13	2.9
20	5 37	18 35	0 23	1 19	...	.0	12 50	2.7
10	5 50	18 22	0 22	1 14	...	.0	12 31	2.6
0	6 2	18 9	0 22	1 12	...	.0	12 13	2.4
10	6 15	17 57	0 22	1 12	0 2	2.5	11 55	2.3
20	6 27	17 45	0 23	1 16	0 20	2.7	11 36	2.2
30	6 42	17 30	0 25	1 22	0 40	2.9	11 14	2.0
35	6 50	17 22	0 27	1 27	0 51	3.0	11 1	1.9
40	6 60	17 12	0 29	1 33	1 5	3.2	10 46	1.8
45	7 11	17 1	0 31	1 41	1 21	3.3	10 29	1.6
50	7 24	16 48	0 35	1 51	1 41	3.6	10 8	1.4
55	7 41	16 31	0 40	2 6	2 8	4.0	9 40	1.0
60	8 4	16 9	0 47	2 26	2 46	4.7	9 1	.3

UT	MESEC				JUPITER			SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	273	28.7	77	20	51.2	118	65	47.1	-21	25.9	164	58.5	13	52.2	
2	302	22.2	76	21	14.7	115	95	52.1	-21	25.9	195	2.8	13	52.0	
4	331	15.3	74	21	37.7	112	125	57.0	-21	25.9	225	7.1	13	51.8	
6	0	8.1	72	22	.2	110	156	2.0	-21	25.9	255	11.5	13	51.6	
8	29	.5	70	22	22.1	107	186	6.9	-21	25.9	285	15.8	13	51.4	
10	57	52.6	69	22	43.5	104	216	11.8	-21	25.9	315	20.1	13	51.2	
12	86	44.3	67	23	4.4	101	246	16.8	-21	26.0	345	24.4	13	51.0	
14	115	35.8	66	23	24.6	98	276	21.7	-21	26.0	15	28.7	13	50.8	
16	144	26.9	64	23	44.3	95	306	26.7	-21	26.0	45	33.1	13	50.5	
18	173	17.7	62	24	3.3	92	336	31.6	-21	26.0	75	37.4	13	50.3	
20	202	8.1	61	24	21.8	89	6	36.5	-21	26.0	105	41.7	13	50.1	
22	230	58.3	59	24	39.6	86	36	41.5	-21	26.0	135	46.0	13	49.9	
Δ								25		0			22		-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 5	59.7	.3	15.8	T _m	5 59	2.4	59.2	16.1
12	- 5	56.4</							

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS		
	S _☉		δ _☉		S _☿		S _♀			S _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'
0	178	31.7	16	35.2	315	8.1	164	25.1	5	20.0	257	14.4
2	208	31.8	16	33.9	345	13.0	194	32.3	5	19.7	287	16.0
4	238	32.0	16	32.5	15	18.0	224	39.5	5	19.4	317	17.6
6	268	32.1	16	31.1	45	22.9	254	46.6	5	19.2	347	19.2
8	298	32.2	16	29.7	75	27.8	284	53.8	5	18.9	17	20.7
10	328	32.4	16	28.3	105	32.7	315	1.0	5	18.7	47	22.3
12	358	32.5	16	26.9	135	37.7	345	8.2	5	18.4	77	23.9
14	28	32.7	16	25.5	165	42.6	15	15.5	5	18.2	107	25.5
16	58	32.8	16	24.1	195	47.5	45	22.7	5	18.0	137	27.0
18	88	33.0	16	22.7	225	52.5	75	30.0	5	17.7	167	28.6
20	118	33.1	16	21.3	255	57.4	105	37.2	5	17.5	197	30.2
22	148	33.3	16	19.9	286	2.3	135	44.5	5	17.3	227	31.8
Δ	1		-7				36		-1		8	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 54	20 16	0 56	:	21 21	1.6	17 27	3.8
55	4 19	19 52	0 44	3 28	22 25	2.1	16 24	3.2
50	4 37	19 34	0 37	2 25	23 4	2.2	15 45	3.0
45	4 52	19 19	0 33	2 0	23 33	2.3	15 17	2.9
40	5 3	19 8	0 30	1 45	23 55	2.4	14 55	2.9
35	5 14	18 58	0 27	1 35	...	.0	14 37	2.8
30	5 22	18 49	0 26	1 28	...	.0	14 22	2.7
20	5 37	18 34	0 23	1 19	0 3	2.3	13 55	2.7
10	5 50	18 21	0 22	1 14	0 24	2.4	13 33	2.6
0	6 2	18 9	0 22	1 12	0 43	2.5	13 11	2.5
10	6 14	17 57	0 22	1 12	1 3	2.6	12 50	2.5
20	6 27	17 45	0 23	1 15	1 24	2.7	12 28	2.4
30	6 41	17 31	0 25	1 22	1 49	2.8	12 2	2.3
35	6 49	17 23	0 26	1 26	2 4	2.9	11 46	2.2
40	6 59	17 13	0 28	1 33	2 21	3.0	11 29	2.2
45	7 10	17 3	0 31	1 41	2 41	3.1	11 7	2.1
50	7 23	16 49	0 35	1 51	3 7	3.3	10 41	1.9
55	7 39	16 33	0 40	2 5	3 43	3.6	10 4	1.7
60	8 1	16 11	0 47	2 26	4 38	4.4	9 8	.9

UT	MESEC				JUPITER		SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	
h	°	'	°	'	°	'	°	'	
0	259	48.1	58	24 56.8	83	66 46.4	-21 26.1	165 50.3	13 49.7
2	288	37.7	56	25 13.4	80	96 51.3	-21 26.1	195 54.7	13 49.5
4	317	27.0	55	25 29.3	76	126 56.3	-21 26.1	225 59.0	13 49.3
6	346	16.0	54	25 44.5	73	157 1.2	-21 26.1	256 3.3	13 49.1
8	15	4.7	52	25 59.1	70	187 6.1	-21 26.1	286 7.6	13 48.9
10	43	53.2	51	26 13.0	66	217 11.0	-21 26.1	316 11.9	13 48.6
12	72	41.4	50	26 26.2	63	247 16.0	-21 26.2	346 16.3	13 48.4
14	101	29.4	49	26 38.8	59	277 20.9	-21 26.2	16 20.6	13 48.2
16	130	17.2	48	26 50.6	56	307 25.8	-21 26.2	46 24.9	13 48.0
18	159	4.8	47	27 1.7	52	337 30.7	-21 26.2	76 29.2	13 47.8
20	187	52.2	46	27 12.1	48	7 35.7	-21 26.2	106 33.5	13 47.6
22	216	39.4	45	27 21.8	45	37 40.6	-21 26.3	136 37.9	13 47.4
Δ						25	0	22	-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	- 5 53.2	.3	15.8	T _m	6 57	2.5	59.0	16.1
12	- 5 49.6	T _{m☉}	12 h 5.8 min	Starost	23.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	12 59	.5	209	-4.1	♃	19 30	.0	112	-2.2
♂	6 51	.1	302	.5	♄	12 55	.0	211	.7

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS		
	S _☉		δ _☉		S _☿		S _♀			S _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'
0	178	33.5	16	18.5	316	7.2	165	51.8	5	17.1	257	33.4
2	208	33.6	16	17.1	346	12.2	195	59.1	5	16.9	287	34.9
4	238	33.8	16	15.7	16	17.1	226	6.4	5	16.7	317	36.5
6	268	33.9	16	14.3	46	22.0	256	13.7	5	16.5	347	38.1
8	298	34.1	16	12.8	76	27.0	286	21.1	5	16.4	17	39.7
10	328	34.2	16	11.4	106	31.9	316	28.4	5	16.2	47	41.3
12	358	34.4	16	10.0	136	36.8	346	35.8	5	16.0	77	42.8
14	28	34.6	16	8.6	166	41.7	16	43.2	5	15.9	107	44.4
16	58	34.7	16	7.2	196	46.7	46	50.5	5	15.7	137	46.0
18	88	34.9	16	5.7	226	51.6	76	57.9	5	15.6	167	47.6
20	118	35.1	16	4.3	256	56.5	107	5.3	5	15.5	197	49.2
22	148	35.2	16	2.9	287	1.5	137	12.7	5	15.3	227	50.8
Δ	1		-7				37		-1		8	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 56	20 13	0 55	:	21 59	3.3	18 57	1.9
55	4 21	19 50	0 44	3 21	23 15	3.0	17 41	2.3
50	4 39	19 32	0 37	2 24	23 58	2.9	16 58	2.4
45	4 53	19 18	0 33	1 60	...	.0	16 28	2.4
40	5 4	19 6	0 30	1 45	...	.0	16 4	2.5
35	5 14	18 57	0 27	1 35	0 14	2.4	15 44	2.5
30	5 23	18 48	0 26	1 28	0 30	2.4	15 28	2.5
20	5 38	18 33	0 23	1 18	0 57	2.5	14 59	2.5
10	5 50	18 21	0 22	1 13	1 21	2.5	14 35	2.5
0	6 2	18 9	0 22	1 12	1 43	2.6	14 12	2.5
10	6 14	17 58	0 22	1 12	2 5	2.6	13 50	2.6
20	6 26	17 45	0 23	1 15	2 29	2.6	13 25	2.6
30	6 40	17 31	0 25	1 22	2 57	2.6	12 57	2.6
35	6 48	17 23	0 26	1 26	3 13	2.6	12 40	2.6
40	6 58	17 14	0 28	1 32	3 33	2.7	12 21	2.6
45	7 8	17 4	0 31	1 40	3 56	2.7	11 57	2.6
50	7 21	16 51	0 35	1 51	4 26	2.7	11 27	2.6
55	7 37	16 35	0 39	2 5	5 8	2.8	10 44	2.6
60	7 59	16 13	0 47	2 25	6 23	2.9	9 28	2.5

UT	MESEC				JUPITER		SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	
h	°	'	°	'	°	'	°	'	
0	245	26.4	45	27 30.7	41	67 45.5	-21 26.3	166 42.2	13 47.2
2	274	13.4	44	27 38.9	37	97 50.4	-21 26.3	196 46.5	13 47.0
4	303	.2	43	27 46.4	34	127 55.3	-21 26.3	226 50.8	13 46.7
6	331	46.8	43	27 53.2	30	158 .2	-21 26.3	256 55.1	13 46.5
8	0	33.4	43	27 59.2	26	188 5.1	-21 26.3	286 59.5	13 46.3
10	29	20.0	42	28 4.4	23	218 10.1	-21 26.4	317 3.8	13 46.1
12	58	6.5	42	28 9.0	19	248 15.0	-21 26.4	347 8.1	13 45.9
14	86	52.9	42	28 12.7	15	278 19.9	-21 26.4	17 12.4	13 45.7
16	115	39.3	42	28 15.7	11	308 24.8	-21 26.4	47 16.7	13 45.5
18	144	25.8	42	28 18.0	8	338 29.7	-21 26.4	77 21.1	13 45.3
20	173	12.2	43	28 19.5	4	8 34.6	-21 26.5	107 25.4	13 45.0
22	201	58.7	43	28 20.3	0	38 39.5	-21 26.5	137 29.7	13 44.8
Δ						25	0	22	-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	- 5 46.0	.3	15.8	T _m	7 58	2.5	58.7	16.0
12	- 5 42.1	T _{m☉}	12 h 5.7 min	Starost	24.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	12 53	.5	210	-4.1	♃	19 26	.0	112	-2.2
♂	6 49	.1	301	.5	♄	12 51	.0	211	.7

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS		
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}	δ_{ζ}		S_{σ}	δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'	°	'
0	178	35.4	16	1.5	317	6.4	167	20.2	5	15.2	257	52.3
2	208	35.6	16	.0	347	11.3	197	27.6	5	15.1	287	53.9
4	238	35.7	15	58.6	17	16.2	227	35.1	5	15.0	317	55.5
6	268	35.9	15	57.2	47	21.2	257	42.5	5	14.9	347	57.1
8	298	36.1	15	55.7	77	26.1	287	50.0	5	14.8	17	58.7
10	328	36.2	15	54.3	107	31.0	317	57.5	5	14.7	48	.3
12	358	36.4	15	52.9	137	36.0	348	5.0	5	14.6	78	1.9
14	28	36.6	15	51.4	167	40.9	18	12.5	5	14.6	108	3.4
16	58	36.7	15	50.0	197	45.8	48	20.0	5	14.5	138	5.0
18	88	36.9	15	48.5	227	50.7	78	27.5	5	14.4	168	6.6
20	118	37.1	15	47.1	257	55.7	108	35.0	5	14.4	198	8.2
22	148	37.3	15	45.6	288	.6	138	42.6	5	14.4	228	9.8
Δ	1		-7				37		0		8	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	3 59	20 11	0 54	:	23 20	4.3	19 43	.7
55	4 22	19 47	0 44	3 15	...	.0	18 35	1.4
50	4 40	19 30	0 37	2 22	...	.0	17 55	1.7
45	4 54	19 16	0 33	1 59	0 29	2.8	17 26	1.9
40	5 5	19 5	0 30	1 44	0 52	2.7	17 3	2.0
35	5 15	18 56	0 27	1 35	1 12	2.7	16 44	2.1
30	5 24	18 47	0 25	1 27	1 29	2.7	16 27	2.2
20	5 38	18 33	0 23	1 18	1 57	2.6	15 60	2.3
10	5 51	18 21	0 22	1 13	2 22	2.6	15 36	2.4
0	6 2	18 9	0 21	1 11	2 44	2.5	15 13	2.4
10	6 14	17 58	0 22	1 12	3 7	2.5	14 51	2.5
20	6 26	17 46	0 23	1 15	3 32	2.4	14 27	2.6
30	6 40	17 32	0 25	1 21	3 60	2.3	13 59	2.7
35	6 47	17 24	0 26	1 26	4 17	2.3	13 42	2.8
40	6 56	17 15	0 28	1 32	4 37	2.2	13 22	2.9
45	7 7	17 5	0 31	1 40	5 1	2.1	12 59	3.0
50	7 19	16 52	0 34	1 51	5 31	2.0	12 28	3.1
55	7 35	16 37	0 39	2 5	6 15	1.8	11 45	3.4
60	7 56	16 16	0 46	2 25	7 33	1.1	10 28	4.1
S								

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{μ}	δ_{μ}	S_{η}	δ_{η}
h	°	'	°	'	°	'	°	'
0	230	45.3	43	28	68	44.4	167	34.0
2	259	31.9	44	28	98	49.3	197	38.3
4	288	18.7	44	28	128	54.2	227	42.7
6	317	5.6	45	28	158	59.1	257	47.0
8	345	52.6	46	28	189	4.0	287	51.3
10	14	39.8	47	28	219	8.9	317	55.6
12	43	27.1	48	28	249	13.8	347	59.9
14	72	14.7	49	27	279	18.7	18	4.2
16	101	2.4	50	27	309	23.5	48	8.6
18	129	50.4	51	27	339	28.4	78	12.9
20	158	38.6	52	27	9	33.3	108	17.2
22	187	27.1	54	27	39	38.2	138	21.5
Δ					24		0	

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min	s	s	h min	min	'	'
00	- 5 38.3	.3	15.8	T_m	8 59	2.5	58.4
12	- 5 34.1	$T_{m\odot}$	12 h 5.6 min	Starost 25.5 d Faza ●			
PLANETE							
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π
♀	h min	'	°	Vel.	♂	h min	'
♂	12 47	.5	210	-4.0	♂	19 22	.0
♂	6 48	.1	301	.5	♂	12 48	.0

10. AVGUST

PETAK

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS		
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}	δ_{ζ}		S_{σ}	δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'	°	'
0	178	37.5	15	44.2	318	5.5	168	50.1	5	14.3	258	11.4
2	208	37.6	15	42.7	348	10.4	198	57.7	5	14.3	288	13.0
4	238	37.8	15	41.3	18	15.4	229	5.2	5	14.3	318	14.6
6	268	38.0	15	39.8	48	20.3	259	12.8	5	14.2	348	16.2
8	298	38.2	15	38.4	78	25.2	289	20.4	5	14.2	18	17.8
10	328	38.4	15	36.9	108	30.2	319	28.0	5	14.2	48	19.4
12	358	38.5	15	35.5	138	35.1	349	35.6	5	14.2	78	21.0
14	28	38.7	15	34.0	168	40.0	19	43.2	5	14.3	108	22.6
16	58	38.9	15	32.5	198	44.9	49	50.9	5	14.3	138	24.2
18	88	39.1	15	31.1	228	49.9	79	58.5	5	14.3	168	25.7
20	118	39.3	15	29.6	258	54.8	110	6.2	5	14.3	198	27.3
22	148	39.5	15	28.1	288	59.7	140	13.8	5	14.4	228	28.9
Δ	1		-7				38		0		8	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	4 1	20 8	0 54	:	...	.0	19 59	.2
55	4 24	19 45	0 43	3 10	0 27	3.6	19 9	.9
50	4 42	19 28	0 37	2 21	1 7	3.3	18 36	1.2
45	4 55	19 15	0 33	1 58	1 36	3.1	18 11	1.4
40	5 6	19 4	0 29	1 44	1 58	2.9	17 50	1.6
35	5 16	18 55	0 27	1 34	2 17	2.8	17 34	1.7
30	5 24	18 46	0 25	1 27	2 33	2.7	17 19	1.8
20	5 38	18 32	0 23	1 18	2 60	2.6	16 54	2.0
10	5 51	18 20	0 22	1 13	3 23	2.5	16 32	2.1
0	6 2	18 9	0 21	1 11	3 44	2.4	16 12	2.3
10	6 13	17 58	0 22	1 12	4 6	2.3	15 52	2.4
20	6 25	17 46	0 23	1 15	4 29	2.1	15 30	2.6
30	6 39	17 33	0 25	1 21	4 56	2.0	15 4	2.7
35	6 46	17 25	0 26	1 26	5 11	1.9	14 49	2.8
40	6 55	17 16	0 28	1 32	5 30	1.8	14 31	3.0
45	7 5	17 6	0 31	1 40	5 52	1.6	14 10	3.1
50	7 18	16 54	0 34	1 50	6 20	1.4	13 43	3.4
55	7 33	16 38	0 39	2 5	6 58	1.1	13 6	3.7
60	7 54	16 18	0 46	2 24	7 59	.4	12 6	4.5
S								

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{μ}	δ_{μ}	S_{η}	δ_{η}
h	°	'	°	'	°	'	°	'
0	216	15.9	55	27	69	43.1	168	25.8
2	245	5.0	57	27	99	48.0	198	30.2
4	273	54.3	58	27	129	52.9	228	34.5
6	302	44.0	60	26	159	57.7	258	38.8
8	331	34.0	62	26	190	2.6	288	43.1
10	0	24.4	64	26	220	7.5	318	47.4
12	29	15.1	65	26	250	12.4	348	51.7
14	58	6.2	67	26	280	17.2	18	56.1
16	86	57.6	69	25	310	22.1	49	.4
18	115	49.5	71	25	340	27.0	79	4.7
20	144	41.7	73	25	10	31.9	109	9.0
22	173	34.3	75	25	40	36.7	139	13.3
Δ					24		0	

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min	s	s	h min	min	'	'
00	- 5 30.0	.4	15.8	T_m	9 58	2.3	58.0
12	- 5 25.6	$T_{m\odot}$	12 h 5.4 min	Starost 26.5 d Faza ●			
PLANETE							
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π
♀	h min	'	°	Vel.	♂	h min	'
♂	12 41	.5	211	-4.0	♂	19 18	.0
♂	6 47	.1	300	.5	♂	12 44	.0

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 39.7	15 26.7	319 4.7	170 21.5	5 14.4	258 30.5	19 36.0	
2	208 39.9	15 25.2	349 9.6	200 29.2	5 14.5	288 32.1	19 36.7	
4	238 40.1	15 23.7	19 14.5	230 36.8	5 14.5	318 33.7	19 37.4	
6	268 40.2	15 22.2	49 19.4	260 44.5	5 14.6	348 35.3	19 38.1	
8	298 40.4	15 20.8	79 24.4	290 52.2	5 14.7	18 36.9	19 38.8	
10	328 40.6	15 19.3	109 29.3	320 59.9	5 14.7	48 38.5	19 39.5	
12	358 40.8	15 17.8	139 34.2	351 7.6	5 14.8	78 40.1	19 40.2	
14	28 41.0	15 16.3	169 39.2	21 15.4	5 14.9	108 41.7	19 40.9	
16	58 41.2	15 14.8	199 44.1	51 23.1	5 15.0	138 43.4	19 41.5	
18	88 41.4	15 13.4	229 49.0	81 30.8	5 15.1	168 45.0	19 42.2	
20	118 41.6	15 11.9	259 53.9	111 38.6	5 15.2	198 46.6	19 42.9	
22	148 41.8	15 10.4	289 58.9	141 46.3	5 15.4	228 48.2	19 43.6	
Δ	1	-7		39	0	8	3	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 3	20 5	0 53	:	1 4	4.3	20 5	.1
55	4 26	19 43	0 43	3 6	1 53	3.7	19 30	.6
50	4 43	19 27	0 37	2 20	2 25	3.4	19 4	.9
45	4 56	19 13	0 32	1 57	2 49	3.1	18 45	1.1
40	5 7	19 3	0 29	1 43	3 9	3.0	18 28	1.3
35	5 17	18 53	0 27	1 34	3 25	2.8	18 15	1.4
30	5 25	18 45	0 25	1 27	3 38	2.7	18 3	1.5
20	5 39	18 32	0 23	1 18	4 2	2.5	17 42	1.7
10	5 51	18 20	0 22	1 13	4 22	2.3	17 24	1.9
0	6 2	18 9	0 21	1 11	4 41	2.2	17 7	2.1
10	6 13	17 58	0 22	1 12	4 60	2.0	16 50	2.3
20	6 25	17 46	0 23	1 15	5 20	1.9	16 31	2.4
30	6 38	17 33	0 25	1 21	5 43	1.7	16 10	2.6
35	6 45	17 26	0 26	1 26	5 57	1.5	15 57	2.8
40	6 54	17 17	0 28	1 32	6 12	1.4	15 42	2.9
45	7 4	17 7	0 31	1 40	6 31	1.2	15 25	3.1
50	7 16	16 55	0 34	1 50	6 54	1.0	15 3	3.3
55	7 31	16 40	0 39	2 4	7 24	.7	14 35	3.7
60	7 51	16 20	0 46	2 24	8 7	.1	13 53	4.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	202 27.3	77	24 50.0	-83	70 41.6	-21 27.1	169 17.6	13 39.5
2	231 20.8	79	24 33.3	-86	100 46.5	-21 27.1	199 22.0	13 39.3
4	260 14.6	81	24 16.2	-88	130 51.3	-21 27.1	229 26.3	13 39.1
6	289 8.9	83	23 58.5	-91	160 56.2	-21 27.1	259 30.6	13 38.9
8	318 3.6	86	23 40.2	-94	191 1.0	-21 27.2	289 34.9	13 38.7
10	346 58.7	88	23 21.5	-96	221 5.9	-21 27.2	319 39.2	13 38.5
12	15 54.3	90	23 2.3	-98	251 10.8	-21 27.2	349 43.5	13 38.2
14	44 50.2	92	22 42.7	-101	281 15.6	-21 27.3	19 47.9	13 38.0
16	73 46.7	94	22 22.5	-103	311 20.5	-21 27.3	49 52.2	13 37.8
18	102 43.5	96	22 2.0	-105	341 25.3	-21 27.3	79 56.5	13 37.6
20	131 40.8	99	21 40.9	-107	11 30.2	-21 27.3	110 .8	13 37.4
22	160 38.5	101	21 19.5	-109	41 35.0	-21 27.4	140 5.1	13 37.2
Δ					24	0	22	-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s	'	h min	min	'	'	
00	- 5 21.1	.4	15.8	T _m	10 54	2.1	57.5	15.7
12	- 5 16.4	T _{m☉}	12 h 5.3 min	Starost	27.5 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	12 35	.5	211	-4.0	♃	19 14	.0	112	-2.2
♂	6 46	.1	299	.5	♄	12 41	.0	210	.7

12. AVGUST

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 42.0	15 8.9	320 3.8	171 54.1	5 15.5	258 49.8	19 44.3	
2	208 42.2	15 7.4	350 8.7	202 1.9	5 15.6	288 51.4	19 44.9	
4	238 42.4	15 5.9	20 13.7	232 9.6	5 15.8	318 53.0	19 45.6	
6	268 42.6	15 4.4	50 18.6	262 17.4	5 15.9	348 54.6	19 46.3	
8	298 42.8	15 2.9	80 23.5	292 25.2	5 16.1	18 56.2	19 47.0	
10	328 43.1	15 1.4	110 28.4	322 33.0	5 16.2	48 57.8	19 47.6	
12	358 43.3	14 59.9	140 33.4	352 40.8	5 16.4	78 59.4	19 48.3	
14	28 43.5	14 58.4	170 38.3	22 48.6	5 16.6	109 1.0	19 49.0	
16	58 43.7	14 56.9	200 43.2	52 56.5	5 16.7	139 2.6	19 49.7	
18	88 43.9	14 55.4	230 48.2	83 4.3	5 16.9	169 4.3	19 50.3	
20	118 44.1	14 53.9	260 53.1	113 12.1	5 17.1	199 5.9	19 51.0	
22	148 44.3	14 52.4	290 58.0	143 20.0	5 17.3	229 7.5	19 51.7	
Δ	1	-8		39	1	8	3	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 6	20 3	0 53	:	2 48	4.1	20 7	.0
55	4 28	19 41	0 43	3 2	3 22	3.6	19 43	.4
50	4 45	19 25	0 36	2 18	3 46	3.3	19 25	.7
45	4 58	19 12	0 32	1 57	4 4	3.0	19 11	.9
40	5 8	19 1	0 29	1 43	4 19	2.9	18 59	1.1
35	5 17	18 52	0 27	1 34	4 32	2.7	18 48	1.2
30	5 25	18 44	0 25	1 27	4 43	2.6	18 39	1.3
20	5 39	18 31	0 23	1 18	5 2	2.4	18 24	1.5
10	5 51	18 19	0 22	1 13	5 18	2.2	18 10	1.7
0	6 2	18 9	0 21	1 11	5 33	2.0	17 57	1.9
10	6 13	17 58	0 22	1 12	5 49	1.8	17 44	2.1
20	6 24	17 46	0 23	1 15	6 5	1.6	17 29	2.3
30	6 37	17 34	0 25	1 21	6 23	1.4	17 13	2.5
35	6 44	17 26	0 26	1 26	6 34	1.3	17 4	2.7
40	6 53	17 18	0 28	1 32	6 46	1.1	16 53	2.8
45	7 3	17 8	0 31	1 40	7 0	1.0	16 40	3.0
50	7 14	16 57	0 34	1 50	7 18	.7	16 24	3.2
55	7 29	16 42	0 39	2 4	7 40	.5	16 3	3.5
60	7 48	16 23	0 46	2 23	8 10	.0	15 35	4.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	189 36.6	103	20 57.6	-111	71 39.9	-21 27.4	170 9.4	13 37.0
2	218 35.2	105	20 35.4	-113	101 44.7	-21 27.4	200 13.8	13 36.7
4	247 34.2	107	20 12.8	-115	131 49.6	-21 27.4	230 18.1	13 36.5
6	276 33.6	109	19 49.7	-117	161 54.4	-21 27.5	260 22.4	13 36.3
8	305 33.4	111	19 26.4	-119	191 59.3	-21 27.5	290 26.7	13 36.1
10	334 33.6	113	19 2.7	-120	222 4.1	-21 27.5	320 31.0	13 35.9
12	3 34.3	115	18 38.6	-122	252 9.0	-21 27.6	350 35.3	13 35.7
14	32 35.3	117	18 14.2	-123	282 13.8	-21 27.6	20 39.6	13 35.5
16	61 36.8	119	17 49.5	-125	312 18.7	-21 27.6	50 44.0	13 35.3
18	90 38.7	121	17 24.5	-126	342 23.5	-21 27.6	80 48.3	13 35.0
20	119 40.9	123	16 59.3	-128	12 28.3	-21 27.7	110 52.6	13 34.8
22	148 43.5	125	16 33.7	-129	42 33.2	-21 27.7	140 56.9	13 34.6
Δ					24	0	22	-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s	'	h min	min	'	'	
00	- 5 11.7	.4	15.8	T _m	11 45	2.0	57.0	15.5
12	- 5 6.7	T _{m☉}	12 h 5.1 min	Starost	28.5 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	12 29	.5	212	-3.9	♃	19 10	.0	112	-2.2
♂	6 44	.1	299	.4	♄	12 38	.0	210	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 44.5	14 50.9	321 2.9	173 27.8	5 17.5	259 9.1	19 52.3
2	208 44.7	14 49.4	351 7.9	203 35.7	5 17.8	289 10.7	19 53.0
4	238 45.0	14 47.9	21 12.8	233 43.5	5 18.0	319 12.3	19 53.7
6	268 45.2	14 46.3	51 17.7	263 51.4	5 18.2	349 13.9	19 54.3
8	298 45.4	14 44.8	81 22.7	293 59.2	5 18.4	19 15.6	19 55.0
10	328 45.6	14 43.3	111 27.6	324 7.1	5 18.7	49 17.2	19 55.6
12	358 45.8	14 41.8	141 32.5	354 15.0	5 18.9	79 18.8	19 56.3
14	28 46.0	14 40.3	171 37.4	24 22.9	5 19.2	109 20.4	19 57.0
16	58 46.3	14 38.7	201 42.4	54 30.8	5 19.4	139 22.0	19 57.6
18	88 46.5	14 37.2	231 47.3	84 38.7	5 19.7	169 23.6	19 58.3
20	118 46.7	14 35.7	261 52.2	114 46.6	5 20.0	199 25.3	19 58.9
22	148 46.9	14 34.2	291 57.1	144 54.5	5 20.2	229 26.9	19 59.6
Δ	1	-8		39	1	8	3

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 8	19 60	0 52	:::	4 27	3.8	20 8	.0
55	4 30	19 39	0 42	2 58	4 49	3.4	19 53	.3
50	4 46	19 23	0 36	2 17	5 5	3.1	19 41	.6
45	4 59	19 10	0 32	1 56	5 18	2.9	19 32	.8
40	5 9	19 0	0 29	1 43	5 28	2.7	19 24	.9
35	5 18	18 51	0 27	1 33	5 37	2.6	19 17	1.1
30	5 26	18 44	0 25	1 26	5 45	2.5	19 11	1.2
20	5 39	18 30	0 23	1 18	5 59	2.2	19 1	1.4
10	5 51	18 19	0 22	1 13	6 10	2.0	18 52	1.6
0	6 2	18 8	0 21	1 11	6 21	1.8	18 43	1.8
10	6 12	17 58	0 22	1 12	6 32	1.7	18 34	2.0
20	6 23	17 47	0 23	1 15	6 44	1.5	18 25	2.2
30	6 36	17 34	0 25	1 21	6 57	1.2	18 14	2.4
35	6 43	17 27	0 26	1 26	7 5	1.1	18 7	2.5
40	6 51	17 19	0 28	1 32	7 13	1.0	17 60	2.7
45	7 1	17 9	0 31	1 40	7 23	.8	17 51	2.9
50	7 13	16 58	0 34	1 50	7 36	.6	17 41	3.1
55	7 27	16 44	0 39	2 4	7 51	.3	17 28	3.4
60	7 46	16 25	0 45	2 23	8 11	.0	17 11	3.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 46.5	127 16	7.9	-130	72 38.0	-21 27.7	171 1.2	13 34.4
2	206 49.9	129 15	41.8	-132	102 42.8	-21 27.8	201 5.5	13 34.2
4	235 53.6	130 15	15.5	-133	132 47.7	-21 27.8	231 9.9	13 34.0
6	264 57.7	132 14	48.9	-134	162 52.5	-21 27.8	261 14.2	13 33.8
8	294 2.2	134 14	22.1	-135	192 57.3	-21 27.9	291 18.5	13 33.5
10	323 6.9	136 13	55.2	-136	223 2.2	-21 27.9	321 22.8	13 33.3
12	352 12.0	137 13	28.0	-137	253 7.0	-21 27.9	351 27.1	13 33.1
14	21 17.5	139 13	.6	-138	283 11.8	-21 28.0	21 31.4	13 32.9
16	50 23.2	140 12	33.0	-139	313 16.6	-21 28.0	51 35.7	13 32.7
18	79 29.3	142 12	5.3	-139	343 21.5	-21 28.0	81 40.1	13 32.5
20	108 35.7	143 11	37.4	-140	13 26.3	-21 28.0	111 44.4	13 32.3
22	137 42.4	145 11	9.4	-141	43 31.1	-21 28.1	141 48.7	13 32.0
Δ					24	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 5 1.7	.4	15.8	T _m	12 32	1.8	56.4 15.4
12	- 4 56.4	T _{m☉}	12 h 4.9 min	Starost	.0 d	Faza ●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 23	.5	212	-3.9	♄	19 6	.0	112	-2.1
♂	6 43	.1	298	.4	♄	12 34	.0	210	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 47.2	14 32.6	322 2.1	175 2.4	5 20.5	259 28.5	20 .2
2	208 47.4	14 31.1	352 7.0	205 10.3	5 20.8	289 30.1	20 .9
4	238 47.6	14 29.6	22 11.9	235 18.2	5 21.1	319 31.8	20 1.5
6	268 47.8	14 28.0	52 16.9	265 26.2	5 21.4	349 33.4	20 2.2
8	298 48.1	14 26.5	82 21.8	295 34.1	5 21.7	19 35.0	20 2.8
10	328 48.3	14 25.0	112 26.7	325 42.0	5 22.0	49 36.6	20 3.5
12	358 48.5	14 23.4	142 31.6	355 50.0	5 22.4	79 38.3	20 4.1
14	28 48.8	14 21.9	172 36.6	25 57.9	5 22.7	109 39.9	20 4.7
16	58 49.0	14 20.3	202 41.5	56 5.9	5 23.0	139 41.5	20 5.4
18	88 49.2	14 18.8	232 46.4	86 13.8	5 23.4	169 43.1	20 6.0
20	118 49.5	14 17.2	262 51.4	116 21.8	5 23.7	199 44.8	20 6.7
22	148 49.7	14 15.7	292 56.3	146 29.7	5 24.1	229 46.4	20 7.3
Δ	1	-8		40	2	8	3

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 11	19 57	0 52	:::	5 59	3.6	20 7	.0
55	4 32	19 37	0 42	2 55	6 11	3.3	20 0	.3
50	4 47	19 21	0 36	2 16	6 20	3.0	19 55	.5
45	4 60	19 9	0 32	1 55	6 28	2.8	19 50	.7
40	5 10	18 59	0 29	1 42	6 34	2.6	19 46	.8
35	5 19	18 50	0 27	1 33	6 39	2.5	19 43	1.0
30	5 27	18 43	0 25	1 26	6 44	2.3	19 40	1.1
20	5 40	18 30	0 23	1 17	6 52	2.1	19 35	1.3
10	5 51	18 19	0 22	1 13	6 59	1.9	19 30	1.5
0	6 1	18 8	0 21	1 11	7 6	1.7	19 26	1.7
10	6 12	17 58	0 22	1 12	7 12	1.6	19 21	1.9
20	6 23	17 47	0 23	1 15	7 19	1.4	19 17	2.1
30	6 35	17 35	0 25	1 21	7 27	1.1	19 11	2.3
35	6 42	17 28	0 26	1 26	7 32	1.0	19 8	2.4
40	6 50	17 20	0 28	1 32	7 37	.9	19 4	2.6
45	6 60	17 11	0 31	1 39	7 43	.7	19 0	2.8
50	7 11	16 59	0 34	1 50	7 50	.5	18 55	3.0
55	7 25	16 46	0 39	2 3	7 59	.3	18 49	3.2
60	7 43	16 27	0 45	2 23	8 10	.0	18 40	3.6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	166 49.3	146 10	41.2	-142	73 35.9	-21 28.1	171 53.0	13 31.8
2	195 56.5	147 10	12.9	-142	103 40.7	-21 28.1	201 57.3	13 31.6
4	225 4.0	149 9	44.5	-143	133 45.5	-21 28.2	232 1.6	13 31.4
6	254 11.8	150 9	16.0	-143	163 50.4	-21 28.2	262 5.9	13 31.2
8	283 19.8	151 8	47.3	-144	193 55.2	-21 28.2	292 10.3	13 31.0
10	312 28.0	152 8	18.6	-144	223 60.0	-21 28.3	322 14.6	13 30.8
12	341 36.5	154 7	49.8	-144	254 4.8	-21 28.3	352 18.9	13 30.5
14	10 45.2	155 7	20.9	-145	284 9.6	-21 28.3	22 23.2	13 30.3
16	39 54.1	156 6	51.9	-145	314 14.4	-21 28.4	52 27.5	13 30.1
18	69 3.2	157 6	22.9	-145	344 19.2	-21 28.4	82 31.8	13 29.9
20	98 12.5	158 5	53.8	-146	14 24.0	-21 28.4	112 36.2	13 29.7
22	127 22.1	158 5	24.7	-146	44 28.8	-21 28.5	142 40.5	13 29.5
Δ					24	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 4 51.2	.5	15.8	T _m	13 16	1.7	55.9 15.2
12	- 4 45.6	T _{m☉}	12 h 4.8 min	Starost	1.0 d	Faza ●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 17	.5	213	-3.9	♄	19 3	.0	112	-2.1
♂	6 42	.1	297	.4	♄	12 31	.0	210	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 49.9	14 14.1	323 1.2	176 37.7	5 24.4	259 48.0	20 7.9
2	208 50.2	14 12.6	353 6.1	206 45.6	5 24.8	289 49.7	20 8.6
4	238 50.4	14 11.0	23 11.1	236 53.6	5 25.2	319 51.3	20 9.2
6	268 50.7	14 9.5	53 16.0	267 1.6	5 25.6	349 52.9	20 9.8
8	298 50.9	14 7.9	83 20.9	297 9.6	5 25.9	19 54.6	20 10.5
10	328 51.1	14 6.4	113 25.9	327 17.5	5 26.3	49 56.2	20 11.1
12	358 51.4	14 4.8	143 30.8	357 25.5	5 26.7	79 57.8	20 11.7
14	28 51.6	14 3.3	173 35.7	27 33.5	5 27.1	109 59.5	20 12.4
16	58 51.9	14 1.7	203 40.6	57 41.5	5 27.5	140 1.1	20 13.0
18	88 52.1	14 .1	233 45.6	87 49.5	5 28.0	170 2.7	20 13.6
20	118 52.4	13 58.6	263 50.5	117 57.5	5 28.4	200 4.4	20 14.2
22	148 52.6	13 57.0	293 55.4	148 5.5	5 28.8	230 6.0	20 14.9
Δ	1	-8		40	2	8	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 13	19 54	0 51	:::	7 26	3.5	20 6	.0
55	4 34	19 34	0 42	2 52	7 29	3.2	20 6	.3
50	4 49	19 19	0 36	2 15	7 32	2.9	20 6	.5
45	5 1	19 7	0 32	1 55	7 35	2.7	20 6	.7
40	5 11	18 57	0 29	1 42	7 37	2.6	20 7	.8
35	5 20	18 49	0 27	1 33	7 39	2.4	20 7	1.0
30	5 27	18 42	0 25	1 26	7 40	2.3	20 7	1.1
20	5 40	18 29	0 23	1 17	7 43	2.1	20 7	1.3
10	5 51	18 18	0 22	1 13	7 45	1.9	20 7	1.5
0	6 1	18 8	0 21	1 11	7 47	1.7	20 7	1.7
10	6 11	17 58	0 22	1 11	7 49	1.5	20 7	1.8
20	6 22	17 47	0 23	1 15	7 52	1.3	20 7	2.0
30	6 34	17 35	0 25	1 21	7 54	1.1	20 6	2.3
35	6 41	17 29	0 26	1 25	7 56	1.0	20 6	2.4
40	6 49	17 21	0 28	1 31	7 58	.8	20 6	2.5
45	6 58	17 12	0 31	1 39	7 60	.7	20 6	2.7
50	7 9	17 1	0 34	1 49	8 2	.5	20 6	2.9
55	7 23	16 47	0 38	2 3	8 5	.2	20 6	3.2
60	7 40	16 30	0 45	2 22	8 9	.0	20 6	3.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	156 31.7	159	4 55.5	-146	74 33.6	-21 28.5	172 44.8	13 29.3
2	185 41.6	160	4 26.4	-146	104 38.4	-21 28.5	202 49.1	13 29.0
4	214 51.6	161	3 57.1	-146	134 43.2	-21 28.6	232 53.4	13 28.8
6	244 1.8	162	3 27.9	-146	164 48.0	-21 28.6	262 57.7	13 28.6
8	273 12.1	162	2 58.7	-146	194 52.8	-21 28.6	293 2.0	13 28.4
10	302 22.5	163	2 29.5	-146	224 57.6	-21 28.7	323 6.4	13 28.2
12	331 33.1	163	2 .2	-146	255 2.4	-21 28.7	353 10.7	13 28.0
14	0 43.8	164	1 31.0	-146	285 7.2	-21 28.8	23 15.0	13 27.8
16	29 54.6	164	1 1.9	-146	315 12.0	-21 28.8	53 19.3	13 27.5
18	59 5.5	165	0 32.7	-146	345 16.8	-21 28.8	83 23.6	13 27.3
20	88 16.5	165	0 3.6	-145	15 21.6	-21 28.9	113 27.9	13 27.1
22	117 27.5	166	- 0 25.5	-145	45 26.4	-21 28.9	143 32.2	13 26.9
Δ					24	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 4 40.1	.5	15.8	T _m	13 57	1.7	55.4 15.1		
12	- 4 34.2	T _{m☉}	12 h 4.6 min	Starost	2.0 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	12 10	.5	214	-3.9	♃	18 59	.0	112	-2.1
♂	6 40	.1	297	.4	♄	12 27	.0	210	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 52.9	13 55.4	324 .4	178 13.5	5 29.2	260 7.6	20 15.5
2	208 53.1	13 53.9	354 5.3	208 21.5	5 29.7	290 9.3	20 16.1
4	238 53.4	13 52.3	24 10.2	238 29.5	5 30.1	320 10.9	20 16.7
6	268 53.6	13 50.7	54 15.1	268 37.4	5 30.6	350 12.6	20 17.4
8	298 53.9	13 49.1	84 20.1	298 45.5	5 31.0	20 14.2	20 18.0
10	328 54.1	13 47.6	114 25.0	328 53.5	5 31.5	50 15.9	20 18.6
12	358 54.4	13 46.0	144 29.9	359 1.5	5 31.9	80 17.5	20 19.2
14	28 54.6	13 44.4	174 34.9	29 9.5	5 32.4	110 19.1	20 19.8
16	58 54.9	13 42.8	204 39.8	59 17.5	5 32.9	140 20.8	20 20.4
18	88 55.1	13 41.3	234 44.7	89 25.5	5 33.4	170 22.4	20 21.0
20	118 55.4	13 39.7	264 49.6	119 33.5	5 33.9	200 24.1	20 21.7
22	148 55.6	13 38.1	294 54.6	149 41.5	5 34.4	230 25.7	20 22.3
Δ	1	-8		40	2	8	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 16	19 52	0 51	:::	8 50	3.5	20 5	.0
55	4 35	19 32	0 42	2 49	8 46	3.1	20 12	.3
50	4 50	19 17	0 36	2 13	8 43	2.9	20 18	.5
45	5 2	19 6	0 32	1 54	8 40	2.7	20 23	.7
40	5 12	18 56	0 29	1 41	8 38	2.5	20 26	.9
35	5 20	18 48	0 27	1 32	8 36	2.4	20 30	1.0
30	5 28	18 41	0 25	1 26	8 35	2.3	20 33	1.1
20	5 40	18 28	0 23	1 17	8 32	2.0	20 38	1.3
10	5 51	18 18	0 22	1 12	8 30	1.8	20 42	1.5
0	6 1	18 8	0 21	1 11	8 28	1.7	20 47	1.7
10	6 11	17 58	0 22	1 11	8 25	1.5	20 51	1.9
20	6 21	17 48	0 23	1 15	8 23	1.3	20 56	2.0
30	6 33	17 36	0 25	1 21	8 21	1.1	21 1	2.3
35	6 40	17 29	0 26	1 25	8 19	1.0	21 4	2.4
40	6 48	17 22	0 28	1 31	8 18	.8	21 7	2.5
45	6 56	17 13	0 30	1 39	8 16	.7	21 11	2.7
50	7 7	17 2	0 34	1 49	8 14	.5	21 16	2.9
55	7 20	16 49	0 38	2 3	8 11	.3	21 22	3.2
60	7 38	16 32	0 45	2 22	8 8	.0	21 29	3.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	146 38.7	166 - 0	54.5	-145	75 31.1	-21 28.9	173 36.5	13 26.7
2	175 49.9	166 - 1	23.5	-145	105 35.9	-21 29.0	203 40.9	13 26.5
4	205 1.1	166 - 1	52.4	-144	135 40.7	-21 29.0	233 45.2	13 26.2
6	234 12.4	167 - 2	21.3	-144	165 45.5	-21 29.0	263 49.5	13 26.0
8	263 23.7	167 - 2	50.1	-143	195 50.3	-21 29.1	293 53.8	13 25.8
10	292 35.1	167 - 3	18.8	-143	225 55.1	-21 29.1	323 58.1	13 25.6
12	321 46.5	167 - 3	47.4	-143	255 59.8	-21 29.2	354 2.4	13 25.4
14	350 57.9	167 - 4	15.9	-142	286 4.6	-21 29.2	24 6.7	13 25.2
16	20 9.3	167 - 4	44.3	-142	316 9.4	-21 29.2	54 11.1	13 25.0
18	49 20.7	167 - 5	12.6	-141	346 14.2	-21 29.3	84 15.4	13 24.7
20	78 32.0	167 - 5	40.8	-140	16 18.9	-21 29.3	114 19.7	13 24.5
22	107 43.4	167 - 6	8.9	-140	46 23.7	-21 29.3	144 24.0	13 24.3
Δ					24	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 4 28.4	.5	15.8	T _m	14 37	1.7	54.9 15.0		
12	- 4 22.3	T _{m☉}	12 h 4.4 min	Starost	3.0 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	12 4	.5	214	-3.9	♃	18 55	.0	112	-2.1
♂	6 39	.1	296	.4	♄	12 24	.0	210	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 55.9	13 36.5	324 59.5	179 49.5	5 34.9	260 27.4	20 22.9	
2	208 56.2	13 34.9	355 4.4	209 57.5	5 35.4	290 29.0	20 23.5	
4	238 56.4	13 33.3	25 9.3	240 5.5	5 35.9	320 30.7	20 24.1	
6	268 56.7	13 31.7	55 14.3	270 13.5	5 36.4	350 32.3	20 24.7	
8	298 56.9	13 30.1	85 19.2	300 21.5	5 36.9	20 34.0	20 25.3	
10	328 57.2	13 28.5	115 24.1	330 29.5	5 37.4	50 35.6	20 25.9	
12	358 57.5	13 27.0	145 29.1	0 37.5	5 38.0	80 37.3	20 26.5	
14	28 57.7	13 25.4	175 34.0	30 45.6	5 38.5	110 38.9	20 27.1	
16	58 58.0	13 23.8	205 38.9	60 53.6	5 39.1	140 40.6	20 27.7	
18	88 58.3	13 22.2	235 43.8	91 1.6	5 39.6	170 42.2	20 28.3	
20	118 58.5	13 20.6	265 48.8	121 9.6	5 40.2	200 43.9	20 28.9	
22	148 58.8	13 19.0	295 53.7	151 17.6	5 40.7	230 45.6	20 29.5	
Δ	1	-8		40	3	8	3	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 18	19 49	0 50	:::	10 13	3.5	20 4	.0
55	4 37	19 30	0 41	2 47	10 1	3.2	20 19	.3
50	4 52	19 15	0 36	2 12	9 52	2.9	20 30	.6
45	5 3	19 4	0 32	1 53	9 45	2.7	20 39	.8
40	5 13	18 55	0 29	1 41	9 39	2.5	20 47	.9
35	5 21	18 47	0 27	1 32	9 33	2.4	20 54	1.1
30	5 28	18 40	0 25	1 25	9 29	2.3	20 60	1.2
20	5 40	18 28	0 23	1 17	9 21	2.1	21 10	1.4
10	5 51	18 17	0 22	1 12	9 14	1.9	21 19	1.6
0	6 1	18 8	0 21	1 11	9 8	1.7	21 27	1.7
10	6 10	17 58	0 22	1 11	9 1	1.5	21 36	1.9
20	6 21	17 48	0 23	1 14	8 55	1.4	21 45	2.1
30	6 32	17 37	0 25	1 21	8 47	1.1	21 55	2.3
35	6 39	17 30	0 26	1 25	8 43	1.0	22 1	2.4
40	6 46	17 23	0 28	1 31	8 38	.9	22 8	2.5
45	6 55	17 14	0 30	1 39	8 32	.7	22 16	2.7
50	7 5	17 4	0 34	1 49	8 25	.5	22 25	2.9
55	7 18	16 51	0 38	2 3	8 17	.3	22 37	3.2
60	7 35	16 34	0 44	2 22	8 7	.0	22 53	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	136 54.7	166 - 6	36.9	-139	76 28.5	-21 29.4	174 28.3	13 24.1
2	166 6.0	166 - 7	4.7	-139	106 33.2	-21 29.4	204 32.6	13 23.9
4	195 17.2	166 - 7	32.5	-138	136 38.0	-21 29.5	234 36.9	13 23.7
6	224 28.4	166 - 8	.0	-137	166 42.8	-21 29.5	264 41.3	13 23.4
8	253 39.5	165 - 8	27.5	-136	196 47.5	-21 29.5	294 45.6	13 23.2
10	282 50.5	165 - 8	54.7	-136	226 52.3	-21 29.6	324 49.9	13 23.0
12	312 1.4	164 - 9	21.9	-135	256 57.1	-21 29.6	354 54.2	13 22.8
14	341 12.3	164 - 9	48.8	-134	287 1.8	-21 29.7	24 58.5	13 22.6
16	10 23.1	163 -10	15.6	-133	317 6.6	-21 29.7	55 2.8	13 22.4
18	39 33.7	163 -10	42.3	-132	347 11.3	-21 29.7	85 7.1	13 22.2
20	68 44.2	162 -11	8.7	-131	17 16.1	-21 29.8	115 11.5	13 21.9
22	97 54.7	161 -11	35.0	-130	47 20.8	-21 29.8	145 15.8	13 21.7
Δ					24	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 4 16.2	.5	15.8	T _m	15 17	1.7	54.5 14.9		
12	- 4 9.8	T _{m☉}	12 h 4.2 min	Starost	4.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	11 58	.5	215	-3.8	♃	18 51	.0	111	-2.1
♂	6 38	.1	295	.4	♄	12 20	.0	209	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 59.1	13 17.4	325 58.6	181 25.6	5 41.3	260 47.2	20 30.1	
2	208 59.4	13 15.8	356 3.6	211 33.6	5 41.9	290 48.9	20 30.7	
4	238 59.6	13 14.1	26 8.5	241 41.6	5 42.4	320 50.5	20 31.3	
6	268 59.9	13 12.5	56 13.4	271 49.6	5 43.0	350 52.2	20 31.9	
8	299 .2	13 10.9	86 18.3	301 57.6	5 43.6	20 53.8	20 32.5	
10	329 .4	13 9.3	116 23.3	332 5.6	5 44.2	50 55.5	20 33.0	
12	359 .7	13 7.7	146 28.2	2 13.6	5 44.8	80 57.2	20 33.6	
14	29 1.0	13 6.1	176 33.1	32 21.6	5 45.4	110 58.8	20 34.2	
16	59 1.3	13 4.5	206 38.1	62 29.5	5 46.0	141 .5	20 34.8	
18	89 1.6	13 2.9	236 43.0	92 37.5	5 46.6	171 2.2	20 35.4	
20	119 1.8	13 1.2	266 47.9	122 45.5	5 47.2	201 3.8	20 36.0	
22	149 2.1	12 59.6	296 52.8	152 53.5	5 47.8	231 5.5	20 36.6	
Δ	1	-8		40	3	8	3	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 20	19 46	0 50	:::	11 38	3.7	20 4	.0
55	4 39	19 27	0 41	2 44	11 17	3.2	20 27	.4
50	4 53	19 13	0 35	2 11	11 2	3.0	20 44	.7
45	5 5	19 2	0 32	1 53	10 49	2.7	20 58	.9
40	5 14	18 53	0 29	1 40	10 39	2.6	21 10	1.1
35	5 22	18 45	0 27	1 32	10 31	2.4	21 19	1.2
30	5 29	18 39	0 25	1 25	10 23	2.3	21 28	1.3
20	5 41	18 27	0 23	1 17	10 10	2.1	21 43	1.5
10	5 51	18 17	0 22	1 12	9 59	1.9	21 56	1.7
0	6 1	18 7	0 21	1 11	9 48	1.8	22 9	1.8
10	6 10	17 58	0 22	1 11	9 38	1.6	22 21	2.0
20	6 20	17 48	0 23	1 14	9 27	1.4	22 34	2.1
30	6 31	17 37	0 25	1 21	9 15	1.3	22 50	2.3
35	6 38	17 31	0 26	1 25	9 7	1.1	22 59	2.5
40	6 45	17 24	0 28	1 31	8 59	1.0	23 9	2.6
45	6 53	17 15	0 30	1 39	8 50	.8	23 21	2.8
50	7 3	17 5	0 34	1 49	8 38	.6	23 35	3.0
55	7 16	16 53	0 38	2 2	8 24	.4	23 54	3.3
60	7 32	16 37	0 44	2 21	8 6	.0	...	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	127 5.0	161 -12	1.0	-129	77 25.6	-21 29.9	175 20.1	13 21.5
2	156 15.1	160 -12	26.9	-128	107 30.4	-21 29.9	205 24.4	13 21.3
4	185 25.1	159 -12	52.6	-127	137 35.1	-21 29.9	235 28.7	13 21.1
6	214 35.0	158 -13	18.1	-126	167 39.9	-21 30.0	265 33.0	13 20.9
8	243 44.7	158 -13	43.3	-125	197 44.6	-21 30.0	295 37.3	13 20.6
10	272 54.2	157 -14	8.3	-124	227 49.3	-21 30.1	325 41.6	13 20.4
12	302 3.5	156 -14	33.2	-123	257 54.1	-21 30.1	355 46.0	13 20.2
14	331 12.7	155 -14	57.7	-122	287 58.8	-21 30.1	25 50.3	13 20.0
16	0 21.7	154 -15	22.1	-121	318 3.6	-21 30.2	55 54.6	13 19.8
18	29 30.5	153 -15	46.2	-119	348 8.3	-21 30.2	85 58.9	13 19.6
20	58 39.0	152 -16	10.0	-118	18 13.1	-21 30.3	116 3.2	13 19.4
22	87 47.4	151 -16	33.6	-117	48 17.8	-21 30.3	146 7.5	13 19.1
Δ					24	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 4 3.5	.6	15.8	T _m	15 59	1.8	54.3 14.8		
12	- 3 56.9	T _{m☉}	12 h 4.0 min	Starost	5.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	11 51	.5	215	-3.8	♃	18 17	.0	111	-2.1
♂	6 36	.1	295	.4	♄	12 17	.0	209	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	2.4	12	58.0	326	57.8	183	1.5	5	48.5	261	7.2	20	37.1
2	209	2.7	12	56.4	357	2.7	213	9.5	5	49.1	291	8.8	20	37.7
4	239	3.0	12	54.8	27	7.6	243	17.4	5	49.7	321	10.5	20	38.3
6	269	3.2	12	53.1	57	12.6	273	25.4	5	50.4	351	12.2	20	38.9
8	299	3.5	12	51.5	87	17.5	303	33.4	5	51.0	21	13.8	20	39.4
10	329	3.8	12	49.9	117	22.4	333	41.3	5	51.6	51	15.5	20	40.0
12	359	4.1	12	48.2	147	27.3	3	49.3	5	52.3	81	17.2	20	40.6
14	29	4.4	12	46.6	177	32.3	33	57.2	5	53.0	111	18.9	20	41.2
16	59	4.7	12	45.0	207	37.2	64	5.2	5	53.6	141	20.5	20	41.7
18	89	5.0	12	43.4	237	42.1	94	13.1	5	54.3	171	22.2	20	42.3
20	119	5.3	12	41.7	267	47.1	124	21.1	5	54.9	201	23.9	20	42.9
22	149	5.5	12	40.1	297	52.0	154	29.0	5	55.6	231	25.5	20	43.4
Δ		1		-8			40		3		8			3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 23	19 43	0 49	:::	13 6	3.8	20 4	.1
55	4 41	19 25	0 41	2 42	12 35	3.3	20 37	.6
50	4 55	19 12	0 35	2 10	12 13	3.0	21 1	.9
45	5 6	19 1	0 31	1 52	11 55	2.8	21 20	1.1
40	5 15	18 52	0 29	1 40	11 41	2.6	21 36	1.3
35	5 23	18 44	0 27	1 31	11 29	2.5	21 49	1.4
30	5 29	18 38	0 25	1 25	11 19	2.4	21 60	1.5
20	5 41	18 26	0 23	1 17	11 1	2.2	22 19	1.7
10	5 51	18 16	0 22	1 12	10 45	2.0	22 37	1.8
0	6 0	18 7	0 21	1 10	10 31	1.9	22 53	2.0
10	6 10	17 58	0 21	1 11	10 17	1.7	23 9	2.1
20	6 19	17 48	0 23	1 14	10 2	1.6	23 26	2.2
30	6 30	17 38	0 24	1 20	9 45	1.4	23 46	2.4
35	6 36	17 31	0 26	1 25	9 35	1.3	23 58	2.5
40	6 43	17 24	0 28	1 31	9 23	1.2	...	.0
45	6 52	17 16	0 30	1 39	9 10	1.0	...	.0
50	7 1	17 7	0 33	1 49	8 54	.8	...	.0
55	7 14	16 55	0 38	2 2	8 33	.5	...	.0
60	7 30	16 39	0 44	2 21	8 6	.1	0 21	3.7

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	116	55.6	150	-16	57.0	-115	78	22.5	-21	30.4	176	11.8	13	18.9
2	146	3.5	149	-17	20.1	-114	108	27.3	-21	30.4	206	16.2	13	18.7
4	175	11.2	147	-17	42.9	-113	138	32.0	-21	30.4	236	20.5	13	18.5
6	204	18.7	146	-18	5.4	-111	168	36.7	-21	30.5	266	24.8	13	18.3
8	233	25.9	145	-18	27.6	-110	198	41.5	-21	30.5	296	29.1	13	18.1
10	262	32.9	144	-18	49.6	-108	228	46.2	-21	30.6	326	33.4	13	17.8
12	291	39.6	142	-19	11.2	-107	258	50.9	-21	30.6	356	37.7	13	17.6
14	320	46.1	141	-19	32.5	-105	288	55.7	-21	30.7	26	42.0	13	17.4
16	349	52.3	140	-19	53.6	-104	319	.4	-21	30.7	56	46.3	13	17.2
18	18	58.2	138	-20	14.3	-102	349	5.1	-21	30.7	86	50.7	13	17.0
20	48	3.8	137	-20	34.7	-100	19	9.8	-21	30.8	116	55.0	13	16.8
22	77	9.2	135	-20	54.7	-99	49	14.6	-21	30.8	146	59.3	13	16.5
Δ							24		0		22			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 3 50.2	.6	15.8	T _m	16 42	1.9	54.2	14.8
12	- 3 43.4	T _{m☉}	12 h 3,7 min	Starost	6.0 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	11 45	.5	216	-3.8	♃	18 44	.0	111	-2.1
♂	6 35	.1	294	.4	♄	12 13	.0	209	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	5.8	12	38.4	327	56.9	184	37.0	5	56.3	261	27.2	20	44.0
2	209	6.1	12	36.8	358	1.8	214	44.9	5	57.0	291	28.9	20	44.6
4	239	6.4	12	35.2	28	6.8	244	52.8	5	57.7	321	30.6	20	45.1
6	269	6.7	12	33.5	58	11.7	275	.8	5	58.4	351	32.3	20	45.7
8	299	7.0	12	31.9	88	16.6	305	8.7	5	59.1	21	33.9	20	46.3
10	329	7.3	12	30.2	118	21.6	335	16.6	5	59.8	51	35.6	20	46.8
12	359	7.6	12	28.6	148	26.5	5	24.5	6	.5	81	37.3	20	47.4
14	29	7.9	12	26.9	178	31.4	35	32.4	6	1.2	111	39.0	20	47.9
16	59	8.2	12	25.3	208	36.3	65	40.3	6	1.9	141	40.7	20	48.5
18	89	8.5	12	23.6	238	41.3	95	48.2	6	2.6	171	42.4	20	49.1
20	119	8.8	12	22.0	268	46.2	125	56.1	6	3.3	201	44.0	20	49.6
22	149	9.1	12	20.3	298	51.1	156	4.0	6	4.0	231	45.7	20	50.2
Δ		1		-8			40		4		8			3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 25	19 40	0 49	:::	14 38	3.9	20 7	.3
55	4 43	19 23	0 41	2 40	13 54	3.2	20 53	1.0
50	4 56	19 10	0 35	2 9	13 24	2.9	21 24	1.3
45	5 7	18 59	0 31	1 51	13 2	2.7	21 47	1.5
40	5 16	18 50	0 29	1 40	12 44	2.6	22 6	1.6
35	5 23	18 43	0 26	1 31	12 29	2.5	22 22	1.7
30	5 30	18 37	0 25	1 25	12 15	2.4	22 36	1.8
20	5 41	18 25	0 23	1 16	11 53	2.3	22 60	1.9
10	5 51	18 16	0 22	1 12	11 34	2.1	23 20	2.0
0	6 0	18 7	0 21	1 10	11 16	2.0	23 39	2.1
10	6 9	17 58	0 21	1 11	10 59	1.9	23 59	2.2
20	6 19	17 49	0 22	1 14	10 40	1.8	...	.0
30	6 29	17 38	0 24	1 20	10 18	1.6	...	.0
35	6 35	17 32	0 26	1 25	10 6	1.5	...	.0
40	6 42	17 25	0 28	1 31	9 51	1.4	0 11	2.6
45	6 50	17 18	0 30	1 39	9 34	1.3	0 27	2.8
50	6 60	17 8	0 33	1 49	9 13	1.1	0 47	3.0
55	7 11	16 56	0 38	2 2	8 46	.8	1 13	3.3
60	7 27	16 41	0 44	2 21	8 8	.2	1 50	3.9

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	106	14.3	134	-21	14.4	-97	79	19.3	-21	30.9	177	3.6	13	16.3
2	135	19.1	133	-21	33.8	-95	109	24.0	-21	30.9	207	7.9	13	16.1
4	164	23.6	131	-21	52.8	-93	139	28.7	-21	31.0	237	12.2	13	15.9
6	193	27.8	130	-22	11.5	-91	169	33.4	-21	31.0	267	16.5	13	15.7
8	222	31.8	128	-22	29.8	-90	199	38.2	-21	31.1	297	20.9	13	15.5
10	251	35.4	127	-22	47.7	-88	229	42.9	-21	31.1	327	25.2	13	15.3
12	280	38.7	125	-23	5.2	-86	259	47.6	-21	31.2	357	29.5	13	15.0
14	309	41.7	123	-23	22.3	-84	289	52.3	-21	31.2	27	33.8	13	14.8
16	338	44.4	122	-23	39.1	-82	319	57.0	-21	31.2	57	38.1	13	14.6
18	7	46.8	120	-23	55.4	-80	350	1.7	-21	31.3	87	42.4	13	14.4
20	36	48.8	119	-24	11.4	-78	20	6.4	-21	31.3	117	46.7	13	14.2
22	65	50.6	117	-24	26.9	-75	50	11.1	-21	31.4	147	51.0	13	14.0
Δ							24		0		22			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 3 36.5	.6	15.8	T _m	17 28	2.0	54.2	14.8
12	- 3 29.4	T _{m☉}	12 h 3,5 min	Starost	7.0 d	Faza		

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS		
	S _☉		δ _☉		S _♊		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'	°	'	
0	179	9.4	12	18.7	328	56.0	186	11.8	6	4.8	
2	209	9.7	12	17.0	359	1.0	216	19.7	6	5.5	
4	239	10.0	12	15.4	29	5.9	246	27.6	6	6.2	
6	269	10.3	12	13.7	59	10.8	276	35.4	6	7.0	
8	299	10.6	12	12.1	89	15.8	306	43.3	6	7.7	
10	329	10.9	12	10.4	119	20.7	336	51.1	6	8.5	
12	359	11.2	12	8.7	149	25.6	6	59.0	6	9.2	
14	29	11.5	12	7.1	179	30.5	37	6.8	6	10.0	
16	59	11.8	12	5.4	209	35.5	67	14.6	6	10.7	
18	89	12.1	12	3.7	239	40.4	97	22.4	6	11.5	
20	119	12.5	12	2.1	269	45.3	127	30.2	6	12.3	
22	149	12.8	12	.4	299	50.3	157	38.1	6	13.0	
Δ	2		-8				39	4		8	3

UT	MESEC				JUPITER		SATURN							
	S _♄		Δ	δ _♄	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	94	52.0	116	-24	42.0	-73	80	15.8	-21	31.4	177	55.4	13	13.7
2	123	53.2	114	-24	56.6	-71	110	20.5	-21	31.5	207	59.7	13	13.5
4	152	54.0	112	-25	10.8	-69	140	25.2	-21	31.5	238	4.0	13	13.3
6	181	54.5	111	-25	24.6	-67	170	29.9	-21	31.6	268	8.3	13	13.1
8	210	54.7	109	-25	37.9	-64	200	34.6	-21	31.6	298	12.6	13	12.9
10	239	54.5	108	-25	50.8	-62	230	39.3	-21	31.7	328	16.9	13	12.7
12	268	54.1	106	-26	3.2	-60	260	44.0	-21	31.7	358	21.2	13	12.4
14	297	53.4	105	-26	15.1	-57	290	48.7	-21	31.8	28	25.6	13	12.2
16	326	52.3	103	-26	26.5	-55	320	53.4	-21	31.8	58	29.9	13	12.0
18	355	51.0	102	-26	37.4	-52	350	58.1	-21	31.9	88	34.2	13	11.8
20	24	49.3	100	-26	47.8	-50	21	2.8	-21	31.9	118	38.5	13	11.6
22	53	47.3	99	-26	57.7	-47	51	7.5	-21	32.0	148	42.8	13	11.4
Δ							23	0		22			-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 28	19 37	0 48	:	16 13	3.6	20 15	.9
55	4 45	19 20	0 40	2 38	15 12	3.0	21 16	1.6
50	4 58	19 8	0 35	2 8	14 35	2.7	21 55	1.8
45	5 8	18 57	0 31	1 51	14 8	2.6	22 22	1.9
40	5 17	18 49	0 28	1 39	13 46	2.5	22 44	1.9
35	5 24	18 42	0 26	1 31	13 29	2.5	23 3	2.0
30	5 31	18 35	0 25	1 25	13 13	2.4	23 18	2.0
20	5 42	18 25	0 23	1 16	12 48	2.3	23 45	2.1
10	5 51	18 15	0 22	1 12	12 25	2.2	...	.0
0	5 60	18 7	0 21	1 10	12 5	2.2	...	.0
10	6 9	17 58	0 21	1 11	11 45	2.1	...	.0
20	6 18	17 49	0 22	1 14	11 23	2.0	0 19	2.3
30	6 28	17 39	0 24	1 20	10 58	1.9	0 43	2.4
35	6 34	17 33	0 26	1 25	10 43	1.8	0 57	2.5
40	6 41	17 26	0 28	1 31	10 26	1.8	1 14	2.6
45	6 48	17 19	0 30	1 38	10 5	1.7	1 34	2.7
50	6 58	17 10	0 33	1 48	9 40	1.5	1 58	2.9
55	7 9	16 58	0 38	2 2	9 5	1.3	2 32	3.1
60	7 24	16 43	0 44	2 21	8 13	.6	3 23	3.8
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	- 3 22.2	.6	15.8	T _m	18 17	2.2	54.5 14.8
12	- 3 14.9	T _{m☉}	12 h 3.3 min	Starost	8.0 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	11 32	.5	217	-3.9	♃	18 36	.0	111	-2.1
♂	6 32	.1	293	.4	♄	12 7	.0	209	.8

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS		
	S _☉		δ _☉		S _♊		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'	°	'	
0	179	13.1	11	58.7	329	55.2	187	45.9	6	13.8	
2	209	13.4	11	57.1	0	.1	217	53.6	6	14.6	
4	239	13.7	11	55.4	30	5.0	248	1.4	6	15.3	
6	269	14.0	11	53.7	60	10.0	278	9.2	6	16.1	
8	299	14.3	11	52.0	90	14.9	308	17.0	6	16.9	
10	329	14.6	11	50.4	120	19.8	338	24.7	6	17.7	
12	359	15.0	11	48.7	150	24.8	8	32.5	6	18.5	
14	29	15.3	11	47.0	180	29.7	38	40.2	6	19.3	
16	59	15.6	11	45.3	210	34.6	68	48.0	6	20.1	
18	89	15.9	11	43.7	240	39.5	98	55.7	6	20.9	
20	119	16.2	11	42.0	270	44.5	129	3.4	6	21.7	
22	149	16.6	11	40.3	300	49.4	159	11.1	6	22.5	
Δ	2		-8				39	4		9	3

UT	MESEC				JUPITER		SATURN							
	S _♄		Δ	δ _♄	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	82	45.1	97	-27	7.2	-44	81	12.2	-21	32.0	178	47.1	13	11.2
2	111	42.6	96	-27	16.0	-42	111	16.9	-21	32.1	208	51.4	13	10.9
4	140	39.8	95	-27	24.4	-39	141	21.6	-21	32.1	238	55.8	13	10.7
6	169	36.7	93	-27	32.2	-36	171	26.3	-21	32.1	269	.1	13	10.5
8	198	33.3	92	-27	39.5	-34	201	30.9	-21	32.2	299	4.4	13	10.3
10	227	29.7	91	-27	46.2	-31	231	35.6	-21	32.2	329	8.7	13	10.1
12	256	25.9	89	-27	52.4	-28	261	40.3	-21	32.3	359	13.0	13	9.9
14	285	21.7	88	-27	58.0	-25	291	45.0	-21	32.3	29	17.3	13	9.6
16	314	17.4	87	-28	3.1	-22	321	49.7	-21	32.4	59	21.6	13	9.4
18	343	12.8	86	-28	7.6	-20	351	54.4	-21	32.4	89	25.9	13	9.2
20	12	8.0	85	-28	11.5	-17	21	59.0	-21	32.5	119	30.3	13	9.0
22	41	3.0	84	-28	14.8	-14	52	3.7	-21	32.5	149	34.6	13	8.8
Δ							23	0		22			-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 30	19 34	0 48	3 53	17 40	2.4	20 37	2.4
55	4 47	19 18	0 40	2 36	16 23	2.4	21 54	2.4
50	4 59	19 6	0 35	2 7	15 41	2.4	22 37	2.4
45	5 9	18 56	0 31	1 50	15 10	2.3	23 7	2.3
40	5 18	18 48	0 28	1 39	14 47	2.3	23 31	2.3
35	5 25	18 41	0 26	1 30	14 28	2.3	23 51	2.3
30	5 31	18 34	0 25	1 24	14 11	2.3	...	.0
20	5 42	18 24	0 23	1 16	13 43	2.3	...	.0
10	5 51	18 15	0 21	1 12	13 19	2.3	0 8	2.2
0	5 60	18 6	0 21	1 10	12 57	2.3	0 30	2.2
10	6 8	17 58	0 21	1 11	12 35	2.2	0 51	2.3
20	6 17	17 49	0 22	1 14	12 11	2.2	1 14	2.3
30	6 27	17 39	0 24	1 20	11 43	2.2	1 41	2.4
35	6 33	17 34	0 26	1 25	11 27	2.2	1 57	2.4
40	6 39	17 27	0 28	1 31	11 8	2.1	2 16	2.4
45	6 47	17 20	0 30	1 38	10 45	2.1	2 38	2.5
50	6 56	17 11	0 33	1 48	10 16	2.1	3 7	2.6
55	7 7	17 0	0 38	2 2	9 36	2.0	3 47	2.7
60	7 21	16 46	0 44	2 20	8 28	1.6	4 54	3.1
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	- 3 7.5	.6	15.8	T _m	19 10	2.3	54.9 15.0
12	- 2 59.9	T _{m☉}	12 h 3.0 min	Starost	9.0 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	11 26	.5	218	-3.9	♃	18 32	.0	111	-2.1
♂	6 31	.1	292	.4	♄	12 3	.0	209	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	179	16.9	11	38.6	330	54.3	189	18.8	6	23.3	262	28.2	21	3.7	
2	209	17.2	11	36.9		0 59.3	219	26.5	6	24.1	292	29.9	21	4.2	
4	239	17.5	11	35.2	31	4.2	249	34.2	6	24.9	322	31.6	21	4.7	
6	269	17.8	11	33.5	61	9.1	279	41.9	6	25.8	352	33.3	21	5.2	
8	299	18.2	11	31.8	91	14.0	309	49.5	6	26.6		22 35.0	21	5.7	
10	329	18.5	11	30.2	121	19.0	339	57.2	6	27.4	52	36.7	21	6.3	
12	359	18.8	11	28.5	151	23.9		10 4.8	6	28.2	82	38.4	21	6.8	
14	29	19.1	11	26.8	181	28.8	40	12.5	6	29.1	112	40.2	21	7.3	
16	59	19.5	11	25.1	211	33.8	70	20.1	6	29.9	142	41.9	21	7.8	
18	89	19.8	11	23.4	241	38.7	100	27.7	6	30.7	172	43.6	21	8.3	
20	119	20.1	11	21.7	271	43.6	130	35.3	6	31.6	202	45.3	21	8.8	
22	149	20.5	11	20.0	301	48.5	160	42.9	6	32.4	232	47.0	21	9.4	
Δ		2		-8				38		4			9		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 32	19 31	0 48	3 42	18 37	1.0	21 34	3.8
55	4 49	19 16	0 40	2 34	17 20	1.7	22 51	3.1
50	5 1	19 4	0 35	2 6	16 37	1.9	23 33	2.9
45	5 11	18 54	0 31	1 50	16 7	2.0	...	.0
40	5 19	18 46	0 28	1 38	15 43	2.0	...	.0
35	5 26	18 39	0 26	1 30	15 23	2.1	...	.0
30	5 32	18 33	0 25	1 24	15 6	2.1	0 7	2.3
20	5 42	18 23	0 23	1 16	14 38	2.2	0 36	2.3
10	5 51	18 14	0 21	1 12	14 14	2.3	1 0	2.3
0	5 59	18 6	0 21	1 10	13 51	2.3	1 23	2.3
10	6 8	17 58	0 21	1 11	13 28	2.4	1 45	2.3
20	6 16	17 49	0 22	1 14	13 4	2.4	2 10	2.3
30	6 26	17 40	0 24	1 20	12 36	2.5	2 38	2.2
35	6 32	17 34	0 26	1 25	12 19	2.5	2 55	2.2
40	6 38	17 28	0 28	1 31	11 59	2.5	3 14	2.2
45	6 45	17 21	0 30	1 38	11 36	2.6	3 38	2.2
50	6 54	17 12	0 33	1 48	11 5	2.7	4 8	2.1
55	7 4	17 2	0 37	2 2	10 22	2.8	4 51	2.0
60	7 18	16 48	0 43	2 20	9 6	3.2	6 8	1.7

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	69	57.7	83	-28	17.5	-11	82	8.4	-21	32.6	179	38.9	13	8.6	
2	98	52.3	82	-28	19.6	-8	112	13.1	-21	32.7	209	43.2	13	8.3	
4	127	46.7	81	-28	21.2	-5	142	17.7	-21	32.7	239	47.5	13	8.1	
6	156	40.9	80	-28	22.1	-2	172	22.4	-21	32.8	269	51.8	13	7.9	
8	185	35.0	80	-28	22.4	1	202	27.1	-21	32.8	299	56.1	13	7.7	
10	214	28.9	79	-28	22.1	5	232	31.7	-21	32.9	330	.5	13	7.5	
12	243	22.6	78	-28	21.2	8	262	36.4	-21	32.9	0	4.8	13	7.3	
14	272	16.3	78	-28	19.7	11	292	41.1	-21	33.0	30	9.1	13	7.0	
16	301	9.8	77	-28	17.6	14	322	45.7	-21	33.0	60	13.4	13	6.8	
18	330	3.2	77	-28	14.8	17	352	50.4	-21	33.1	90	17.7	13	6.6	
20	358	56.5	76	-28	11.4	20	22	55.0	-21	33.1	120	22.0	13	6.4	
22	27	49.7	76	-28	7.3	23	52	59.7	-21	33.2	150	26.3	13	6.2	
Δ								23		0			22		-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 2 52.3	.7	15.8	T _m	20 4	2.3	55.4	15.1
12	- 2 44.5	T _{m☉}	12 h 2.7 min	Starost	10.0 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	11 20	.5	218	-3.9	♃	18 29	.0	111	-2.1
♂	6 30	.1	292	.4	♄	11 60	.0	209	.8

24. AVGUST

PETAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	179	20.8	11	18.3	331	53.5	190	50.5	6	33.2	262	48.7	21	9.9	
2	209	21.1	11	16.6		1 58.4	220	58.1	6	34.1	292	50.5	21	10.4	
4	239	21.5	11	14.9	32	3.3	251	5.7	6	34.9	322	52.2	21	10.9	
6	269	21.8	11	13.2	62	8.2	281	13.2	6	35.8	352	53.9	21	11.4	
8	299	22.1	11	11.5	92	13.2	311	20.8	6	36.6		22 55.6	21	11.9	
10	329	22.5	11	9.8	122	18.1	341	28.3	6	37.5	52	57.4	21	12.4	
12	359	22.8	11	8.1	152	23.0		11 35.8	6	38.3	82	59.1	21	12.9	
14	29	23.1	11	6.3	182	28.0	41	43.4	6	39.2	113	.8	21	13.4	
16	59	23.5	11	4.6	212	32.9	71	50.9	6	40.1	143	2.5	21	13.9	
18	89	23.8	11	2.9	242	37.8	101	58.4	6	40.9	173	4.3	21	14.4	
20	119	24.1	11	1.2	272	42.7	132	5.9	6	41.8	203	6.0	21	14.9	
22	149	24.5	10	59.5	302	47.7	162	13.3	6	42.6	233	7.7	21	15.4	
Δ		2		-9				38		4			9		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 35	19 29	0 47	3 33	19 1	.3	23 5	4.4
55	4 50	19 13	0 40	2 32	17 60	1.1	...	.0
50	5 2	19 2	0 35	2 5	17 22	1.4	...	.0
45	5 12	18 52	0 31	1 49	16 54	1.6	0 4	2.8
40	5 20	18 45	0 28	1 38	16 32	1.7	0 27	2.7
35	5 26	18 38	0 26	1 30	16 14	1.8	0 47	2.6
30	5 32	18 32	0 25	1 24	15 58	1.9	1 3	2.6
20	5 42	18 22	0 23	1 16	15 31	2.1	1 31	2.5
10	5 51	18 14	0 21	1 12	15 8	2.2	1 55	2.4
0	5 59	18 6	0 21	1 10	14 47	2.3	2 18	2.3
10	6 7	17 58	0 21	1 11	14 25	2.4	2 40	2.2
20	6 15	17 50	0 22	1 14	14 2	2.5	3 4	2.1
30	6 25	17 40	0 24	1 20	13 35	2.7	3 32	2.0
35	6 30	17 35	0 26	1 25	13 19	2.7	3 48	2.0
40	6 36	17 29	0 28	1 31	13 0	2.8	4 7	1.9
45	6 43	17 22	0 30	1 38	12 38	3.0	4 30	1.8
50	6 52	17 14	0 33	1 48	12 9	3.2	4 59	1.6
55	7 2	17 4	0 37	2 1	11 29	3.4	5 39	1.3
60	7 16	16 50	0 43	2 20	10 22	4.2	6 48	.6

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	56	42.9	76	-28	2.7	26	83	4.4	-21	33.2	180	30.7	13	6.0	
2	85	36.0	75	-27	57.4	30	113	9.0	-21	33.3	210	35.0	13	5.7	
4	114	29.0	75	-27	51.4	33	143	13.7	-21	33.3	240	39.3	13	5.5	
6	143	22.1	75	-27	44.9	36	173	18.3	-21	33.4	270	43.6	13	5.3	
8	172	15.1	75	-27	37.7	39	203	23.0	-21	33.4	300	47.9	13	5.1	
10	201	8.0	75	-27	29.8	42	233	27.6	-21	33.5	330	52.2	13	4.9	
12	230	1.0	75	-27	21.3	46	263	32.3	-21	33.5	0	56.5	13	4.7	
14	258	54.0	75	-27	12.2	49	293	36.9	-21	33.6	31	.9	13	4.4	
16	287	47.1	75	-27	2.5	52	323	41.6	-21	33.6	61	5.2	13	4.2	
18	316	40.1	76	-26	52.1	55	353	46.2	-21	33.7	91	9.5	13	4.0	
20	345	33.2	76	-26	41.0	58	23	50.9	-21	33.8	121	13.8	13	3.8	
22	14	26.4	76	-26	29.4	61	53	55.5	-21	33.8	151	18.1	13	3.6	
Δ								23		0			22		-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 2 36.6	.7	15.8	T _m	21 0	2.3	56.1	15.3
12	- 2 28.6	T _{m☉}	12 h 2.5 min	Starost	11.0 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	179	24.8	10	57.8	332	52.6	192	20.8	6	43.5	263	9.5	21	15.9	
2	209	25.2	10	56.1	2	57.5	222	28.2	6	44.4	293	11.2	21	16.4	
4	239	25.5	10	54.4	33	2.5	252	35.7	6	45.3	323	12.9	21	16.9	
6	269	25.8	10	52.6	63	7.4	282	43.1	6	46.1	353	14.7	21	17.4	
8	299	26.2	10	50.9	93	12.3	312	50.5	6	47.0	23	16.4	21	17.9	
10	329	26.5	10	49.2	123	17.2	342	57.9	6	47.9	53	18.1	21	18.4	
12	359	26.9	10	47.5	153	22.2	13	5.3	6	48.8	83	19.9	21	18.9	
14	29	27.2	10	45.7	183	27.1	43	12.7	6	49.6	113	21.6	21	19.4	
16	59	27.6	10	44.0	213	32.0	73	20.1	6	50.5	143	23.3	21	19.9	
18	89	27.9	10	42.3	243	37.0	103	27.4	6	51.4	173	25.1	21	20.4	
20	119	28.3	10	40.6	273	41.9	133	34.8	6	52.3	203	26.8	21	20.9	
22	149	28.6	10	38.8	303	46.8	163	42.1	6	53.2	233	28.6	21	21.3	
Δ		2		-9				37		4			9		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 37	19 26	0 47	3 27	19 9	.1	.. .	.0
55	4 52	19 11	0 39	2 30	18 26	.7	0 6	3.7
50	5 4	18 60	0 34	2 5	17 55	1.0	0 44	3.3
45	5 13	18 51	0 31	1 49	17 32	1.3	1 11	3.1
40	5 21	18 43	0 28	1 38	17 14	1.5	1 32	3.0
35	5 27	18 37	0 26	1 30	16 58	1.6	1 50	2.8
30	5 33	18 31	0 25	1 24	16 44	1.7	2 5	2.7
20	5 43	18 22	0 23	1 16	16 21	1.9	2 31	2.6
10	5 51	18 13	0 21	1 11	16 1	2.1	2 53	2.4
0	5 59	18 6	0 21	1 10	15 42	2.2	3 13	2.3
10	6 7	17 58	0 21	1 11	15 23	2.4	3 34	2.1
20	6 15	17 50	0 22	1 14	15 2	2.6	3 55	2.0
30	6 24	17 41	0 24	1 20	14 39	2.8	4 21	1.8
35	6 29	17 36	0 26	1 25	14 25	2.9	4 35	1.7
40	6 35	17 30	0 28	1 30	14 9	3.0	4 52	1.6
45	6 42	17 23	0 30	1 38	13 49	3.2	5 13	1.4
50	6 50	17 15	0 33	1 48	13 25	3.4	5 38	1.2
55	6 60	17 6	0 37	2 1	12 52	3.8	6 12	.9
60	7 13	16 53	0 43	2 20	12 2	4.4	7 3	.2

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	43	19.6	77	-26	17.1	64	84	.2	-21	33.9	181	22.4	13	3.4	
2	72	13.0	77	-26	4.2	68	114	4.8	-21	33.9	211	26.7	13	3.1	
4	101	6.4	77	-25	50.7	71	144	9.4	-21	34.0	241	31.1	13	2.9	
6	129	59.8	78	-25	36.5	74	174	14.1	-21	34.0	271	35.4	13	2.7	
8	158	53.5	79	-25	21.8	77	204	18.7	-21	34.1	301	39.7	13	2.5	
10	187	47.2	79	-25	6.4	80	234	23.4	-21	34.1	331	44.0	13	2.3	
12	216	41.0	80	-24	50.4	83	264	28.0	-21	34.2	1	48.3	13	2.1	
14	245	35.0	81	-24	33.9	86	294	32.6	-21	34.3	31	52.6	13	1.8	
16	274	29.1	81	-24	16.7	89	324	37.3	-21	34.3	61	56.9	13	1.6	
18	303	23.3	82	-23	58.9	92	354	41.9	-21	34.4	92	1.3	13	1.4	
20	332	17.8	83	-23	40.6	95	384	46.5	-21	34.4	122	5.6	13	1.2	
22	1	12.3	84	-23	21.7	97	414	51.2	-21	34.5	152	9.9	13	1.0	
Δ								23		0			22		-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	- 2 20.5	.7	15.8	T _m	21 55	2.2	56.9	15.5
12	- 2 12.3	T _{m☉}	12 h 2.2 min	Starost	12.0 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	11 8	.5	219	-4.0	♃	18 21	.0	111	-2.1
♂	6 27	.1	290	.3	♄	11 53	.0	208	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	179	29.0	10	37.1	333	51.7	193	49.4	6	54.1	263	30.3	21	21.8	
2	209	29.3	10	35.4	3	56.7	223	56.8	6	55.0	293	32.1	21	22.3	
4	239	29.7	10	33.7	34	1.6	254	4.0	6	55.9	323	33.8	21	22.8	
6	269	30.0	10	31.9	64	6.5	284	11.3	6	56.7	353	35.5	21	23.3	
8	299	30.4	10	30.2	94	11.5	314	18.6	6	57.6	23	37.3	21	23.8	
10	329	30.7	10	28.5	124	16.4	344	25.9	6	58.5	53	39.0	21	24.2	
12	359	31.1	10	26.7	154	21.3	14	33.1	6	59.4	83	40.8	21	24.7	
14	29	31.4	10	25.0	184	26.2	44	40.3	7	.3	113	42.5	21	25.2	
16	59	31.8	10	23.2	214	31.2	74	47.6	7	1.2	143	44.3	21	25.7	
18	89	32.1	10	21.5	244	36.1	104	54.8	7	2.1	173	46.0	21	26.1	
20	119	32.5	10	19.8	274	41.0	135	2.0	7	3.0	203	47.8	21	26.6	
22	149	32.8	10	18.0	304	46.0	165	9.2	7	3.9	233	49.5	21	27.1	
Δ		2		-9				36		4			9		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 40	19 23	0 47	3 21	19 12	.0	0 52	4.5
55	4 54	19 8	0 39	2 29	18 42	.5	1 35	3.9
50	5 5	18 58	0 34	2 4	18 20	.8	2 4	3.5
45	5 14	18 49	0 31	1 48	18 3	1.1	2 25	3.3
40	5 22	18 42	0 28	1 37	17 49	1.2	2 43	3.1
35	5 28	18 35	0 26	1 29	17 36	1.4	2 58	2.9
30	5 33	18 30	0 25	1 23	17 26	1.5	3 10	2.8
20	5 43	18 21	0 22	1 16	17 7	1.8	3 32	2.6
10	5 51	18 13	0 21	1 11	16 51	2.0	3 51	2.4
0	5 59	18 5	0 21	1 10	16 36	2.2	4 8	2.2
10	6 6	17 58	0 21	1 11	16 20	2.3	4 25	2.0
20	6 14	17 50	0 22	1 14	16 4	2.6	4 43	1.8
30	6 23	17 42	0 24	1 20	15 45	2.8	5 4	1.6
35	6 28	17 37	0 26	1 25	15 34	2.9	5 16	1.5
40	6 33	17 31	0 27	1 30	15 21	3.1	5 30	1.3
45	6 40	17 25	0 30	1 38	15 6	3.3	5 47	1.2
50	6 48	17 17	0 33	1 48	14 47	3.5	6 7	.9
55	6 57	17 7	0 37	2 1	14 23	3.9	6 33	.6
60	7 10	16 55	0 43	2 20	13 49	4.4	7 9	.1

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	30	7.0	84	-23	2.2	100	84	55.8	-21	34.5	182	14.2	13	.8	
2	59	1.9	85	-22	42.1	103	115	.4	-21	34.6	212	18.5	13	.5	
4	87	57.0	86	-22	21.5	106	145	5.0	-21	34.6	242	22.8	13	.3	
6	116	52.3	87	-22	.3	109	175	9.7	-21	34.7	272	27.2	13	.1	
8	145	47.7	88	-21	38.6	111	205	14.3	-21	34.8	302	31.5	12	59.9	
10	174	43.3	89	-21	16.4	114	235	18.9	-21	34.8	332	35.8	12	59.7	
12	203	39.1	90	-20	53.6	116	265	23.5	-21	34.9	2	40.1	12	59.5	
14	232	35.1	91	-20	30.3	119	295	28.1	-21	34.9	32	44.4	12	59.2	
16	261	31.2	92	-20	6.5	121	325	32.8	-21	35.0	62	48.7	12	59.0	
18	290	27.6	93	-19	42.2	124	355	37.4	-21	35.0	92	53.0	12	58.8	
20	319	24.1	94	-19	17.5	126	25	42.0	-21	35.1	122	57.4	12	58.6	
22	348	20.9	95	-18	52.2	129	55	46.6	-21	35.2	153	1.7	12	58.4	
Δ								23		0			22		-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	- 2 4.0	.7	15.8	T _m	22 48	2.2	57.7	15.7
12	- 1 55.5	T _{m☉}	12 h 1.9 min	Starost	13.0 d	Faza	☉	

PLANETE							
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 33.2	10 16.3	334 50.9	195 16.3	7 4.8	263 51.3	21 27.6
2	209 33.6	10 14.5	4 55.8	225 23.5	7 5.7	293 53.1	21 28.0
4	239 33.9	10 12.8	35 7	255 30.6	7 6.6	323 54.8	21 28.5
6	269 34.3	10 11.0	65 5.7	285 37.7	7 7.6	353 56.6	21 29.0
8	299 34.6	10 9.3	95 10.6	315 44.9	7 8.5	23 58.3	21 29.4
10	329 35.0	10 7.6	125 15.5	345 52.0	7 9.4	54 1	21 29.9
12	359 35.4	10 5.8	155 20.5	15 59.1	7 10.3	84 1.9	21 30.4
14	29 35.7	10 4.1	185 25.4	46 6.1	7 11.2	114 3.6	21 30.8
16	59 36.1	10 2.3	215 30.3	76 13.2	7 12.1	144 5.4	21 31.3
18	89 36.4	10 0.6	245 35.2	106 20.2	7 13.0	174 7.1	21 31.8
20	119 36.8	9 58.8	275 40.2	136 27.3	7 13.9	204 8.9	21 32.2
22	149 37.2	9 57.0	305 45.1	166 34.3	7 14.8	234 10.7	21 32.7
Δ	2	-9		35	5	9	2

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 42	19 20	0 46	3 16	19 13	.0	2 40	4.4
55	4 56	19 6	0 39	2 27	18 54	.4	3 8	3.9
50	5 7	18 55	0 34	2 3	18 40	.7	3 28	3.6
45	5 15	18 47	0 31	1 48	18 28	.9	3 44	3.3
40	5 23	18 40	0 28	1 37	18 18	1.1	3 57	3.1
35	5 29	18 34	0 26	1 29	18 10	1.3	4 8	2.9
30	5 34	18 29	0 25	1 23	18 3	1.4	4 17	2.8
20	5 43	18 20	0 22	1 15	17 50	1.7	4 33	2.5
10	5 51	18 12	0 21	1 11	17 38	1.9	4 48	2.3
0	5 58	18 5	0 21	1 10	17 28	2.1	5 1	2.1
10	6 6	17 58	0 21	1 11	17 17	2.3	5 14	1.9
20	6 13	17 50	0 22	1 14	17 5	2.5	5 28	1.7
30	6 22	17 42	0 24	1 20	16 52	2.8	5 43	1.5
35	6 26	17 37	0 26	1 24	16 44	2.9	5 52	1.3
40	6 32	17 32	0 27	1 30	16 35	3.1	6 3	1.2
45	6 38	17 26	0 30	1 38	16 25	3.3	6 15	1.0
50	6 46	17 18	0 33	1 48	16 12	3.6	6 29	.7
55	6 55	17 9	0 37	2 1	15 56	3.9	6 47	.4
60	7 7	16 57	0 43	2 19	15 35	4.3	7 11	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	17 17.8	96 -18	26.5	131	85 51.2	-21 35.2	183 6.0	12 58.2
2	46 14.9	97 -18	.3	133	115 55.8	-21 35.3	213 10.3	12 57.9
4	75 12.2	97 -17	33.6	135	146 4	-21 35.3	243 14.6	12 57.7
6	104 9.7	98 -17	6.5	138	176 5.0	-21 35.4	273 18.9	12 57.5
8	133 7.4	99 -16	39.0	140	206 9.6	-21 35.5	303 23.3	12 57.3
10	162 5.3	100 -16	11.1	142	236 14.3	-21 35.5	333 27.6	12 57.1
12	191 3.3	101 -15	42.7	144	266 18.9	-21 35.6	3 31.9	12 56.9
14	220 1.5	102 -15	14.0	146	296 23.5	-21 35.6	33 36.2	12 56.7
16	248 59.9	103 -14	44.9	147	326 28.1	-21 35.7	63 40.5	12 56.4
18	277 58.5	104 -14	15.4	149	356 32.7	-21 35.8	93 44.8	12 56.2
20	306 57.2	104 -13	45.5	151	26 37.3	-21 35.8	123 49.1	12 56.0
22	335 56.0	105 -13	15.3	153	56 41.9	-21 35.9	153 53.5	12 55.8
Δ					23	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 1 47.0	.7	15.9	T _m 23 40	2.0	58.5	15.9
12	- 1 38.4	T _{m☉} 12 h 1.6 min	Starost 14.0 d	Faza ☉			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 56	.5	220	-4.1	♄	18 14	.0	111	-2.1
♂	6 24	.1	289	.3	♂	11 46	.0	208	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 37.5	9 55.3	335 50.0	196 41.3	7 15.7	264 12.4	21 33.1
2	209 37.9	9 53.5	5 54.9	226 48.3	7 16.7	294 14.2	21 33.6
4	239 38.3	9 51.8	35 59.9	256 55.3	7 17.6	324 16.0	21 34.1
6	269 38.6	9 50.0	66 4.8	287 2.2	7 18.5	354 17.8	21 34.5
8	299 39.0	9 48.3	96 9.7	317 9.2	7 19.4	24 19.5	21 35.0
10	329 39.4	9 46.5	126 14.7	347 16.1	7 20.3	54 21.3	21 35.4
12	359 39.7	9 44.7	156 19.6	17 23.0	7 21.2	84 23.1	21 35.9
14	29 40.1	9 43.0	186 24.5	47 29.9	7 22.1	114 24.9	21 36.3
16	59 40.5	9 41.2	216 29.4	77 36.8	7 23.1	144 26.6	21 36.8
18	89 40.8	9 39.4	246 34.4	107 43.7	7 24.0	174 28.4	21 37.2
20	119 41.2	9 37.7	276 39.3	137 50.5	7 24.9	204 30.2	21 37.7
22	149 41.6	9 35.9	306 44.2	167 57.4	7 25.8	234 32.0	21 38.1
Δ	2	-9		35	5	9	2

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 44	19 17	0 46	3 12	19 13	.0	4 25	4.3
55	4 58	19 4	0 39	2 26	19 4	.3	4 41	3.9
50	5 8	18 53	0 34	2 2	18 56	.6	4 53	3.6
45	5 17	18 45	0 31	1 47	18 50	.8	5 3	3.3
40	5 23	18 39	0 28	1 37	18 45	1.0	5 11	3.1
35	5 29	18 33	0 26	1 29	18 40	1.2	5 18	2.9
30	5 35	18 28	0 24	1 23	18 36	1.4	5 24	2.8
20	5 43	18 19	0 22	1 15	18 30	1.6	5 34	2.5
10	5 51	18 12	0 21	1 11	18 23	1.8	5 43	2.3
0	5 58	18 5	0 21	1 10	18 18	2.1	5 52	2.1
10	6 5	17 58	0 21	1 10	18 12	2.3	5 60	1.9
20	6 12	17 51	0 22	1 14	18 6	2.5	6 9	1.6
30	6 20	17 43	0 24	1 20	17 59	2.8	6 18	1.4
35	6 25	17 38	0 26	1 24	17 55	2.9	6 24	1.2
40	6 30	17 33	0 27	1 30	17 50	3.1	6 30	1.1
45	6 36	17 27	0 30	1 38	17 44	3.3	6 38	.9
50	6 44	17 20	0 33	1 48	17 38	3.6	6 47	.6
55	6 53	17 11	0 37	2 1	17 30	3.9	6 58	.4
60	7 4	16 60	0 43	2 19	17 19	4.3	7 12	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	4 55.1	106 -12	44.7	154	86 46.5	-21 35.9	183 57.8	12 55.6
2	33 54.3	107 -12	13.9	156	116 51.1	-21 36.0	214 2.1	12 55.4
4	62 53.6	107 -11	42.7	157	146 55.7	-21 36.1	244 6.4	12 55.1
6	91 53.0	108 -11	11.2	159	177 2	-21 36.1	274 10.7	12 54.9
8	120 52.6	109 -10	39.4	160	207 4.8	-21 36.2	304 15.0	12 54.7
10	149 52.3	109 -10	7.3	162	237 9.4	-21 36.2	334 19.4	12 54.5
12	178 52.1	110 -9	35.0	163	267 14.0	-21 36.3	4 23.7	12 54.3
14	207 52.1	110 -9	2.4	164	297 18.6	-21 36.4	34 28.0	12 54.1
16	236 52.1	111 -8	29.6	165	327 23.2	-21 36.4	64 32.3	12 53.8
18	265 52.2	111 -7	56.6	166	357 27.8	-21 36.5	94 36.6	12 53.6
20	294 52.5	111 -7	23.3	167	27 32.4	-21 36.5	124 40.9	12 53.4
22	323 52.7	112 -6	49.9	168	57 36.9	-21 36.6	154 45.3	12 53.2
Δ					23	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 1 29.7	.7	15.9	T _m ...	1.0	59.2	16.1
12	- 1 20.8	T _{m☉} 12 h 1.4 min	Starost 15.0 d	Faza ☉			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 51	.5	221	-4.1	♄	18 10	.0	111	-2.0
♂	6 23	.1	288	.3	♂	11 42	.0	208	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 42.0	9 34.1	336 49.2	198 4.2	7 26.7	264 33.7	21 38.6
2	209 42.3	9 32.4	6 54.1	228 11.0	7 27.6	294 35.5	21 39.0
4	239 42.7	9 30.6	36 59.0	258 17.8	7 28.6	324 37.3	21 39.5
6	269 43.1	9 28.8	67 3.9	288 24.6	7 29.5	354 39.1	21 39.9
8	299 43.5	9 27.1	97 8.9	318 31.4	7 30.4	24 40.9	21 40.3
10	329 43.8	9 25.3	127 13.8	348 38.1	7 31.3	54 42.7	21 40.8
12	359 44.2	9 23.5	157 18.7	18 44.9	7 32.2	84 44.5	21 41.2
14	29 44.6	9 21.7	187 23.7	48 51.6	7 33.1	114 46.2	21 41.7
16	59 45.0	9 19.9	217 28.6	78 58.3	7 34.0	144 48.0	21 42.1
18	89 45.3	9 18.2	247 33.5	109 5.0	7 35.0	174 49.8	21 42.5
20	119 45.7	9 16.4	277 38.4	139 11.7	7 35.9	204 51.6	21 43.0
22	149 46.1	9 14.6	307 43.4	169 18.3	7 36.8	234 53.4	21 43.4
Δ	2	-9		34	5	9	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 47	19 14	0 46	3 8	19 13	.0	6 8	4.3
55	4 60	19 1	0 39	2 24	19 12	.3	6 14	3.9
50	5 10	18 51	0 34	2 1	19 11	.6	6 19	3.6
45	5 18	18 43	0 30	1 47	19 10	.8	6 22	3.3
40	5 24	18 37	0 28	1 36	19 10	1.0	6 25	3.1
35	5 30	18 31	0 26	1 29	19 9	1.2	6 28	2.9
30	5 35	18 27	0 24	1 23	19 9	1.4	6 30	2.8
20	5 44	18 18	0 22	1 15	19 8	1.6	6 34	2.5
10	5 51	18 11	0 21	1 11	19 8	1.8	6 38	2.3
0	5 58	18 4	0 21	1 10	19 7	2.1	6 41	2.0
10	6 4	17 58	0 21	1 10	19 6	2.3	6 44	1.8
20	6 11	17 51	0 22	1 14	19 6	2.5	6 48	1.6
30	6 19	17 43	0 24	1 20	19 5	2.8	6 51	1.3
35	6 24	17 39	0 26	1 24	19 5	2.9	6 54	1.2
40	6 29	17 34	0 27	1 30	19 4	3.1	6 56	1.0
45	6 35	17 28	0 30	1 38	19 4	3.3	6 59	.8
50	6 42	17 21	0 33	1 48	19 3	3.6	7 2	.6
55	6 50	17 13	0 37	2 1	19 2	3.9	7 6	.3
60	7 1	17 2	0 43	2 19	19 1	4.3	7 11	.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	352 53.1	112 - 6	16.2	169	87 41.5	-21 36.7	184 49.6	12 53.0
2	21 53.5	112 - 5	42.4	170	117 46.1	-21 36.7	214 53.9	12 52.8
4	50 54.0	113 - 5	8.5	171	147 50.7	-21 36.8	244 58.2	12 52.5
6	79 54.5	113 - 4	34.4	171	177 55.3	-21 36.9	275 2.5	12 52.3
8	108 55.1	113 - 4	.1	172	207 59.8	-21 36.9	305 6.8	12 52.1
10	137 55.7	113 - 3	25.8	172	238 4.4	-21 37.0	335 11.2	12 51.9
12	166 56.3	113 - 2	51.3	173	268 9.0	-21 37.0	5 15.5	12 51.7
14	195 56.9	113 - 2	16.8	173	298 13.6	-21 37.1	35 19.8	12 51.5
16	224 57.5	113 - 1	42.1	173	328 18.1	-21 37.2	65 24.1	12 51.2
18	253 58.1	113 - 1	7.4	174	358 22.7	-21 37.2	95 28.4	12 51.0
20	282 58.7	113 - 0	32.7	174	28 27.3	-21 37.3	125 32.8	12 50.8
22	311 59.3	113 0	2.1	174	58 31.9	-21 37.4	155 37.1	12 50.6
Δ					23	0	22	-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min s	s / ' / "	' / "	h min	min	' / "	' / "	
00	- 1 12.0	.8	15.9	T _m	0 29	2.1	59.8	16.3
12	- 1 2.9	T _{m☉} 12 h	1.1 min	Starost 16.0 d Faza ☉				

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☉	h min	' / "	°	' / "	☿	h min	' / "	°	' / "
♃	10 45	.5	221	-4.1	♄	18 6	.0	111	-2.0
♂	6 21	.1	288	.3	♂	11 39	.0	208	.8

30. AVGUST

ČETVRTAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 46.5	9 12.8	337 48.3	199 25.0	7 37.7	264 55.2	21 43.8
2	209 46.9	9 11.0	7 53.2	229 31.6	7 38.6	294 57.0	21 44.3
4	239 47.2	9 9.3	37 58.2	259 38.2	7 39.5	324 58.8	21 44.7
6	269 47.6	9 7.5	68 3.1	289 44.8	7 40.4	355 .6	21 45.1
8	299 48.0	9 5.7	98 8.0	319 51.4	7 41.4	25 2.4	21 45.5
10	329 48.4	9 3.9	128 12.9	349 58.0	7 42.3	55 4.2	21 46.0
12	359 48.8	9 2.1	158 17.9	20 4.5	7 43.2	85 6.0	21 46.4
14	29 49.2	9 .3	188 22.8	50 11.1	7 44.1	115 7.8	21 46.8
16	59 49.5	8 58.5	218 27.7	80 17.6	7 45.0	145 9.6	21 47.3
18	89 49.9	8 56.8	248 32.7	110 24.1	7 45.9	175 11.4	21 47.7
20	119 50.3	8 55.0	278 37.6	140 30.6	7 46.8	205 13.2	21 48.1
22	149 50.7	8 53.2	308 42.5	170 37.1	7 47.7	235 15.0	21 48.5
Δ	2	-9		33	5	9	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 49	19 11	0 45	3 4	19 12	.0	7 51	4.3
55	5 2	18 59	0 39	2 23	19 20	.4	7 47	3.9
50	5 11	18 49	0 34	2 1	19 26	.7	7 44	3.6
45	5 19	18 42	0 30	1 46	19 31	.9	7 42	3.4
40	5 25	18 35	0 28	1 36	19 35	1.1	7 40	3.1
35	5 31	18 30	0 26	1 28	19 38	1.3	7 38	3.0
30	5 36	18 25	0 24	1 23	19 41	1.4	7 37	2.8
20	5 44	18 17	0 22	1 15	19 47	1.7	7 34	2.5
10	5 51	18 10	0 21	1 11	19 52	1.9	7 32	2.3
0	5 57	18 4	0 21	1 10	19 56	2.1	7 30	2.1
10	6 4	17 58	0 21	1 10	20 1	2.3	7 28	1.9
20	6 11	17 51	0 22	1 14	20 6	2.6	7 26	1.6
30	6 18	17 44	0 24	1 20	20 12	2.8	7 24	1.4
35	6 22	17 39	0 26	1 24	20 15	3.0	7 22	1.2
40	6 27	17 35	0 27	1 30	20 19	3.2	7 21	1.1
45	6 33	17 29	0 30	1 38	20 24	3.4	7 19	.9
50	6 40	17 23	0 33	1 48	20 29	3.6	7 17	.6
55	6 48	17 15	0 37	2 1	20 36	4.0	7 14	.3
60	6 58	17 4	0 42	2 19	20 44	4.4	7 11	.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	340 59.8	112 0	36.9	174	88 36.4	-21 37.4	185 41.4	12 50.4
2	10 .2	112 1	11.7	174	118 41.0	-21 37.5	215 45.7	12 50.2
4	39 .6	112 1	46.5	174	148 45.5	-21 37.6	245 50.0	12 49.9
6	68 1.0	111 2	21.2	174	178 50.1	-21 37.6	275 54.3	12 49.7
8	97 1.3	111 2	55.9	173	208 54.7	-21 37.7	305 58.7	12 49.5
10	126 1.4	110 3	30.6	173	238 59.2	-21 37.7	336 3.0	12 49.3
12	155 1.5	110 4	5.2	173	269 3.8	-21 37.8	6 7.3	12 49.1
14	184 1.5	109 4	39.8	172	299 8.4	-21 37.9	36 11.6	12 48.9
16	213 1.4	109 5	14.2	172	329 12.9	-21 37.9	66 15.9	12 48.7
18	242 1.1	108 5	48.5	171	359 17.5	-21 38.0	96 20.2	12 48.4
20	271 .7	107 6	22.7	170	29 22.0	-21 38.1	126 24.6	12 48.2
22	300 .2	107 6	56.8	170	59 26.6	-21 38.1	156 28.9	12 48.0
Δ					23	0	22	-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min s	s / ' / "	' / "	h min	min	' / "	' / "	
00	- 0 53.9	.8	15.9	T _m	1 19	2.0	60.1	16.4
12	- 0 44.7	T _{m☉} 12 h	.7 min	Starost 17.0 d Faza ☉				

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☉	h min	' / "	°	' / "	☿	h min	' / "	°	' / "
♃	10 40	.5	222	-4.2	♄				

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 51.1	8 51.4	338 47.4	200 43.5	7 48.6	265 16.8	21 48.9
2	209 51.5	8 49.6	8 52.4	230 50.0	7 49.5	295 18.6	21 49.4
4	239 51.9	8 47.8	38 57.3	260 56.4	7 50.5	325 20.4	21 49.8
6	269 52.3	8 46.0	69 2.2	291 2.8	7 51.4	355 22.2	21 50.2
8	299 52.6	8 44.2	99 7.1	321 9.2	7 52.3	25 24.1	21 50.6
10	329 53.0	8 42.4	129 12.1	351 15.6	7 53.2	55 25.9	21 51.0
12	359 53.4	8 40.6	159 17.0	21 21.9	7 54.1	85 27.7	21 51.4
14	29 53.8	8 38.8	189 21.9	51 28.3	7 55.0	115 29.5	21 51.8
16	59 54.2	8 37.0	219 26.9	81 34.6	7 55.9	145 31.3	21 52.3
18	89 54.6	8 35.2	249 31.8	111 40.9	7 56.8	175 33.1	21 52.7
20	119 55.0	8 33.4	279 36.7	141 47.2	7 57.7	205 35.0	21 53.1
22	149 55.4	8 31.6	309 41.6	171 53.5	7 58.6	235 36.8	21 53.5
Δ	2	-9		32	5	9	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 51	19 8	0 45	3 1	19 12	.0	9 35	4.5
55	5 4	18 56	0 38	2 22	19 29	.5	9 21	4.0
50	5 13	18 47	0 34	2 0	19 42	.8	9 11	3.7
45	5 20	18 40	0 30	1 46	19 53	1.1	9 2	3.4
40	5 26	18 34	0 28	1 36	20 1	1.3	8 55	3.2
35	5 32	18 29	0 26	1 28	20 9	1.4	8 50	3.0
30	5 36	18 24	0 24	1 22	20 16	1.6	8 44	2.9
20	5 44	18 17	0 22	1 15	20 27	1.8	8 35	2.6
10	5 51	18 10	0 21	1 11	20 38	2.0	8 28	2.4
0	5 57	18 4	0 21	1 9	20 48	2.2	8 20	2.2
10	6 3	17 58	0 21	1 10	20 57	2.4	8 13	2.0
20	6 10	17 51	0 22	1 13	21 8	2.7	8 5	1.7
30	6 17	17 44	0 24	1 20	21 20	2.9	7 57	1.5
35	6 21	17 40	0 26	1 24	21 27	3.1	7 52	1.3
40	6 26	17 36	0 27	1 30	21 35	3.2	7 46	1.2
45	6 31	17 30	0 30	1 38	21 45	3.4	7 40	1.0
50	6 37	17 24	0 33	1 48	21 56	3.7	7 32	.7
55	6 45	17 16	0 37	2 1	22 11	4.1	7 22	.4
60	6 55	17 7	0 42	2 19	22 30	4.6	7 10	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	328 59.5	106	7 30.7	169	89 31.1	-21 38.2	186 33.2	12 47.8
2	357 58.6	105	8 4.4	168	119 35.7	-21 38.3	216 37.5	12 47.6
4	26 57.6	104	8 38.0	167	149 40.2	-21 38.3	246 41.8	12 47.4
6	55 56.4	103	9 11.4	166	179 44.8	-21 38.4	276 46.2	12 47.1
8	84 55.0	102	9 44.5	165	209 49.3	-21 38.5	306 50.5	12 46.9
10	113 53.4	101	10 17.5	163	239 53.9	-21 38.5	336 54.8	12 46.7
12	142 51.6	100	10 50.2	162	269 58.4	-21 38.6	6 59.1	12 46.5
14	171 49.6	99	11 22.6	161	300 3.0	-21 38.7	37 3.4	12 46.3
16	200 47.3	98	11 54.8	159	330 7.5	-21 38.7	67 7.8	12 46.1
18	229 44.9	96	12 26.7	158	0 12.0	-21 38.8	97 12.1	12 45.8
20	258 42.2	95	12 58.2	156	30 16.6	-21 38.9	127 16.4	12 45.6
22	287 39.2	94	13 29.5	155	60 21.1	-21 38.9	157 20.7	12 45.4
Δ					23	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	- 0 35.5	.8	15.9	T _m	2 8	2.2	60.2 16.4		
12	- 0 26.1	T _{m☉}	12 h .4 min	Starost	18.0 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	10 35	.5	222	-4.2	♃	17 59	.0	111	-2.0
♂	6 18	.1	286	.3	♄	11 32	.0	208	.8

1. SEPTEMBAR

SUBOTA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 55.8	8 29.8	339 46.6	201 59.8	7 59.5	265 38.6	21 53.9
2	209 56.2	8 28.0	9 51.5	232 6.0	8 .4	295 40.4	21 54.3
4	239 56.6	8 26.2	39 56.4	262 12.2	8 1.2	325 42.2	21 54.7
6	269 57.0	8 24.4	70 1.4	292 18.4	8 2.1	355 44.1	21 55.1
8	299 57.4	8 22.6	100 6.3	322 24.6	8 3.0	25 45.9	21 55.5
10	329 57.7	8 20.7	130 11.2	352 30.8	8 3.9	55 47.7	21 55.9
12	359 58.1	8 18.9	160 16.1	22 37.0	8 4.8	85 49.5	21 56.3
14	29 58.5	8 17.1	190 21.1	52 43.1	8 5.7	115 51.4	21 56.7
16	59 58.9	8 15.3	220 26.0	82 49.3	8 6.6	145 53.2	21 57.1
18	89 59.3	8 13.5	250 30.9	112 55.4	8 7.5	175 55.0	21 57.5
20	119 59.7	8 11.7	280 35.9	143 1.5	8 8.4	205 56.9	21 57.9
22	150 .1	8 9.9	310 40.8	173 7.6	8 9.2	235 58.7	21 58.3
Δ	2	-9		31	4	9	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 54	19 5	0 45	2 58	19 13	.2	11 23	4.7
55	5 5	18 54	0 38	2 21	19 41	.7	10 57	4.1
50	5 14	18 45	0 34	1 59	20 2	1.1	10 39	3.7
45	5 21	18 38	0 30	1 45	20 18	1.3	10 24	3.4
40	5 27	18 32	0 28	1 35	20 32	1.5	10 12	3.2
35	5 32	18 27	0 26	1 28	20 43	1.7	10 2	3.1
30	5 37	18 23	0 24	1 22	20 54	1.8	9 53	2.9
20	5 44	18 16	0 22	1 15	21 11	2.0	9 38	2.7
10	5 51	18 9	0 21	1 11	21 27	2.2	9 25	2.5
0	5 57	18 3	0 21	1 9	21 41	2.4	9 13	2.3
10	6 3	17 58	0 21	1 10	21 56	2.5	9 0	2.1
20	6 9	17 52	0 22	1 13	22 12	2.7	8 47	1.9
30	6 16	17 45	0 24	1 20	22 30	2.9	8 33	1.7
35	6 20	17 41	0 25	1 24	22 41	3.1	8 24	1.5
40	6 24	17 37	0 27	1 30	22 53	3.2	8 14	1.4
45	6 29	17 32	0 30	1 38	23 7	3.4	8 3	1.2
50	6 35	17 26	0 33	1 48	23 25	3.7	7 50	.9
55	6 43	17 18	0 37	2 1	23 49	4.1	7 33	.6
60	6 52	17 9	0 42	2 19	...	.0	7 10	.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	316 36.0	93	14 .5	153	90 25.7	-21 39.0	187 25.0	12 45.2
2	345 32.5	91	14 31.1	151	120 30.2	-21 39.1	217 29.3	12 45.0
4	14 28.8	90	15 1.4	149	150 34.7	-21 39.1	247 33.7	12 44.8
6	43 24.8	89	15 31.3	148	180 39.3	-21 39.2	277 38.0	12 44.6
8	72 20.6	87	16 .8	146	210 43.8	-21 39.3	307 42.3	12 44.3
10	101 16.0	86	16 29.9	144	240 48.3	-21 39.3	337 46.6	12 44.1
12	130 11.2	84	16 58.6	141	270 52.9	-21 39.4	7 50.9	12 43.9
14	159 6.1	83	17 26.9	139	300 57.4	-21 39.5	37 55.3	12 43.7
16	188 .6	81	17 54.7	137	331 1.9	-21 39.5	67 59.6	12 43.5
18	216 54.9	80	18 22.1	135	1 6.4	-21 39.6	98 3.9	12 43.3
20	245 48.9	78	18 49.1	132	31 11.0	-21 39.7	128 8.2	12 43.0
22	274 42.6	77	19 15.5	130	61 15.5	-21 39.7	158 12.5	12 42.8
Δ					23	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	- 0 16.7	.8	15.9	T _m	2 60	2.3	60.1 16.4		
12	- 0 7.2	T _{m☉}	12 h .1 min	Starost	19.0 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	10 30	.5	222	-4.2	♃	17 56	.0	111	-2.0
♂	6 17	.1	286	.3	♄	11 29	.0	208	.8

2. SEPTEMBAR

2007.

NEDELJA

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	.5	8	8.1	340	45.7	203	13.6	8	10.1	266	.5	21	58.7
2	210	.9	8	6.2	10	50.6	233	19.7	8	11.0	296	2.4	21	59.1
4	240	1.3	8	4.4	40	55.6	263	25.7	8	11.9	326	4.2	21	59.5
6	270	1.7	8	2.6	71	.5	293	31.7	8	12.7	356	6.1	21	59.9
8	300	2.1	8	.8	101	5.4	323	37.7	8	13.6	26	7.9	22	.3
10	330	2.5	7	59.0	131	10.4	353	43.7	8	14.5	56	9.7	22	.7
12	0	2.9	7	57.1	161	15.3	23	49.6	8	15.4	86	11.6	22	1.0
14	30	3.3	7	55.3	191	20.2	53	55.6	8	16.2	116	13.4	22	1.4
16	60	3.7	7	53.5	221	25.1	84	1.5	8	17.1	146	15.3	22	1.8
18	90	4.1	7	51.7	251	30.1	114	7.4	8	18.0	176	17.1	22	2.2
20	120	4.5	7	49.8	281	35.0	144	13.3	8	18.8	206	19.0	22	2.6
22	150	4.9	7	48.0	311	39.9	174	19.2	8	19.7	236	20.8	22	3.0
Δ		2		-9			30		4		9			2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 56	19 2	0 45	2 56	19 17	.4	13 15	4.7
55	5 7	18 51	0 38	2 19	19 59	1.1	12 35	4.0
50	5 16	18 43	0 33	1 59	20 28	1.5	12 8	3.6
45	5 23	18 36	0 30	1 45	20 50	1.7	11 47	3.4
40	5 28	18 31	0 28	1 35	21 8	1.9	11 30	3.2
35	5 33	18 26	0 26	1 28	21 23	2.0	11 16	3.0
30	5 37	18 22	0 24	1 22	21 37	2.1	11 3	2.9
20	5 45	18 15	0 22	1 15	21 59	2.2	10 43	2.7
10	5 51	18 9	0 21	1 11	22 19	2.4	10 25	2.6
0	5 57	18 3	0 21	1 9	22 38	2.5	10 8	2.4
10	6 2	17 58	0 21	1 10	22 57	2.6	9 51	2.3
20	6 8	17 52	0 22	1 13	23 17	2.7	9 33	2.1
30	6 15	17 45	0 24	1 20	23 40	2.9	9 13	1.9
35	6 18	17 42	0 25	1 24	23 54	3.0	9 1	1.8
40	6 23	17 38	0 27	1 30	...	...	8 47	1.7
45	6 28	17 33	0 30	1 38	...	...	8 31	1.5
50	6 33	17 27	0 33	1 48	...	...	8 12	1.2
55	6 40	17 20	0 37	2 1	...	...	7 47	.9
60	6 50	17 11	0 42	2 19	0 23	4.8	7 12	.2

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	303	36.0	75	19	41.5	127	91	20.0	-21	39.8	188	16.9	12	42.6
2	332	29.1	74	20	6.9	125	121	24.5	-21	39.9	218	21.2	12	42.4
4	1	21.8	72	20	31.9	122	151	29.0	-21	39.9	248	25.5	12	42.2
6	30	14.3	71	20	56.3	119	181	33.6	-21	40.0	278	29.8	12	42.0
8	59	6.5	69	21	20.2	117	211	38.1	-21	40.1	308	34.2	12	41.7
10	87	58.3	68	21	43.5	114	241	42.6	-21	40.1	338	38.5	12	41.5
12	116	49.9	66	22	6.3	111	271	47.1	-21	40.2	8	42.8	12	41.3
14	145	41.1	65	22	28.5	108	301	51.6	-21	40.3	38	47.1	12	41.1
16	174	32.1	63	22	50.1	105	331	56.1	-21	40.4	68	51.4	12	40.9
18	203	22.8	62	23	11.1	102	2	.7	-21	40.4	98	55.8	12	40.7
20	232	13.2	61	23	31.4	99	32	5.2	-21	40.5	129	.1	12	40.5
22	261	3.3	59	23	51.2	96	62	9.7	-21	40.6	159	4.4	12	40.2
Δ							23		0		22			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	0 2.3	.8	15.9	T _m	3 54	2.4	59.8	16.3
12	0 12.0	T _{m☉}	11 h 59.8 min	Starost	20.0 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 25	.5	222	-4.2	♄	17 52	.0	111	-2.0
♂	6 16	.1	285	.3	♄	11 25	.0	208	.8

3. SEPTEMBAR

PONEDELJAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	5.4	7	46.2	341	44.9	204	25.1	8	20.6	266	22.7	22	3.4
2	210	5.8	7	44.4	11	49.8	234	30.9	8	21.4	296	24.5	22	3.7
4	240	6.2	7	42.5	41	54.7	264	36.7	8	22.3	326	26.4	22	4.1
6	270	6.6	7	40.7	71	59.6	294	42.6	8	23.1	356	28.2	22	4.5
8	300	7.0	7	38.9	102	4.6	324	48.4	8	24.0	26	30.1	22	4.9
10	330	7.4	7	37.0	132	9.5	354	54.1	8	24.8	56	32.0	22	5.2
12	0	7.8	7	35.2	162	14.4	24	59.9	8	25.7	86	33.8	22	5.6
14	30	8.2	7	33.4	192	19.4	55	5.6	8	26.5	116	35.7	22	6.0
16	60	8.6	7	31.5	222	24.3	85	11.4	8	27.4	146	37.5	22	6.4
18	90	9.0	7	29.7	252	29.2	115	17.1	8	28.2	176	39.4	22	6.7
20	120	9.4	7	27.9	282	34.1	145	22.8	8	29.1	206	41.3	22	7.1
22	150	9.8	7	26.0	312	39.1	175	28.4	8	29.9	236	43.1	22	7.5
Δ		2		-9			29		4		9			2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 59	18 59	0 44	2 53	19 27	1.2	15 8	4.1
55	5 9	18 49	0 38	2 18	20 26	1.8	14 10	3.4
50	5 17	18 41	0 33	1 58	21 3	2.1	13 34	3.2
45	5 24	18 34	0 30	1 44	21 31	2.2	13 7	3.1
40	5 29	18 29	0 28	1 35	21 53	2.3	12 46	3.0
35	5 34	18 25	0 26	1 27	22 11	2.3	12 29	2.9
30	5 38	18 21	0 24	1 22	22 26	2.4	12 14	2.8
20	5 45	18 14	0 22	1 15	22 53	2.4	11 48	2.7
10	5 51	18 8	0 21	1 11	23 16	2.5	11 26	2.6
0	5 56	18 3	0 21	1 9	23 38	2.5	11 6	2.5
10	6 2	17 57	0 21	1 10	23 59	2.6	10 46	2.4
20	6 7	17 52	0 22	1 13	...	...	10 24	2.3
30	6 14	17 46	0 24	1 20	...	...	9 59	2.2
35	6 17	17 42	0 25	1 24	...	...	9 44	2.1
40	6 21	17 38	0 27	1 30	0 11	3.1	9 27	2.0
45	6 26	17 34	0 29	1 38	0 30	3.2	9 7	1.9
50	6 31	17 29	0 32	1 48	0 54	3.4	8 42	1.7
55	6 38	17 22	0 36	2 1	1 27	3.8	8 8	1.4
60	6 47	17 14	0 42	2 19	2 18	4.6	7 17	.6

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	289	53.1	58	24	10.4	93	92	14.2	-21	40.6	189	8.7	12	40.0
2	318	42.7	57	24	28.8	89	122	18.7	-21	40.7	219	13.0	12	39.8
4	347	32.0	55	24	46.7	86	152	23.2	-21	40.8	249	17.4	12	39.6
6	16	21.1	54	25	3.9	83	182	27.7	-21	40.9	279	21.7	12	39.4
8	45	9.9	53	25	20.4	79	212	32.2	-21	40.9	309	26.0	12	39.2
10	73	58.5	52	25	36.2	76	242	36.7	-21	41.0	339	30.3	12	38.9
12	102	46.8	51	25	51.4	72	272	41.2	-21	41.1	9	34.6	12	38.7
14	131	35.0	50	26	5.9	69	302	45.7	-21	41.1	39	39.0	12	38.5
16	160	23.0	49	26	19.6	65	332	50.2	-21	41.2	69	43.3	12	38.3
18	189	10.7	48	26	32.7	62	2	54.7	-21	41.3	99	47.6	12	38.1
20	217	58.4	47	26	45.0	58	32	59.2	-21	41.3	129	51.9	12	37.9
22	246	45.8	47	26	56.7	55	63	3.7	-21	41.4	159	56.3	12	37.7
Δ							23		0		22			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	0 21.6	.8	15.9	T _m	4 52	2.5	59.4	16.2
12	0 31.4	T _{m☉}	11 h 59.5 min	Starost	21.0 d	Faza	☉	

PLANETE							
Pl.	T _m	π	3				

4. SEPTEMBAR

2007.

UTORAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 10.2	7 24.2	342 44.0	205 34.1	8 30.7	266 45.0	22 7.9
2	210 10.6	7 22.3	12 48.9	235 39.7	8 31.6	296 46.9	22 8.2
4	240 11.1	7 20.5	42 53.8	265 45.4	8 32.4	326 48.7	22 8.6
6	270 11.5	7 18.7	72 58.8	295 51.0	8 33.2	356 50.6	22 9.0
8	300 11.9	7 16.8	103 3.7	325 56.6	8 34.1	26 52.5	22 9.3
10	330 12.3	7 15.0	133 8.6	356 2.1	8 34.9	56 54.4	22 9.7
12	0 12.7	7 13.1	163 13.6	26 7.7	8 35.7	86 56.2	22 10.1
14	30 13.1	7 11.3	193 18.5	56 13.2	8 36.5	116 58.1	22 10.4
16	60 13.5	7 9.5	223 23.4	86 18.8	8 37.4	146 60.0	22 10.8
18	90 13.9	7 7.6	253 28.3	116 24.3	8 38.2	177 1.9	22 11.1
20	120 14.4	7 5.8	283 33.3	146 29.8	8 39.0	207 3.7	22 11.5
22	150 14.8	7 3.9	313 38.2	176 35.2	8 39.8	237 5.6	22 11.9
Δ	2	-9		28	4	9	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 1	18 56	0 44	2 51	19 55	2.8	16 47	2.5
55	5 11	18 46	0 38	2 17	21 10	2.7	15 33	2.5
50	5 19	18 39	0 33	1 57	21 53	2.7	14 51	2.6
45	5 25	18 33	0 30	1 44	22 23	2.6	14 21	2.6
40	5 30	18 28	0 28	1 34	22 47	2.6	13 57	2.6
35	5 34	18 23	0 26	1 27	23 6	2.6	13 38	2.6
30	5 38	18 20	0 24	1 22	23 23	2.6	13 21	2.6
20	5 45	18 13	0 22	1 15	23 51	2.6	12 53	2.6
10	5 51	18 8	0 21	1 11	...	.0	12 29	2.5
0	5 56	18 2	0 21	1 9	...	.0	12 7	2.5
10	6 1	17 57	0 21	1 10	...	.0	11 44	2.5
20	6 6	17 52	0 22	1 13	0 22	2.6	11 20	2.5
30	6 12	17 46	0 24	1 20	0 50	2.7	10 52	2.5
35	6 16	17 43	0 25	1 24	1 6	2.7	10 36	2.5
40	6 20	17 39	0 27	1 30	1 25	2.8	10 16	2.4
45	6 24	17 35	0 29	1 38	1 47	2.8	9 53	2.4
50	6 29	17 30	0 32	1 48	2 17	2.9	9 23	2.4
55	6 35	17 24	0 36	2 1	2 58	3.0	8 42	2.3
60	6 44	17 16	0 42	2 19	4 8	3.4	7 31	1.9

UT	MESEC				JUPITER				SATURN				
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ	S _♄	δ _♄	Δ
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	' / "	° / ' / "	' / "	' / "	° / ' / "	' / "	' / "
0	275 33.1	46 27 7.6	51	93 8.2	-21 41.5	190 .6	12 37.4	123 12.7	-21 41.6	220 4.9	12 37.2	153 17.2	-21 41.6
2	304 20.3	45 27 17.7	47	183 21.7	-21 41.7	280 13.6	12 36.8	213 26.1	-21 41.8	310 17.9	12 36.6	243 30.6	-21 41.9
4	333 7.4	45 27 27.2	44	273 35.1	-21 41.9	40 26.5	12 36.2	303 39.6	-21 42.0	40 30.8	12 35.9	333 44.1	-21 42.1
6	1 54.3	44 27 35.9	40	33 48.6	-21 42.1	100 39.5	12 35.5	333 44.1	-21 42.2	130 43.8	12 35.3	63 57.5	-21 42.3
8	30 41.2	44 27 43.9	36	63 57.5	-21 42.3	160 48.1	12 35.1						
10	59 28.1	44 27 51.1	32										
12	88 14.8	44 27 57.6	29										
14	117 1.6	44 28 3.3	25										
16	145 48.3	44 28 8.3	21										
18	174 35.1	44 28 12.5	18										
20	203 21.9	44 28 16.0	14										
22	232 8.7	44 28 18.8	10										
Δ				22	0	22	-1						

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	0 41.1	.8	15.9	T _m	5 52	2.5	58.9
12	0 51.0	T _{m☉}	11 h 59.2 min	Starost	22.0 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	'	°	"/h	♄	h min	'	°	"/h
♃	10 16	.4	223	-4.3	♄	17 45	.0	110	-2.0
♂	6 13	.1	284	.2	♂	11 18	.0	207	.8

5. SEPTEMBAR

SREDA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 15.2	7 2.1	343 43.1	206 40.7	8 40.6	267 7.5	22 12.2
2	210 15.6	7 .2	13 48.1	236 46.1	8 41.4	297 9.4	22 12.6
4	240 16.0	6 58.4	43 53.0	266 51.6	8 42.2	327 11.3	22 12.9
6	270 16.4	6 56.5	73 57.9	296 57.0	8 43.0	357 13.2	22 13.3
8	300 16.8	6 54.7	104 2.8	327 2.4	8 43.8	27 15.1	22 13.6
10	330 17.3	6 52.8	134 7.8	357 7.7	8 44.6	57 17.0	22 14.0
12	0 17.7	6 51.0	164 12.7	27 13.1	8 45.4	87 18.8	22 14.3
14	30 18.1	6 49.1	194 17.6	57 18.4	8 46.2	117 20.7	22 14.7
16	60 18.5	6 47.3	224 22.6	87 23.7	8 47.0	147 22.6	22 15.0
18	90 18.9	6 45.4	254 27.5	117 29.0	8 47.8	177 24.5	22 15.4
20	120 19.3	6 43.5	284 32.4	147 34.3	8 48.6	207 26.4	22 15.7
22	150 19.8	6 41.7	314 37.3	177 39.6	8 49.4	237 28.3	22 16.1
Δ	2	-9		27	4	9	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 3	18 53	0 44	2 48	21 3	4.1	17 47	.9
55	5 13	18 44	0 38	2 16	22 15	3.4	16 34	1.6
50	5 20	18 36	0 33	1 57	22 57	3.1	15 52	1.9
45	5 26	18 31	0 30	1 44	23 26	3.0	15 22	2.0
40	5 31	18 26	0 28	1 34	23 49	2.8	14 59	2.1
35	5 35	18 22	0 26	1 27	...	.0	14 39	2.2
30	5 39	18 18	0 24	1 22	...	.0	14 23	2.2
20	5 45	18 12	0 22	1 14	...	.0	13 54	2.3
10	5 51	18 7	0 21	1 11	0 16	2.5	13 30	2.4
0	5 56	18 2	0 21	1 9	0 39	2.5	13 7	2.5
10	6 0	17 57	0 21	1 10	1 1	2.5	12 45	2.5
20	6 5	17 52	0 22	1 13	1 26	2.4	12 20	2.6
30	6 11	17 47	0 24	1 19	1 54	2.4	11 52	2.7
35	6 14	17 44	0 25	1 24	2 11	2.4	11 35	2.7
40	6 18	17 40	0 27	1 30	2 31	2.3	11 15	2.8
45	6 22	17 36	0 29	1 38	2 55	2.3	10 51	2.8
50	6 27	17 32	0 32	1 48	3 26	2.2	10 20	2.9
55	6 33	17 26	0 36	2 1	4 10	2.0	9 36	3.1
60	6 41	17 18	0 42	2 19	5 31	1.5	8 16	3.7

UT	MESEC				JUPITER				SATURN				
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ	S _♄	δ _♄	Δ
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	' / "	° / ' / "	' / "	' / "	° / ' / "	' / "	' / "
0	260 55.5	45 28 20.8	6	94 2.0	-21 42.4	190 52.5	12 34.9	124 6.5	-21 42.4	220 56.8	12 34.6	154 11.0	-21 42.5
2	289 42.5	45 28 22.1	3	184 15.4	-21 42.6	281 5.4	12 34.2	214 19.9	-21 42.7	311 9.8	12 34.0	244 24.4	-21 42.7
4	318 29.5	46 28 22.6	-1	274 28.9	-21 42.8	41 18.4	12 33.6	304 33.3	-21 42.9	41 22.7	12 33.4	334 37.8	-21 43.0
6	347 16.7	46 28 22.4	-5	334 37.8	-21 43.0	71 27.1	12 33.1						
8	16 4.0	47 28 21.5	-8										
10	44 51.4	48 28 19.8	-12										
12	73 39.1	49 28 17.4	-16										
14	102 26.9	50 28 14.3	-19										
16	131 14.8	51 28 10.4	-23										
18	160 3.1	52 28 5.9	-26										
20	188 51.5	53 28 .7	-30										
22	217 40.2	55 27 54.7	-33										
Δ				22	0	22	-1						

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 20.2	6 39.8	344 42.3	207 44.9	8 50.2	267 30.2	22 16.4
2	210 20.6	6 38.0	14 47.2	237 50.1	8 51.0	297 32.1	22 16.8
4	240 21.0	6 36.1	44 52.1	267 55.3	8 51.7	327 34.0	22 17.1
6	270 21.4	6 34.3	74 57.1	298 .5	8 52.5	357 35.9	22 17.5
8	300 21.9	6 32.4	105 2.0	328 5.7	8 53.3	27 37.8	22 17.8
10	330 22.3	6 30.5	135 6.9	358 10.9	8 54.0	57 39.8	22 18.1
12	0 22.7	6 28.7	165 11.8	28 16.0	8 54.8	87 41.7	22 18.5
14	30 23.1	6 26.8	195 16.8	58 21.2	8 55.6	117 43.6	22 18.8
16	60 23.5	6 25.0	225 21.7	88 26.3	8 56.3	147 45.5	22 19.2
18	90 24.0	6 23.1	255 26.6	118 31.4	8 57.1	177 47.4	22 19.5
20	120 24.4	6 21.2	285 31.6	148 36.5	8 57.9	207 49.3	22 19.8
22	150 24.8	6 19.4	315 36.5	178 41.5	8 58.6	237 51.2	22 20.2
Δ	2	-9		26	4	10	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 6	18 50	0 44	2 46	22 41	4.3	18 9	.3
55	5 15	18 41	0 37	2 15	23 36	3.6	17 13	1.0
50	5 22	18 34	0 33	1 56	.. . .	.0	16 37	1.3
45	5 27	18 29	0 30	1 43	.. . .	.0	16 10	1.5
40	5 32	18 24	0 27	1 34	.. . .	.0	15 49	1.7
35	5 36	18 20	0 26	1 27	0 9	2.8	15 31	1.8
30	5 39	18 17	0 24	1 21	0 25	2.7	15 16	1.9
20	5 45	18 11	0 22	1 14	0 53	2.6	14 50	2.0
10	5 51	18 6	0 21	1 10	1 16	2.5	14 27	2.2
0	5 55	18 2	0 21	1 9	1 39	2.4	14 6	2.3
10	5 60	17 57	0 21	1 10	2 1	2.3	13 45	2.4
20	6 5	17 53	0 22	1 13	2 24	2.2	13 22	2.5
30	6 10	17 47	0 24	1 19	2 52	2.0	12 56	2.7
35	6 13	17 45	0 25	1 24	3 8	2.0	12 40	2.8
40	6 16	17 41	0 27	1 30	3 27	1.9	12 21	2.9
45	6 20	17 37	0 29	1 38	3 50	1.7	11 59	3.0
50	6 25	17 33	0 32	1 48	4 19	1.6	11 31	3.3
55	6 30	17 27	0 36	2 1	4 59	1.3	10 51	3.6
60	6 38	17 20	0 42	2 20	6 7	.5	9 45	4.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	246 29.1	56 27	48.1	-36	94 55.7	-21 43.3	191 44.4	12 32.3
2	275 18.3	58 27	40.8	-40	125 .1	-21 43.3	221 48.7	12 32.1
4	304 7.8	59 27	32.8	-43	155 4.6	-21 43.4	251 53.0	12 31.9
6	332 57.7	61 27	24.2	-46	185 9.1	-21 43.5	281 57.3	12 31.6
8	1 47.8	62 27	14.9	-50	215 13.5	-21 43.6	312 1.7	12 31.4
10	30 38.2	64 27	5.0	-53	245 18.0	-21 43.6	342 6.0	12 31.2
12	59 29.0	66 26	54.4	-56	275 22.4	-21 43.7	12 10.3	12 31.0
14	88 20.1	67 26	43.2	-59	305 26.9	-21 43.8	42 14.6	12 30.8
16	117 11.6	69 26	31.4	-62	335 31.3	-21 43.9	72 19.0	12 30.6
18	146 3.5	71 26	18.9	-65	5 35.8	-21 43.9	102 23.3	12 30.4
20	174 55.7	73 26	5.9	-68	35 40.2	-21 44.0	132 27.6	12 30.1
22	203 48.3	75 25	52.3	-71	65 44.7	-21 44.1	162 31.9	12 29.9
Δ					22	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	1 20.9	.8	15.9	T _m	7 53	2.3	57.8	15.8	
12	1 31.0	T _{m☉}	11 h 58.5 min	Starost	24.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	10 7	.4	223	-4.3	♃	17 38	.0	110	-2.0
♂	6 10	.1	283	.2	♄	11 11	.0	207	.8

7. SEPTEMBAR

PETAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 25.2	6 17.5	345 41.4	208 46.6	8 59.4	267 53.1	22 20.5
2	210 25.7	6 15.6	15 46.3	238 51.6	9 .1	297 55.1	22 20.8
4	240 26.1	6 13.8	45 51.3	268 56.7	9 .9	327 57.0	22 21.2
6	270 26.5	6 11.9	75 56.2	299 1.7	9 1.6	357 58.9	22 21.5
8	300 26.9	6 10.0	106 1.1	329 6.6	9 2.3	28 .8	22 21.8
10	330 27.4	6 8.1	136 6.0	359 11.6	9 3.1	58 2.8	22 22.2
12	0 27.8	6 6.3	166 11.0	29 16.6	9 3.8	88 4.7	22 22.5
14	30 28.2	6 4.4	196 15.9	59 21.5	9 4.5	118 6.6	22 22.8
16	60 28.6	6 2.5	226 20.8	89 26.4	9 5.3	148 8.5	22 23.1
18	90 29.1	6 .7	256 25.8	119 31.3	9 6.0	178 10.5	22 23.5
20	120 29.5	5 58.8	286 30.7	149 36.2	9 6.7	208 12.4	22 23.8
22	150 29.9	5 56.9	316 35.6	179 41.1	9 7.4	238 14.3	22 24.1
Δ	2	-9		25	4	10	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 8	18 47	0 43	2 44	.. . .	.0	18 17	.1
55	5 17	18 39	0 37	2 14	.. . .	.0	17 37	.6
50	5 23	18 32	0 33	1 56	0 12	3.3	17 8	.9
45	5 28	18 27	0 30	1 43	0 37	3.1	16 47	1.2
40	5 33	18 23	0 27	1 34	0 58	2.9	16 29	1.3
35	5 37	18 19	0 26	1 27	1 15	2.8	16 14	1.5
30	5 40	18 16	0 24	1 21	1 29	2.7	16 1	1.6
20	5 46	18 10	0 22	1 14	1 54	2.5	15 39	1.8
10	5 50	18 6	0 21	1 10	2 16	2.3	15 20	2.0
0	5 55	18 1	0 21	1 9	2 36	2.2	15 1	2.1
10	5 59	17 57	0 21	1 10	2 55	2.1	14 43	2.3
20	6 4	17 53	0 22	1 13	3 17	1.9	14 23	2.4
30	6 9	17 48	0 24	1 19	3 41	1.7	14 0	2.6
35	6 12	17 45	0 25	1 24	3 55	1.6	13 47	2.8
40	6 15	17 42	0 27	1 30	4 12	1.5	13 31	2.9
45	6 18	17 39	0 29	1 38	4 32	1.3	13 12	3.1
50	6 23	17 34	0 32	1 48	4 56	1.1	12 49	3.3
55	6 28	17 29	0 36	2 1	5 29	.8	12 17	3.7
60	6 35	17 23	0 42	2 20	6 18	.2	11 30	4.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	232 41.2	77 25	38.1	-74	95 49.1	-21 44.2	192 36.3	12 29.7
2	261 34.6	79 25	23.4	-76	125 53.6	-21 44.2	222 40.6	12 29.5
4	290 28.4	81 25	8.1	-79	155 58.0	-21 44.3	252 44.9	12 29.3
6	319 22.6	83 24	52.3	-82	186 2.5	-21 44.4	282 49.2	12 29.1
8	348 17.1	85 24	35.9	-84	216 6.9	-21 44.5	312 53.6	12 28.9
10	17 12.1	87 24	19.0	-87	246 11.4	-21 44.6	342 57.9	12 28.6
12	46 7.5	89 24	1.6	-89	276 15.8	-21 44.6	13 2.2	12 28.4
14	75 3.3	91 23	43.7	-92	306 20.3	-21 44.7	43 6.6	12 28.2
16	103 59.6	93 23	25.4	-94	336 24.7	-21 44.8	73 10.9	12 28.0
18	132 56.2	95 23	6.5	-96	6 29.1	-21 44.9	103 15.2	12 27.8
20	161 53.3	97 22	47.2	-99	36 33.6	-21 44.9	133 19.5	12 27.6
22	190 50.7	99 22	27.5	-101	66 38.0	-21 45.0	163 23.9	12 27.4
Δ					22	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	1 41.1	.8	15.9	T _m	8 49	2.1	57.3	15.6	
12	1 51.3	T _{m☉}	11 h 58.1 min	Starost	25.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	10 3	.4	223	-4.3	♃	17 34	.0	110	-2.0
♂	6 8	.1	282	.2	♄	11 8	.0	207	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	30.3	5	55.0	346	40.5	209	45.9	9	8.1	268	16.3	22	24.4	
2	210	30.8	5	53.2	16	45.5	239	50.8	9	8.9	298	18.2	22	24.8	
4	240	31.2	5	51.3	46	50.4	269	55.6	9	9.6	328	20.2	22	25.1	
6	270	31.6	5	49.4	76	55.3	300	.4	9	10.3	358	22.1	22	25.4	
8	300	32.0	5	47.5	107	.3	330	5.2	9	11.0	28	24.0	22	25.7	
10	330	32.5	5	45.7	137	5.2	0	10.0	9	11.7	58	26.0	22	26.0	
12	0	32.9	5	43.8	167	10.1	30	14.7	9	12.4	88	27.9	22	26.3	
14	30	33.3	5	41.9	197	15.0	60	19.5	9	13.1	118	29.9	22	26.7	
16	60	33.8	5	40.0	227	20.0	90	24.2	9	13.8	148	31.8	22	27.0	
18	90	34.2	5	38.1	257	24.9	120	28.9	9	14.5	178	33.8	22	27.3	
20	120	34.6	5	36.3	287	29.8	150	33.6	9	15.1	208	35.7	22	27.6	
22	150	35.1	5	34.4	317	34.8	180	38.3	9	15.8	238	37.7	22	27.9	
Δ		2		-9				24		3			10		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 10	18 44	0 43	2 43	0 26	4.1	18 20	.0
55	5 18	18 36	0 37	2 13	1 4	3.6	17 52	.4
50	5 25	18 30	0 33	1 55	1 31	3.3	17 31	.7
45	5 30	18 25	0 30	1 43	1 51	3.0	17 15	.9
40	5 34	18 21	0 27	1 33	2 8	2.9	17 1	1.1
35	5 37	18 18	0 26	1 26	2 22	2.7	16 50	1.2
30	5 41	18 15	0 24	1 21	2 34	2.6	16 40	1.4
20	5 46	18 10	0 22	1 14	2 54	2.4	16 22	1.6
10	5 50	18 5	0 21	1 10	3 12	2.2	16 7	1.8
0	5 55	18 1	0 21	1 9	3 28	2.0	15 52	1.9
10	5 59	17 57	0 21	1 10	3 45	1.9	15 38	2.1
20	6 3	17 53	0 22	1 13	4 2	1.7	15 22	2.3
30	6 8	17 49	0 24	1 19	4 23	1.5	15 4	2.5
35	6 10	17 46	0 25	1 24	4 34	1.3	14 53	2.7
40	6 13	17 43	0 27	1 30	4 48	1.2	14 41	2.8
45	6 17	17 40	0 29	1 38	5 3	1.0	14 26	3.0
50	6 21	17 36	0 32	1 48	5 23	.8	14 8	3.2
55	6 25	17 31	0 36	2 1	5 48	.5	13 45	3.5
60	6 32	17 25	0 42	2 20	6 22	.0	13 12	4.0
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	219	48.6	102	22	7.3	-103	96	42.5	-21	45.1	193	28.2	12	27.1	
2	248	46.9	104	21	46.7	-105	126	46.9	-21	45.2	223	32.5	12	26.9	
4	277	45.7	106	21	25.6	-107	156	51.3	-21	45.2	253	36.9	12	26.7	
6	306	44.8	108	21	4.2	-109	186	55.8	-21	45.3	283	41.2	12	26.5	
8	335	44.3	110	20	42.4	-111	217	.2	-21	45.4	313	45.5	12	26.3	
10	4	44.3	112	20	20.2	-113	247	4.6	-21	45.5	343	49.8	12	26.1	
12	33	44.6	114	19	57.6	-115	277	9.1	-21	45.6	373	54.2	12	25.9	
14	62	45.3	116	19	34.7	-116	307	13.5	-21	45.6	403	58.5	12	25.7	
16	91	46.5	118	19	11.5	-118	337	17.9	-21	45.7	433	62.8	12	25.4	
18	120	48.0	119	18	47.9	-120	7	22.3	-21	45.8	104	7.2	12	25.2	
20	149	49.9	121	18	23.9	-121	37	26.8	-21	45.9	134	11.5	12	25.0	
22	178	52.2	123	17	59.7	-123	67	31.2	-21	46.0	164	15.8	12	24.8	
Δ								22		0			22		-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	2	1.5	.9	15.9	T _m	9 40	2.0	56.7	15.5
12	2	11.8	T _m ☉	11 h 57.8 min	Starost	26.0 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	9 59	.4	223	-4.3	♄	17 31	.0	110	-2.0
♂	6 7	.1	282	.2	♂	11 5	.0	207	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	35.5	5	32.5	347	39.7	210	42.9	9	16.5	268	39.6	22	28.2	
2	210	35.9	5	30.6	17	44.6	240	47.6	9	17.2	298	41.6	22	28.5	
4	240	36.3	5	28.7	47	49.5	270	52.2	9	17.8	328	43.5	22	28.8	
6	270	36.8	5	26.8	77	54.5	300	56.8	9	18.5	358	45.5	22	29.1	
8	300	37.2	5	25.0	107	59.4	331	1.4	9	19.2	28	47.5	22	29.5	
10	330	37.6	5	23.1	138	4.3	1	6.0	9	19.9	58	49.4	22	29.8	
12	0	38.1	5	21.2	168	9.3	31	10.5	9	20.5	88	51.4	22	30.1	
14	30	38.5	5	19.3	198	14.2	61	15.1	9	21.2	118	53.4	22	30.4	
16	60	38.9	5	17.4	228	19.1	91	19.6	9	21.8	148	55.3	22	30.7	
18	90	39.4	5	15.5	258	24.0	121	24.1	9	22.5	178	57.3	22	31.0	
20	120	39.8	5	13.6	288	29.0	151	28.6	9	23.1	208	59.3	22	31.3	
22	150	40.2	5	11.7	318	33.9	181	33.1	9	23.8	239	1.2	22	31.6	
Δ		2		-9				23		3			10		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 13	18 41	0 43	2 41	2 5	3.9	18 20	.0
55	5 20	18 33	0 37	2 13	2 30	3.4	18 2	.3
50	5 26	18 28	0 33	1 55	2 49	3.2	17 48	.6
45	5 31	18 23	0 30	1 42	3 4	2.9	17 37	.8
40	5 35	18 19	0 27	1 33	3 16	2.7	17 28	.9
35	5 38	18 16	0 26	1 26	3 26	2.6	17 20	1.1
30	5 41	18 13	0 24	1 21	3 36	2.5	17 13	1.2
20	5 46	18 9	0 22	1 14	3 51	2.2	17 0	1.4
10	5 50	18 4	0 21	1 10	4 4	2.0	16 49	1.6
0	5 54	18 1	0 21	1 9	4 17	1.9	16 39	1.8
10	5 58	17 57	0 21	1 10	4 29	1.7	16 28	2.0
20	6 2	17 53	0 22	1 13	4 43	1.5	16 17	2.2
30	6 6	17 49	0 24	1 19	4 58	1.3	16 4	2.4
35	6 9	17 47	0 25	1 24	5 7	1.2	15 57	2.5
40	6 12	17 44	0 27	1 30	5 17	1.0	15 48	2.7
45	6 15	17 41	0 29	1 38	5 28	.8	15 38	2.9
50	6 18	17 37	0 32	1 48	5 42	.6	15 26	3.1
55	6 23	17 33	0 36	2 1	5 60	.4	15 10	3.4
60	6 29	17 27	0 42	2 20	6 23	.0	14 49	3.8
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	207	54.8	125	17	35.2	-124	97	35.6	-21	46.0	194	20.1	12	24.6	
2	236	57.8	127	17	10.4	-125	127	40.0	-21	46.1	224	24.5	12	24.4	
4	266	1.2	129	16	45.3	-127	157	44.4	-21	46.2	254	28.8	12	24.2	
6	295	4.9	130	16	19.9	-128	187	48.9	-21	46.3	284	33.1	12	23.9	
8	324	9.0	132	15	54.3	-129	217	53.3	-21	46.4	314	37.5	12	23.7	
10	353	13.4	134	15	28.4	-131	247	57.7	-21	46.4	344	41.8	12	23.5	
12	22	18.1	135	15	2.3	-132	278	2.1	-21	46.5	374	46.1	12	23.3	
14	51	23.2	137	14	35.9	-133	308	6.5	-21	46.6	404	50.5	12	23.1	
16	80	28.6	138	14	9.4	-134	338	10.9	-21	46.7	434	54.8	12	22.9	
18	109	34.3	140	13	42.6	-135	8	15.3	-21	46.8	104	59.1	12	22.7	
20	138	40.3	141	13	15.6	-136	38	19.8	-21	46.8	135	3.4	12	22.5	
22	167	46.6	143	12	48.5	-137	68	24.2	-21	46.9	165	7.8	12	22.2	
Δ								22		0			22		-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	2	22.1	.9	15.9	T _m	10 28	1.8	56.2	15.3
12	2	32.5	T _m ☉						

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	40.7	5	9.8	348	38.8	211	37.6	9	24.4	269	3.2	22	31.9
2	210	41.1	5	8.0	18	43.8	241	42.0	9	25.0	299	5.2	22	32.2
4	240	41.5	5	6.1	48	48.7	271	46.5	9	25.7	329	7.2	22	32.5
6	270	42.0	5	4.2	78	53.6	301	50.9	9	26.3	359	9.1	22	32.8
8	300	42.4	5	2.3	108	58.5	331	55.3	9	26.9	29	11.1	22	33.1
10	330	42.8	5	.4	139	3.5	1	59.7	9	27.6	59	13.1	22	33.4
12	0	43.3	4	58.5	169	8.4	32	4.1	9	28.2	89	15.1	22	33.7
14	30	43.7	4	56.6	199	13.3	62	8.4	9	28.8	119	17.1	22	33.9
16	60	44.1	4	54.7	229	18.3	92	12.8	9	29.4	149	19.1	22	34.2
18	90	44.6	4	52.8	259	23.2	122	17.1	9	30.0	179	21.1	22	34.5
20	120	45.0	4	50.9	289	28.1	152	21.4	9	30.6	209	23.0	22	34.8
22	150	45.4	4	49.0	319	33.0	182	25.7	9	31.2	239	25.0	22	35.1
Δ	2		-9				22		3		10		1	

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	196	53.1	144	12	21.1	-138	98	28.6	-21	47.0	195	12.1	12	22.0
2	226	.0	146	11	53.6	-138	128	33.0	-21	47.1	225	16.4	12	21.8
4	255	7.1	147	11	26.0	-139	158	37.4	-21	47.2	255	20.8	12	21.6
6	284	14.5	148	10	58.2	-140	188	41.8	-21	47.2	285	25.1	12	21.4
8	313	22.2	149	10	30.2	-140	218	46.2	-21	47.3	315	29.4	12	21.2
10	342	30.1	151	10	2.1	-141	248	50.6	-21	47.4	345	33.8	12	21.0
12	11	38.2	152	9	33.9	-142	278	55.0	-21	47.5	15	38.1	12	20.8
14	40	46.5	153	9	5.6	-142	308	59.4	-21	47.6	45	42.4	12	20.5
16	69	55.1	154	8	37.1	-143	339	3.8	-21	47.6	75	46.8	12	20.3
18	99	3.9	155	8	8.6	-143	9	8.2	-21	47.7	105	51.1	12	20.1
20	128	12.9	156	7	39.9	-144	39	12.6	-21	47.8	135	55.4	12	19.9
22	157	22.1	157	7	11.2	-144	69	17.0	-21	47.9	165	59.8	12	19.7
Δ							22		0		22		-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 15	18 38	0 43	2 39	3 38	3.7	18 20	.0
55	5 22	18 31	0 37	2 12	3 53	3.3	18 10	.3
50	5 28	18 26	0 33	1 54	4 5	3.0	18 2	.5
45	5 32	18 21	0 30	1 42	4 14	2.8	17 56	.7
40	5 36	18 18	0 27	1 33	4 22	2.6	17 51	.9
35	5 39	18 15	0 25	1 26	4 29	2.5	17 46	1.0
30	5 42	18 12	0 24	1 21	4 35	2.4	17 42	1.1
20	5 46	18 8	0 22	1 14	4 45	2.1	17 35	1.3
10	5 50	18 4	0 21	1 10	4 54	1.9	17 28	1.5
0	5 54	18 0	0 21	1 9	5 2	1.8	17 22	1.7
10	5 57	17 57	0 21	1 10	5 10	1.6	17 16	1.9
20	6 1	17 53	0 22	1 13	5 19	1.4	17 10	2.1
30	6 5	17 50	0 24	1 19	5 29	1.2	17 2	2.3
35	6 7	17 47	0 25	1 24	5 34	1.0	16 58	2.5
40	6 10	17 45	0 27	1 30	5 41	.9	16 53	2.6
45	6 13	17 42	0 29	1 38	5 48	.7	16 47	2.8
50	6 16	17 39	0 32	1 48	5 57	.5	16 40	3.0
55	6 20	17 35	0 36	2 1	6 8	.3	16 31	3.2
60	6 26	17 30	0 42	2 20	6 23	.0	16 19	3.6
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	2 42.8	.9	15.9	T _m	11 12	1.7	55.7	15.2	
12	2 53.3			T _{m☉}	11 h 57.1 min	Starost	28.0 d	Faza ●	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	9 52	.4	223	-4.4	♄	17 24	.0	110	-2.0
♂	6 3	.1	280	.2	♅	10 58	.0	207	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	45.9	4	47.1	349	38.0	212	30.0	9	31.9	269	27.0	22	35.4
2	210	46.3	4	45.2	19	42.9	242	34.2	9	32.4	299	29.0	22	35.7
4	240	46.8	4	43.3	49	47.8	272	38.5	9	33.0	329	31.0	22	36.0
6	270	47.2	4	41.4	79	52.7	302	42.7	9	33.6	359	33.0	22	36.3
8	300	47.6	4	39.5	109	57.7	332	46.9	9	34.2	29	35.0	22	36.5
10	330	48.1	4	37.6	140	2.6	2	51.1	9	34.8	59	37.0	22	36.8
12	0	48.5	4	35.7	170	7.5	32	55.3	9	35.4	89	39.0	22	37.1
14	30	48.9	4	33.8	200	12.5	62	59.5	9	36.0	119	41.0	22	37.4
16	60	49.4	4	31.9	230	17.4	93	3.7	9	36.5	149	43.0	22	37.7
18	90	49.8	4	30.0	260	22.3	123	7.8	9	37.1	179	45.0	22	38.0
20	120	50.3	4	28.1	290	27.2	153	11.9	9	37.7	209	47.1	22	38.2
22	150	50.7	4	26.2	320	32.2	183	16.0	9	38.2	239	49.1	22	38.5
Δ	2		-10				21		3		10		1	

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	186	31.5	158	6	42.4	-144	99	21.4	-21	48.0	196	4.1	12	19.5
2	215	41.1	159	6	13.6	-145	129	25.8	-21	48.1	226	8.4	12	19.3
4	244	50.8	159	5	44.7	-145	159	30.2	-21	48.1	256	12.8	12	19.1
6	274	.7	160	5	15.7	-145	189	34.6	-21	48.2	286	17.1	12	18.8
8	303	10.7	161	4	46.7	-145	219	39.0	-21	48.3	316	21.4	12	18.6
10	332	20.9	162	4	17.6	-145	249	43.3	-21	48.4	346	25.8	12	18.4
12	1	31.3	162	3	48.5	-145	279	47.7	-21	48.5	16	30.1	12	18.2
14	30	41.7	163	3	19.4	-146	309	52.1	-21	48.6	46	34.4	12	18.0
16	59	52.3	163	2	50.3	-146	339	56.5	-21	48.6	76	38.8	12	17.8
18	89	3.0	164	2	21.2	-146	10	.9	-21	48.7	106	43.1	12	17.6
20	118	13.8	164	1	52.1	-146	40	5.3	-21	48.8	136	47.4	12	17.4
22	147	24.7	165	1	23.0	-145	70	9.6	-21	48.9	166	51.8	12	17.2
Δ							22		0		22		-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 17	18 35	0 43	2 38	5 5	3.5	18 19	.0
55	5 24	18 28	0 37	2 11	5 12	3.2	18 16	.2
50	5 29	18 23	0 33	1 54	5 18	2.9	18 14	.5
45	5 33	18 19	0 30	1 42	5 22	2.7	18 13	.7
40	5 37	18 16	0 27	1 33	5 25	2.6	18 11	.8
35	5 40	18 13	0 25	1 26	5 28	2.4	18 10	1.0
30	5 42	18 11	0 24	1 21	5 31	2.3	18 9	1.1
20	5 46	18 7	0 22	1 14	5 36	2.1	18 7	1.3
10	5 50	18 3	0 21	1 10	5 40	1.9	18 5	1.5
0	5 54	18 0	0 21	1 9	5 44	1.7	18 3	1.7
10	5 57	17 57	0 21	1 10	5 48	1.5	18 2	1.9
20	6 0	17 54	0 22	1 13	5 52	1.3	17 60	2.0
30	6 4	17 50	0 24	1 19	5 57	1.1	17 58	2.3
35	6 6	17 48	0 25	1 24	5 59	1.0	17 57	2.4
40	6 8	17 46	0 27	1 30	6 2	.8	17 55	2.5
45	6 11	17 43	0 29	1 38	6 6	.7	17 53	2.7
50	6 14	17 40	0 32	1 48	6 10	.5	17 51	2.9
55	6 18	17 37	0 36	2 1	6 15	.3	17 49	3.2
60	6 23	17 32	0 42	2 21	6 22	.0	17 46	3.5
S								

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	3 3.7	.9	15.9	T _m	11 54	1.7	55.3	15.

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 51.1	4 24.3	350 37.1	213 20.1	9 38.8	269 51.1	22 38.8
2	210 51.6	4 22.4	20 42.0	243 24.2	9 39.4	299 53.1	22 39.1
4	240 52.0	4 20.5	50 47.0	273 28.3	9 39.9	329 55.1	22 39.3
6	270 52.5	4 18.6	80 51.9	303 32.3	9 40.5	359 57.1	22 39.6
8	300 52.9	4 16.7	110 56.8	333 36.4	9 41.0	29 59.2	22 39.9
10	330 53.3	4 14.8	141 1.7	3 40.4	9 41.6	60 1.2	22 40.2
12	0 53.8	4 12.9	171 6.7	33 44.4	9 42.1	90 3.2	22 40.4
14	30 54.2	4 11.0	201 11.6	63 48.4	9 42.6	120 5.2	22 40.7
16	60 54.7	4 9.0	231 16.5	93 52.4	9 43.2	150 7.3	22 41.0
18	90 55.1	4 7.1	261 21.5	123 56.3	9 43.7	180 9.3	22 41.2
20	120 55.5	4 5.2	291 26.4	154 .3	9 44.2	210 11.3	22 41.5
22	150 56.0	4 3.3	321 31.3	184 4.2	9 44.7	240 13.3	22 41.8
Δ	2	-10		20	3	10	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 20	18 32	0 43	2 36	6 30	3.5	18 18	.0
55	5 26	18 26	0 37	2 10	6 29	3.1	18 22	.3
50	5 31	18 21	0 33	1 53	6 28	2.9	18 26	.5
45	5 34	18 18	0 30	1 41	6 27	2.7	18 29	.7
40	5 38	18 15	0 27	1 32	6 27	2.5	18 31	.8
35	5 40	18 12	0 25	1 26	6 26	2.4	18 33	1.0
30	5 43	18 10	0 24	1 21	6 26	2.3	18 35	1.1
20	5 47	18 6	0 22	1 14	6 25	2.0	18 38	1.3
10	5 50	18 3	0 21	1 10	6 25	1.8	18 41	1.5
0	5 53	17 60	0 21	1 9	6 24	1.7	18 44	1.7
10	5 56	17 57	0 21	1 10	6 24	1.5	18 46	1.8
20	5 59	17 54	0 22	1 13	6 24	1.3	18 49	2.0
30	6 3	17 51	0 24	1 19	6 23	1.1	18 52	2.3
35	6 5	17 49	0 25	1 24	6 23	1.0	18 54	2.4
40	6 7	17 47	0 27	1 30	6 22	.8	18 56	2.5
45	6 9	17 45	0 29	1 38	6 22	.7	18 58	2.7
50	6 12	17 42	0 32	1 48	6 22	.5	19 1	2.9
55	6 15	17 39	0 36	2 2	6 21	.2	19 5	3.1
60	6 20	17 34	0 41	2 21	6 21	.0	19 9	3.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 35.7	165 0	53.9	-145	100 14.0	-21 49.0	196 56.1	12 16.9
2	205 46.7	166 0	24.8	-145	130 18.4	-21 49.0	227 .4	12 16.7
4	234 57.8	166 - 0	4.2	-145	160 22.8	-21 49.1	257 4.8	12 16.5
6	264 9.0	166 - 0	33.3	-145	190 27.2	-21 49.2	287 9.1	12 16.3
8	293 20.3	166 - 1	2.2	-145	220 31.5	-21 49.3	317 13.4	12 16.1
10	322 31.5	167 - 1	31.1	-144	250 35.9	-21 49.4	347 17.8	12 15.9
12	351 42.9	167 - 2	.0	-144	280 40.3	-21 49.5	17 22.1	12 15.7
14	20 54.2	167 - 2	28.8	-144	310 44.7	-21 49.5	47 26.5	12 15.5
16	50 5.6	167 - 2	57.6	-143	340 49.0	-21 49.6	77 30.8	12 15.3
18	79 17.0	167 - 3	26.2	-143	10 53.4	-21 49.7	107 35.1	12 15.0
20	108 28.3	167 - 3	54.8	-142	40 57.8	-21 49.8	137 39.5	12 14.8
22	137 39.7	167 - 4	23.3	-142	71 2.1	-21 49.9	167 43.8	12 14.6
Δ					22	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	3 24.7	.9	15.9	T _m	12 34	1.7	54.9 15.0		
12	3 35.3	T _m ☉	11 h 56.4 min	Starost	.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	9 45	.4	223	-4.4	♃	17 17	.0	110	-2.0
♂	6 0	.1	279	.2	♄	10 51	.0	206	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 56.4	4 1.4	351 36.2	214 8.1	9 45.3	270 15.4	22 42.1
2	210 56.9	3 59.5	21 41.2	244 12.0	9 45.8	300 17.4	22 42.3
4	240 57.3	3 57.6	51 46.1	274 15.9	9 46.3	330 19.5	22 42.6
6	270 57.7	3 55.7	81 51.0	304 19.8	9 46.8	0 21.5	22 42.8
8	300 58.2	3 53.8	111 56.0	334 23.6	9 47.3	30 23.5	22 43.1
10	330 58.6	3 51.9	142 .9	4 27.5	9 47.8	60 25.6	22 43.4
12	0 59.1	3 49.9	172 5.8	34 31.3	9 48.3	90 27.6	22 43.6
14	30 59.5	3 48.0	202 10.7	64 35.1	9 48.8	120 29.7	22 43.9
16	61 .0	3 46.1	232 15.7	94 38.9	9 49.3	150 31.7	22 44.2
18	91 .4	3 44.2	262 20.6	124 42.7	9 49.8	180 33.8	22 44.4
20	121 .8	3 42.3	292 25.5	154 46.5	9 50.2	210 35.8	22 44.7
22	151 1.3	3 40.4	322 30.5	184 50.2	9 50.7	240 37.9	22 44.9
Δ	2	-10		19	2	10	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 22	18 29	0 42	2 35	7 53	3.5	18 17	.0
55	5 28	18 23	0 37	2 10	7 44	3.2	18 29	.3
50	5 32	18 19	0 33	1 53	7 38	2.9	18 38	.6
45	5 36	18 16	0 30	1 41	7 32	2.7	18 45	.7
40	5 39	18 13	0 27	1 32	7 28	2.5	18 51	.9
35	5 41	18 11	0 25	1 26	7 24	2.4	18 57	1.0
30	5 43	18 8	0 24	1 21	7 20	2.3	19 1	1.2
20	5 47	18 5	0 22	1 14	7 14	2.0	19 10	1.4
10	5 50	18 2	0 21	1 10	7 9	1.9	19 17	1.5
0	5 53	17 59	0 21	1 9	7 4	1.7	19 24	1.7
10	5 56	17 57	0 21	1 10	6 60	1.5	19 31	1.9
20	5 58	17 54	0 22	1 13	6 55	1.3	19 38	2.1
30	6 1	17 51	0 24	1 19	6 49	1.1	19 46	2.3
35	6 3	17 50	0 25	1 24	6 46	1.0	19 51	2.4
40	6 5	17 48	0 27	1 30	6 42	.9	19 57	2.5
45	6 7	17 46	0 29	1 38	6 38	.7	20 3	2.7
50	6 10	17 43	0 32	1 48	6 33	.5	20 11	2.9
55	6 13	17 40	0 36	2 2	6 27	.3	20 20	3.2
60	6 17	17 37	0 41	2 21	6 19	.0	20 33	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	166 51.1	167 - 4	51.7	-141	101 6.5	-21 50.0	197 48.1	12 14.4
2	196 2.4	167 - 5	20.0	-141	131 10.9	-21 50.1	227 52.5	12 14.2
4	225 13.8	166 - 5	48.2	-140	161 15.2	-21 50.1	257 56.8	12 14.0
6	254 25.1	166 - 6	16.2	-140	191 19.6	-21 50.2	288 1.2	12 13.8
8	283 36.3	166 - 6	44.2	-139	221 24.0	-21 50.3	318 5.5	12 13.6
10	312 47.5	166 - 7	12.0	-139	251 28.3	-21 50.4	348 9.8	12 13.4
12	341 58.6	165 - 7	39.7	-138	281 32.7	-21 50.5	18 14.2	12 13.1
14	11 9.7	165 - 8	7.3	-137	311 37.0	-21 50.6	48 18.5	12 12.9
16	40 20.7	165 - 8	34.7	-136	341 41.4	-21 50.6	78 22.8	12 12.7
18	69 31.6	164 - 9	2.0	-136	11 45.8	-21 50.7	108 27.2	12 12.5
20	98 42.5	164 - 9	29.1	-135	41 50.1	-21 50.8	138 31.5	12 12.3
22	127 53.2	163 - 9	56.0	-134	71 54.5	-21 50.9	168 35.9	12 12.1
Δ					22	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	3 45.9	.9	15.9	T _m	13 14	1.7	54.5 14.9		
12	3 56.5	T _m ☉	11 h 56.1 min	Starost	1.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	9 42	.4	223	-4.4	♃	17 13	.0	109	-1.9
♂	5 59	.1	279	.1	♄	10 47	.0	206	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	181	1.7	3	38.4	352	35.4	214	54.0	9	51.2	270	39.9	22	45.2
2	211	2.2	3	36.5	22	40.3	244	57.7	9	51.7	300	42.0	22	45.4
4	241	2.6	3	34.6	52	45.2	275	1.4	9	52.1	330	44.0	22	45.7
6	271	3.0	3	32.7	82	50.2	305	5.1	9	52.6	0	46.1	22	46.0
8	301	3.5	3	30.8	112	55.1	335	8.8	9	53.0	30	48.2	22	46.2
10	331	3.9	3	28.9	143	.0	5	12.5	9	53.5	60	50.2	22	46.5
12	1	4.4	3	26.9	173	4.9	35	16.1	9	54.0	90	52.3	22	46.7
14	31	4.8	3	25.0	203	9.9	65	19.8	9	54.4	120	54.4	22	47.0
16	61	5.3	3	23.1	233	14.8	95	23.4	9	54.8	150	56.4	22	47.2
18	91	5.7	3	21.2	263	19.7	125	27.0	9	55.3	180	58.5	22	47.5
20	121	6.2	3	19.3	293	24.7	155	30.6	9	55.7	211	.6	22	47.7
22	151	6.6	3	17.3	323	29.6	185	34.2	9	56.2	241	2.7	22	48.0
Δ		2		-10			18		2		10			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 24	18 26	0 42	2 34	9 18	3.6	18 16	.0
55	5 30	18 21	0 37	2 9	9 0	3.2	18 36	.4
50	5 34	18 17	0 33	1 52	8 47	2.9	18 51	.7
45	5 37	18 14	0 29	1 41	8 37	2.7	19 3	.9
40	5 40	18 11	0 27	1 32	8 28	2.6	19 13	1.0
35	5 42	18 9	0 25	1 25	8 21	2.4	19 22	1.2
30	5 44	18 7	0 24	1 20	8 14	2.3	19 29	1.3
20	5 47	18 4	0 22	1 14	8 3	2.1	19 42	1.5
10	5 50	18 1	0 21	1 10	7 54	1.9	19 54	1.6
0	5 52	17 59	0 21	1 9	7 45	1.7	20 5	1.8
10	5 55	17 57	0 21	1 10	7 36	1.6	20 16	1.9
20	5 57	17 54	0 22	1 13	7 27	1.4	20 28	2.1
30	6 0	17 52	0 24	1 19	7 16	1.2	20 41	2.3
35	6 2	17 50	0 25	1 24	7 10	1.1	20 49	2.4
40	6 3	17 49	0 27	1 30	7 3	1.0	20 58	2.6
45	6 5	17 47	0 29	1 38	6 55	.8	21 8	2.7
50	6 8	17 45	0 32	1 48	6 46	.6	21 21	3.0
55	6 10	17 42	0 36	2 2	6 34	.3	21 37	3.2
60	6 14	17 39	0 41	2 22	6 19	.0	21 58	3.7
S								

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	157	3.8	163	-10	22.8	-133	101	58.8	-21	51.0	198	40.2	12	11.9
2	186	14.4	162	-10	49.4	-132	132	3.2	-21	51.1	228	44.5	12	11.7
4	215	24.8	161	-11	15.9	-131	162	7.5	-21	51.2	258	48.9	12	11.5
6	244	35.0	161	-11	42.1	-130	192	11.9	-21	51.2	288	53.2	12	11.3
8	273	45.2	160	-12	8.1	-129	222	16.2	-21	51.3	318	57.6	12	11.0
10	302	55.2	159	-12	34.0	-128	252	20.6	-21	51.4	349	1.9	12	10.8
12	332	5.1	159	-12	59.6	-127	282	24.9	-21	51.5	19	6.2	12	10.6
14	1	14.8	158	-13	25.0	-126	312	29.3	-21	51.6	49	10.6	12	10.4
16	30	24.4	157	-13	50.3	-125	342	33.6	-21	51.7	79	14.9	12	10.2
18	59	33.8	156	-14	15.2	-124	12	38.0	-21	51.8	109	19.3	12	10.0
20	88	43.0	155	-14	40.0	-123	42	42.3	-21	51.8	139	23.6	12	9.8
22	117	52.0	154	-15	4.5	-121	72	46.6	-21	51.9	169	27.9	12	9.6
Δ							22		0		22			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	4 7.1	.9	15.9	T _m	13 55	1.7	54.3	14.8
12	4 17.7	T _{m☉}	11 h 55.7 min	Starost	2.5 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	'	°	°	♄	h min	'	°	°
♃	9 39	.4	222	-4.4	♄	17 10	.0	109	-1.9
♂	5 57	.1	278	.1	♂	10 44	.0	206	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	181	7.0	3	15.4	353	34.5	215	37.8	9	56.6	271	4.7	22	48.2
2	211	7.5	3	13.5	23	39.4	245	41.3	9	57.0	301	6.8	22	48.4
4	241	7.9	3	11.6	53	44.4	275	44.9	9	57.4	331	8.9	22	48.7
6	271	8.4	3	9.7	83	49.3	305	48.4	9	57.8	1	11.0	22	48.9
8	301	8.8	3	7.7	113	54.2	335	51.9	9	58.3	31	13.1	22	49.2
10	331	9.3	3	5.8	143	59.2	5	55.4	9	58.7	61	15.2	22	49.4
12	1	9.7	3	3.9	174	4.1	35	58.9	9	59.1	91	17.2	22	49.7
14	31	10.2	3	2.0	204	9.0	66	2.4	9	59.5	121	19.3	22	49.9
16	61	10.6	3	.0	234	13.9	96	5.9	9	59.9	151	21.4	22	50.1
18	91	11.0	2	58.1	264	18.9	126	9.3	10	.3	181	23.5	22	50.4
20	121	11.5	2	56.2	294	23.8	156	12.8	10	.7	211	25.6	22	50.6
22	151	11.9	2	54.3	324	28.7	186	16.2	10	1.1	241	27.7	22	50.9
Δ		2		-10			17		2		10			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 27	18 23	0 42	2 33	10 45	3.8	18 16	.1
55	5 31	18 18	0 37	2 8	10 17	3.3	18 45	.5
50	5 35	18 15	0 32	1 52	9 58	3.0	19 7	.8
45	5 38	18 12	0 29	1 40	9 42	2.8	19 24	1.0
40	5 40	18 10	0 27	1 32	9 30	2.6	19 38	1.2
35	5 42	18 8	0 25	1 25	9 19	2.5	19 49	1.3
30	5 44	18 6	0 24	1 20	9 10	2.3	19 60	1.4
20	5 47	18 3	0 22	1 14	8 54	2.2	20 18	1.6
10	5 50	18 1	0 21	1 10	8 40	2.0	20 33	1.8
0	5 52	17 59	0 21	1 9	8 27	1.8	20 48	1.9
10	5 54	17 57	0 21	1 10	8 14	1.7	21 3	2.0
20	5 56	17 54	0 22	1 13	8 0	1.5	21 18	2.2
30	5 59	17 52	0 24	1 19	7 45	1.3	21 37	2.4
35	6 0	17 51	0 25	1 24	7 36	1.2	21 47	2.5
40	6 2	17 50	0 27	1 30	7 26	1.1	21 59	2.6
45	6 3	17 48	0 29	1 38	7 14	.9	22 14	2.8
50	6 5	17 46	0 32	1 48	6 60	.7	22 32	3.0
55	6 8	17 44	0 36	2 2	6 42	.5	22 55	3.3
60	6 11	17 41	0 41	2 22	6 18	.0	23 27	3.8
S								

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	147	.9	153	-15	28.8	-120	102	51.0	-21	52.0	199	32.3	12	9.4
2	176	9.6	152	-15	52.8	-119	132	55.3	-21	52.1	229	36.6	12	9.2
4	205	18.1	151	-16	16.6	-118	162	59.7	-21	52.2	259	41.0	12	8.9
6	234	26.3	150	-16	40.1	-116	193	4.0	-21	52.3	289	45.3	12	8.7
8	263	34.4	149	-17	3.3	-115	223	8.3	-21	52.4	319	49.6	12	8.5
10	292	42.3	148	-17	26.3	-113	253	12.7	-21	52.5	349	54.0	12	8.3
12	321	49.9	147	-17	49.0	-112	283	17.0	-21	52.5	19	58.3	12	8.1
14	350	57.3	146	-18	11.4	-111	313	21.3	-21	52.6	50	2.7	12	7.9
16	20	4.5	145	-18	33.5	-109	343	25.7	-21	52.7	80	7.0	12	7.7
18	49	11.5	144	-18	55.3	-108	13	30.0	-21	52.8	110	11.4	12	7.5
20	78	18.2	142	-19	16.8	-106	43	34.3	-21	52.9	140	15.7	12	7.3
22	107	24.7	141	-19	38.0	-104	73	38.7	-21	53.0	170	20.0	12	7.1
Δ							22		0		22			-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	'	h min	min	'	'
00	4 28.4	.9	15.9	T _m			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 12.4	2 52.3	354 33.7	216 19.6	10 1.4	271 29.8	22 51.1
2	211 12.8	2 50.4	24 38.6	246 23.0	10 1.8	301 31.9	22 51.3
4	241 13.3	2 48.5	54 43.5	276 26.4	10 2.2	331 34.0	22 51.6
6	271 13.7	2 46.6	84 48.4	306 29.7	10 2.6	1 36.1	22 51.8
8	301 14.2	2 44.6	114 53.4	336 33.1	10 2.9	31 38.2	22 52.0
10	331 14.6	2 42.7	144 58.3	6 36.4	10 3.3	61 40.3	22 52.3
12	1 15.0	2 40.8	175 3.2	36 39.8	10 3.7	91 42.5	22 52.5
14	31 15.5	2 38.8	205 8.2	66 43.1	10 4.0	121 44.6	22 52.7
16	61 15.9	2 36.9	235 13.1	96 46.4	10 4.4	151 46.7	22 53.0
18	91 16.4	2 35.0	265 18.0	126 49.7	10 4.7	181 48.8	22 53.2
20	121 16.8	2 33.1	295 22.9	156 53.0	10 5.1	211 50.9	22 53.4
22	151 17.3	2 31.1	325 27.9	186 56.2	10 5.4	241 53.0	22 53.6
Δ	2	-10		17	2	11	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 29	18 20	0 42	2 32	12 15	3.9	18 18	.2
55	5 33	18 16	0 36	2 8	11 36	3.3	18 59	.8
50	5 37	18 12	0 32	1 52	11 9	2.9	19 27	1.1
45	5 39	18 10	0 29	1 40	10 48	2.7	19 49	1.3
40	5 41	18 8	0 27	1 32	10 32	2.6	20 6	1.4
35	5 43	18 6	0 25	1 25	10 18	2.5	20 21	1.6
30	5 45	18 5	0 24	1 20	10 6	2.4	20 34	1.6
20	5 47	18 2	0 22	1 14	9 45	2.2	20 56	1.8
10	5 50	18 0	0 21	1 10	9 27	2.1	21 15	1.9
0	5 52	17 58	0 21	1 9	9 11	2.0	21 33	2.0
10	5 54	17 56	0 21	1 10	8 55	1.8	21 51	2.1
20	5 56	17 55	0 22	1 13	8 37	1.7	22 11	2.2
30	5 58	17 53	0 24	1 20	8 17	1.5	22 33	2.4
35	5 59	17 52	0 25	1 24	8 6	1.4	22 46	2.5
40	6 0	17 51	0 27	1 30	7 52	1.3	23 2	2.6
45	6 1	17 49	0 29	1 38	7 37	1.2	23 20	2.7
50	6 3	17 48	0 32	1 48	7 18	1.0	23 43	2.9
55	6 5	17 46	0 36	2 3	6 53	.7	...	.0
60	6 8	17 44	0 41	2 22	6 20	.2	...	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	136 30.9	140 -19	58.9	-103	103 43.0	-21 53.1	200 24.4	12 6.9
2	165 36.9	139 -20	19.4	-101	133 47.3	-21 53.2	230 28.7	12 6.6
4	194 42.6	137 -20	39.6	-99	163 51.6	-21 53.2	260 33.1	12 6.4
6	223 48.1	136 -20	59.5	-98	193 56.0	-21 53.3	290 37.4	12 6.2
8	252 53.3	135 -21	19.0	-96	224 .3	-21 53.4	320 41.8	12 6.0
10	281 58.3	133 -21	38.2	-94	254 4.6	-21 53.5	350 46.1	12 5.8
12	311 2.9	132 -21	57.0	-92	284 8.9	-21 53.6	20 50.5	12 5.6
14	340 7.4	131 -22	15.5	-90	314 13.2	-21 53.7	50 54.8	12 5.4
16	9 11.5	129 -22	33.5	-88	344 17.6	-21 53.8	80 59.1	12 5.2
18	38 15.3	128 -22	51.2	-87	14 21.9	-21 53.9	111 3.5	12 5.0
20	67 18.9	127 -23	8.5	-85	44 26.2	-21 53.9	141 7.8	12 4.8
22	96 22.2	125 -23	25.5	-83	74 30.5	-21 54.0	171 12.2	12 4.6
Δ					22	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	4 49.7	.9	15.9	T _m 15 22	2.0	54.1	14.7		
12	5 .4	T _{m☉} 11 h 55.0 min	Starost 4.5 d	Faza ●					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	9 34	.4	222	-4.4	♄	17 3	.0	109	-1.9
♂	5 54	.1	277	.1	♂	10 37	.0	206	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 17.7	2 29.2	355 32.8	216 59.5	10 5.7	271 55.2	22 53.9
2	211 18.2	2 27.3	25 37.7	247 2.7	10 6.1	301 57.3	22 54.1
4	241 18.6	2 25.3	55 42.7	277 5.9	10 6.4	331 59.4	22 54.3
6	271 19.1	2 23.4	85 47.6	307 9.1	10 6.7	2 1.5	22 54.5
8	301 19.5	2 21.5	115 52.5	337 12.3	10 7.1	32 3.7	22 54.8
10	331 20.0	2 19.5	145 57.4	7 15.5	10 7.4	62 5.8	22 55.0
12	1 20.4	2 17.6	176 2.4	37 18.7	10 7.7	92 7.9	22 55.2
14	31 20.8	2 15.7	206 7.3	67 21.9	10 8.0	122 10.1	22 55.4
16	61 21.3	2 13.7	236 12.2	97 25.0	10 8.3	152 12.2	22 55.7
18	91 21.7	2 11.8	266 17.2	127 28.1	10 8.6	182 14.4	22 55.9
20	121 22.2	2 9.9	296 22.1	157 31.3	10 8.9	212 16.5	22 56.1
22	151 22.6	2 7.9	326 27.0	187 34.4	10 9.2	242 18.6	22 56.3
Δ	2	-10		16	2	11	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 31	18 16	0 42	2 31	13 48	3.8	18 23	.6
55	5 35	18 13	0 36	2 7	12 54	3.1	19 18	1.3
50	5 38	18 10	0 32	1 51	12 20	2.8	19 54	1.5
45	5 40	18 8	0 29	1 40	11 54	2.6	20 20	1.7
40	5 42	18 6	0 27	1 32	11 34	2.5	20 41	1.8
35	5 44	18 5	0 25	1 25	11 17	2.4	20 58	1.8
30	5 45	18 3	0 24	1 20	11 3	2.4	21 13	1.9
20	5 48	18 1	0 22	1 13	10 38	2.3	21 39	2.0
10	5 50	17 59	0 21	1 10	10 17	2.2	22 1	2.1
0	5 51	17 58	0 21	1 9	9 58	2.1	22 22	2.1
10	5 53	17 56	0 21	1 10	9 38	2.0	22 42	2.2
20	5 55	17 55	0 22	1 13	9 18	1.9	23 5	2.3
30	5 56	17 53	0 24	1 20	8 54	1.8	23 30	2.4
35	5 57	17 52	0 25	1 24	8 40	1.7	23 46	2.4
40	5 58	17 52	0 27	1 30	8 24	1.6	...	.0
45	5 60	17 50	0 29	1 38	8 5	1.5	...	.0
50	6 1	17 49	0 32	1 49	7 41	1.3	...	.0
55	6 3	17 48	0 36	2 3	7 9	1.0	0 14	3.2
60	6 5	17 46	0 41	2 23	6 23	.4	0 59	3.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	125 25.3	124 -23	42.0	-81	104 34.8	-21 54.1	201 16.5	12 4.4
2	154 28.0	122 -23	58.1	-79	134 39.1	-21 54.2	231 20.9	12 4.1
4	183 30.5	121 -24	13.8	-76	164 43.4	-21 54.3	261 25.2	12 3.9
6	212 32.6	119 -24	29.1	-74	194 47.8	-21 54.4	291 29.6	12 3.7
8	241 34.5	118 -24	43.9	-72	224 52.1	-21 54.5	321 33.9	12 3.5
10	270 36.1	117 -24	58.3	-70	254 56.4	-21 54.6	351 38.3	12 3.3
12	299 37.5	115 -25	12.3	-68	285 .7	-21 54.7	21 42.6	12 3.1
14	328 38.5	114 -25	25.8	-65	315 5.0	-21 54.7	51 47.0	12 2.9
16	357 39.3	113 -25	38.9	-63	345 9.3	-21 54.8	81 51.3	12 2.7
18	26 39.8	111 -25	51.5	-61	15 13.6	-21 54.9	111 55.6	12 2.5
20	55 40.0	110 -26	3.7	-58	45 17.9	-21 55.0	141 60.0	12 2.3
22	84 40.0	108 -26	15.3	-56	75 22.2	-21 55.1	172 4.3	12 2.1
Δ					22	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	5 11.1	.9	15.9	T _m 16 10	2.1	54.1	14.8		
12	5 21.8	T _{m☉} 11 h 54.6 min	Starost 5.5 d	Faza ●					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	9 31	.4	221	-4.4	♄	16 59	.0	109	-1.9
♂	5 52	.1	276	.1	♂	10 33	.0	206	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 23.1	2 6.0	356 31.9	217 37.5	10 9.5	272 20.8	22 56.5
2	211 23.5	2 4.1	26 36.9	247 40.5	10 9.8	302 22.9	22 56.7
4	241 24.0	2 2.1	56 41.8	277 43.6	10 10.1	332 25.1	22 57.0
6	271 24.4	2 .2	86 46.7	307 46.7	10 10.3	2 27.2	22 57.2
8	301 24.9	1 58.3	116 51.6	337 49.7	10 10.6	32 29.4	22 57.4
10	331 25.3	1 56.3	146 56.6	7 52.7	10 10.9	62 31.5	22 57.6
12	1 25.7	1 54.4	177 1.5	37 55.8	10 11.1	92 33.7	22 57.8
14	31 26.2	1 52.5	207 6.4	67 58.8	10 11.4	122 35.9	22 58.0
16	61 26.6	1 50.5	237 11.4	98 1.8	10 11.7	152 38.0	22 58.2
18	91 27.1	1 48.6	267 16.3	128 4.8	10 11.9	182 40.2	22 58.5
20	121 27.5	1 46.7	297 21.2	158 7.7	10 12.2	212 42.4	22 58.7
22	151 28.0	1 44.7	327 26.1	188 10.7	10 12.4	242 44.5	22 58.9
Δ	2	-10		15	1	11	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 34	18 13	0 42	2 30	15 18	3.0	18 38	1.6
55	5 37	18 10	0 36	2 7	14 8	2.6	19 49	2.0
50	5 40	18 8	0 32	1 51	13 27	2.5	20 30	2.1
45	5 42	18 6	0 29	1 40	12 58	2.4	21 0	2.1
40	5 43	18 5	0 27	1 31	12 35	2.4	21 23	2.1
35	5 45	18 3	0 25	1 25	12 16	2.3	21 42	2.2
30	5 46	18 2	0 24	1 20	11 60	2.3	21 59	2.2
20	5 48	18 0	0 22	1 13	11 33	2.3	22 27	2.2
10	5 50	17 59	0 21	1 10	11 9	2.2	22 51	2.2
0	5 51	17 58	0 21	1 9	10 48	2.2	23 13	2.2
10	5 52	17 56	0 21	1 10	10 26	2.1	23 35	2.2
20	5 54	17 55	0 22	1 13	10 3	2.1	23 59	2.2
30	5 55	17 54	0 24	1 20	9 36	2.0	...	.0
35	5 56	17 53	0 25	1 24	9 21	2.0	...	.0
40	5 57	17 52	0 27	1 30	9 2	1.9	0 4	2.5
45	5 58	17 52	0 29	1 38	8 40	1.9	0 25	2.5
50	5 59	17 51	0 32	1 49	8 12	1.8	0 52	2.7
55	5 60	17 50	0 36	2 3	7 34	1.6	1 30	2.8
60	6 2	17 48	0 41	2 23	6 33	1.1	2 31	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	113 39.7	107 -26	26.5	-54	105 26.5	-21 55.2	202 8.7	12 1.9
2	142 39.1	106 -26	37.2	-51	135 30.8	-21 55.3	232 13.0	12 1.7
4	171 38.3	105 -26	47.5	-49	165 35.1	-21 55.4	262 17.4	12 1.4
6	200 37.2	103 -26	57.2	-46	195 39.4	-21 55.5	292 21.7	12 1.2
8	229 35.8	102 -27	6.4	-44	225 43.7	-21 55.6	322 26.1	12 1.0
10	258 34.2	101 -27	15.1	-41	255 48.0	-21 55.6	352 30.4	12 .8
12	287 32.4	100 -27	23.3	-38	285 52.3	-21 55.7	2 34.8	12 .6
14	316 30.3	98 -27	30.9	-36	315 56.6	-21 55.8	52 39.1	12 .4
16	345 28.0	97 -27	38.1	-33	346 .9	-21 55.9	82 43.5	12 .2
18	14 25.4	96 -27	44.7	-30	16 5.2	-21 56.0	112 47.8	11 60.0
20	43 22.7	95 -27	50.7	-28	46 9.5	-21 56.1	142 52.2	11 59.8
22	72 19.7	94 -27	56.3	-25	76 13.7	-21 56.2	172 56.5	11 59.6
Δ					21	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	5 32.5	.9	15.9	T _m	17 0	2.2	54.4 14.8		
12	5 43.2	T _{m☉}	11 h 54.3 min	Starost	6.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	9 29	.4	221	-4.4	♄	16 56	.0	109	-1.9
♂	5 50	.1	276	.1	♂	10 30	.0	206	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 28.4	1 42.8	357 31.1	218 13.6	10 12.7	272 46.7	22 59.1
2	211 28.9	1 40.9	27 36.0	248 16.6	10 12.9	302 48.9	22 59.3
4	241 29.3	1 38.9	57 40.9	278 19.5	10 13.1	332 51.0	22 59.5
6	271 29.8	1 37.0	87 45.9	308 22.4	10 13.4	2 53.2	22 59.7
8	301 30.2	1 35.0	117 50.8	338 25.3	10 13.6	32 55.4	22 59.9
10	331 30.7	1 33.1	147 55.7	8 28.2	10 13.8	62 57.6	23 .1
12	1 31.1	1 31.2	178 .6	38 31.1	10 14.0	92 59.8	23 .3
14	31 31.5	1 29.2	208 5.6	68 33.9	10 14.2	123 1.9	23 .5
16	61 32.0	1 27.3	238 10.5	98 36.8	10 14.5	153 4.1	23 .7
18	91 32.4	1 25.3	268 15.4	128 39.6	10 14.7	183 6.3	23 .9
20	121 32.9	1 23.4	298 20.4	158 42.4	10 14.9	213 8.5	23 1.1
22	151 33.3	1 21.5	328 25.3	188 45.3	10 15.1	243 10.7	23 1.3
Δ	2	-10		14	1	11	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 36	18 10	0 42	2 29	16 29	1.5	19 17	3.2
55	5 39	18 8	0 36	2 6	15 10	1.9	20 36	2.8
50	5 41	18 6	0 32	1 51	14 27	2.0	21 20	2.6
45	5 43	18 4	0 29	1 39	13 56	2.1	21 51	2.5
40	5 44	18 3	0 27	1 31	13 32	2.1	22 14	2.5
35	5 45	18 2	0 25	1 25	13 12	2.2	22 34	2.5
30	5 46	18 1	0 24	1 20	12 55	2.2	22 51	2.4
20	5 48	17 59	0 22	1 13	12 27	2.2	23 19	2.4
10	5 49	17 58	0 21	1 10	12 3	2.2	23 43	2.3
0	5 51	17 57	0 21	1 9	11 40	2.2	...	.0
10	5 52	17 56	0 21	1 10	11 18	2.3	...	.0
20	5 53	17 55	0 22	1 13	10 53	2.3	...	.0
30	5 54	17 54	0 24	1 20	10 25	2.3	0 27	2.2
35	5 54	17 54	0 25	1 24	10 8	2.3	0 43	2.3
40	5 55	17 53	0 27	1 30	9 49	2.3	1 3	2.3
45	5 56	17 53	0 29	1 38	9 25	2.3	1 26	2.3
50	5 57	17 52	0 32	1 49	8 55	2.4	1 56	2.3
55	5 57	17 52	0 36	2 3	8 13	2.4	2 38	2.3
60	5 59	17 51	0 42	2 24	6 58	2.4	3 53	2.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	101 16.5	93 -28	1.2	-22	106 18.0	-21 56.3	203 .9	11 59.4
2	130 13.1	92 -28	5.6	-19	136 22.3	-21 56.4	233 5.2	11 59.2
4	159 9.6	91 -28	9.5	-16	166 26.6	-21 56.5	263 9.6	11 59.0
6	188 5.8	90 -28	12.8	-14	196 30.9	-21 56.5	293 13.9	11 58.8
8	217 1.9	90 -28	15.5	-11	226 35.2	-21 56.6	323 18.3	11 58.6
10	245 57.8	89 -28	17.7	-8	256 39.5	-21 56.7	353 22.6	11 58.3
12	274 53.6	88 -28	19.2	-5	286 43.7	-21 56.8	23 27.0	11 58.1
14	303 49.2	87 -28	20.2	-2	316 48.0	-21 56.9	53 31.3	11 57.9
16	332 44.6	87 -28	20.6	1	346 52.3	-21 57.0	83 35.7	11 57.7
18	1 40.0	86 -28	20.4	4	16 56.6	-21 57.1	113 40.1	11 57.5
20	30 35.2	86 -28	19.7	7	47 .9	-21 57.2	143 44.4	11 57.3
22	59 30.3	85 -28	18.3	10	77 5.1	-21 57.3	173 48.8	11 57.1
Δ					21	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	5 53.9	.9	15.9	T _m	17 53	2.2	54.8 14.9		
12	6 4.6	T _{m☉}	11 h 53.9 min	Starost	7.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	9 26	.4	221	-4.4	♄	16 52	.0	109	-1.9
♂	5 48	.1	275	.1	♂	10 26	.0	205	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 33.8	1 19.5	358 30.2	218 48.1	10 15.3	273 12.9	23 1.5
2	211 34.2	1 17.6	28 35.1	248 50.9	10 15.4	303 15.1	23 1.7
4	241 34.7	1 15.6	58 40.1	278 53.6	10 15.6	333 17.3	23 1.9
6	271 35.1	1 13.7	88 45.0	308 56.4	10 15.8	3 19.5	23 2.1
8	301 35.6	1 11.8	118 49.9	338 59.2	10 16.0	33 21.7	23 2.3
10	331 36.0	1 9.8	148 54.9	9 1.9	10 16.2	63 23.9	23 2.5
12	1 36.4	1 7.9	178 59.8	39 4.6	10 16.3	93 26.1	23 2.7
14	31 36.9	1 5.9	209 4.7	69 7.4	10 16.5	123 28.3	23 2.9
16	61 37.3	1 4.0	239 9.6	99 10.1	10 16.7	153 30.5	23 3.1
18	91 37.8	1 2.1	269 14.6	129 12.8	10 16.8	183 32.7	23 3.3
20	121 38.2	1 .1	299 19.5	159 15.5	10 17.0	213 34.9	23 3.5
22	151 38.7	0 58.2	329 24.4	189 18.1	10 17.1	243 37.2	23 3.7
Δ	2	-10		14	1	11	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 38	18 7	0 42	2 28	17 5	.6	20 34	4.1
55	5 41	18 5	0 36	2 6	15 56	1.3	21 43	3.4
50	5 43	18 4	0 32	1 50	15 15	1.6	22 23	3.1
45	5 44	18 2	0 29	1 39	14 46	1.7	22 52	2.9
40	5 45	18 1	0 27	1 31	14 23	1.8	23 14	2.8
35	5 46	18 0	0 25	1 25	14 4	1.9	23 33	2.7
30	5 47	17 60	0 24	1 20	13 48	2.0	23 49	2.6
20	5 48	17 59	0 22	1 13	13 20	2.1	...	.0
10	5 49	17 58	0 21	1 10	12 56	2.2	...	.0
0	5 50	17 57	0 21	1 9	12 34	2.3	0 6	2.3
10	5 51	17 56	0 21	1 10	12 12	2.3	0 29	2.2
20	5 52	17 56	0 22	1 13	11 48	2.4	0 53	2.2
30	5 53	17 55	0 24	1 20	11 20	2.5	1 21	2.1
35	5 53	17 55	0 25	1 24	11 4	2.6	1 38	2.0
40	5 53	17 54	0 27	1 31	10 45	2.7	1 57	2.0
45	5 54	17 54	0 29	1 39	10 21	2.7	2 20	1.9
50	5 54	17 54	0 32	1 49	9 52	2.9	2 50	1.8
55	5 55	17 53	0 36	2 4	9 10	3.1	3 33	1.6
60	5 56	17 53	0 42	2 25	7 57	3.7	4 46	1.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	88 25.3	85 -28	16.4	13	107 9.4	-21 57.4	203 53.1	11 56.9
2	117 20.2	84 -28	13.8	16	137 13.7	-21 57.5	233 57.5	11 56.7
4	146 15.1	84 -28	10.6	19	167 18.0	-21 57.6	264 1.8	11 56.5
6	175 9.9	84 -28	6.9	22	197 22.2	-21 57.6	294 6.2	11 56.3
8	204 4.6	83 -28	2.5	25	227 26.5	-21 57.7	324 10.5	11 56.1
10	232 59.2	83 -27	57.6	28	257 30.8	-21 57.8	354 14.9	11 55.9
12	261 53.9	83 -27	52.0	31	287 35.0	-21 57.9	24 19.2	11 55.7
14	290 48.5	83 -27	45.8	34	317 39.3	-21 58.0	54 23.6	11 55.5
16	319 43.0	83 -27	39.0	37	347 43.6	-21 58.1	84 27.9	11 55.3
18	348 37.6	83 -27	31.6	40	17 47.8	-21 58.2	114 32.3	11 55.1
20	17 32.2	83 -27	23.6	43	47 52.1	-21 58.3	144 36.7	11 54.9
22	46 26.7	83 -27	15.0	46	77 56.4	-21 58.4	174 41.0	11 54.6
Δ					21	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	6 15.3	.9	15.9	T _m	18 47	2.2	55.4	15.1	
12	6 26.0	T _{m☉}	11 h 53.6 min	Starost	8.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	9 24	.4	220	-4.4	♄	16 49	.0	109	-1.9
♂	5 47	.1	275	.1	♂	10 23	.0	205	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 39.1	0 56.2	359 29.4	219 20.8	10 17.3	273 39.4	23 3.9
2	211 39.6	0 54.3	29 34.3	249 23.5	10 17.4	303 41.6	23 4.1
4	241 40.0	0 52.4	59 39.2	279 26.1	10 17.6	333 43.8	23 4.2
6	271 40.4	0 50.4	89 44.1	309 28.7	10 17.7	3 46.0	23 4.4
8	301 40.9	0 48.5	119 49.1	339 31.3	10 17.8	33 48.3	23 4.6
10	331 41.3	0 46.5	149 54.0	9 34.0	10 17.9	63 50.5	23 4.8
12	1 41.8	0 44.6	179 58.9	39 36.6	10 18.1	93 52.7	23 5.0
14	31 42.2	0 42.6	210 3.8	69 39.1	10 18.2	123 55.0	23 5.2
16	61 42.7	0 40.7	240 8.8	99 41.7	10 18.3	153 57.2	23 5.4
18	91 43.1	0 38.7	270 13.7	129 44.3	10 18.4	183 59.4	23 5.5
20	121 43.5	0 36.8	300 18.6	159 46.8	10 18.5	214 1.7	23 5.7
22	151 44.0	0 34.9	330 23.6	189 49.4	10 18.6	244 3.9	23 5.9
Δ	2	-10		13	1	11	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 41	18 4	0 42	2 27	17 18	.2	22 13	4.4
55	5 43	18 3	0 36	2 5	16 27	.8	23 4	3.7
50	5 44	18 1	0 32	1 50	15 53	1.2	23 37	3.4
45	5 45	18 0	0 29	1 39	15 27	1.4	...	.0
40	5 46	17 60	0 27	1 31	15 7	1.5	...	.0
35	5 47	17 59	0 25	1 25	14 50	1.7	...	.0
30	5 48	17 58	0 24	1 20	14 35	1.8	...	.0
20	5 49	17 58	0 22	1 13	14 10	2.0	0 16	2.5
10	5 49	17 57	0 21	1 10	13 49	2.1	0 39	2.4
0	5 50	17 56	0 21	1 9	13 28	2.2	1 0	2.2
10	5 51	17 56	0 21	1 10	13 8	2.4	1 22	2.1
20	5 51	17 56	0 22	1 13	12 46	2.5	1 44	2.0
30	5 51	17 55	0 24	1 20	12 21	2.7	2 11	1.9
35	5 52	17 55	0 25	1 24	12 6	2.8	2 26	1.8
40	5 52	17 55	0 27	1 31	11 48	2.9	2 44	1.7
45	5 52	17 55	0 29	1 39	11 27	3.0	3 6	1.5
50	5 52	17 55	0 32	1 49	11 1	3.3	3 33	1.4
55	5 52	17 55	0 36	2 4	10 25	3.6	4 11	1.0
60	5 52	17 55	0 42	2 25	9 27	4.3	5 10	.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	75 21.3	83 -27	5.8	49	108 .6	-21 58.5	204 45.4	11 54.4
2	104 16.0	83 -26	55.9	52	138 4.9	-21 58.6	234 49.7	11 54.2
4	133 10.6	84 -26	45.5	55	168 9.2	-21 58.7	264 54.1	11 54.0
6	162 5.3	84 -26	34.5	58	198 13.4	-21 58.8	294 58.4	11 53.8
8	191 .1	84 -26	22.8	61	228 17.7	-21 58.8	325 2.8	11 53.6
10	219 54.9	84 -26	10.6	64	258 21.9	-21 58.9	355 7.2	11 53.4
12	248 49.8	85 -25	57.7	67	288 26.2	-21 59.0	25 11.5	11 53.2
14	277 44.8	85 -25	44.3	70	318 30.5	-21 59.1	55 15.9	11 53.0
16	306 39.8	86 -25	30.3	73	348 34.7	-21 59.2	85 20.2	11 52.8
18	335 35.0	86 -25	15.7	76	18 39.0	-21 59.3	115 24.6	11 52.6
20	4 30.2	87 -25	.5	79	48 43.2	-21 59.4	145 28.9	11 52.4
22	33 25.5	87 -24	44.7	82	78 47.5	-21 59.5	175 33.3	11 52.2
Δ					21	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	6 36.6	.9	16.0	T _m	19 41	2.2	56.1	15.3	
12	6 47.3	T _{m☉}	11 h 53.2 min	Starost	9.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	9 22	.3	220	-4.4	♄	16 46	.0	109	-1.9
♂	5 45	.1	274	.1	♂	10 19	.0	205	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 44.4	0 32.9	0 28.5	219 51.9	10 18.7	274 6.2	23 6.1
2	211 44.9	0 31.0	30 33.4	249 54.4	10 18.8	304 8.4	23 6.3
4	241 45.3	0 29.0	60 38.3	279 56.9	10 18.9	334 10.7	23 6.5
6	271 45.8	0 27.1	90 43.3	309 59.4	10 19.0	4 12.9	23 6.6
8	301 46.2	0 25.1	120 48.2	340 1.9	10 19.1	34 15.2	23 6.8
10	331 46.6	0 23.2	150 53.1	10 4.4	10 19.1	64 17.4	23 7.0
12	1 47.1	0 21.3	180 58.1	40 6.9	10 19.2	94 19.7	23 7.2
14	31 47.5	0 19.3	211 3.0	70 9.3	10 19.3	124 21.9	23 7.4
16	61 48.0	0 17.4	241 7.9	100 11.8	10 19.3	154 24.2	23 7.5
18	91 48.4	0 15.4	271 12.8	130 14.2	10 19.4	184 26.5	23 7.7
20	121 48.9	0 13.5	301 17.8	160 16.6	10 19.5	214 28.7	23 7.9
22	151 49.3	0 11.5	331 22.7	190 19.0	10 19.5	244 31.0	23 8.1
Δ	2	-10		12	0	11	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 43	18 1	0 42	2 26	17 23	.1	23 58	4.4
55	5 45	18 0	0 36	2 5	16 47	.6	...	.0
50	5 46	17 59	0 32	1 50	16 21	.9	...	.0
45	5 46	17 59	0 29	1 39	16 1	1.1	0 2	3.1
40	5 47	17 58	0 27	1 31	15 44	1.3	0 21	3.0
35	5 48	17 58	0 25	1 25	15 30	1.5	0 37	2.8
30	5 48	17 57	0 24	1 20	15 18	1.6	0 51	2.7
20	5 49	17 57	0 22	1 13	14 57	1.8	1 15	2.5
10	5 49	17 56	0 21	1 10	14 39	2.0	1 35	2.3
0	5 50	17 56	0 21	1 9	14 22	2.2	1 54	2.2
10	5 50	17 56	0 21	1 10	14 5	2.3	2 13	2.0
20	5 50	17 56	0 22	1 13	13 46	2.5	2 33	1.9
30	5 50	17 56	0 24	1 20	13 25	2.7	2 56	1.7
35	5 50	17 56	0 25	1 25	13 12	2.9	3 9	1.6
40	5 50	17 56	0 27	1 31	12 58	3.0	3 25	1.4
45	5 50	17 56	0 29	1 39	12 40	3.2	3 43	1.3
50	5 50	17 57	0 32	1 50	12 19	3.5	4 6	1.0
55	5 50	17 57	0 36	2 5	11 51	3.8	4 36	.7
60	5 49	17 58	0 42	2 26	11 9	4.4	5 19	.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	62 21.0	88 -24	28.3	85	108 51.7	-21 59.6	205 37.7	11 52.0
2	91 16.6	88 -24	11.4	87	138 56.0	-21 59.7	235 42.0	11 51.8
4	120 12.3	89 -23	53.9	90	169 .2	-21 59.8	265 46.4	11 51.6
6	149 8.1	90 -23	35.8	93	199 4.5	-21 59.9	295 50.7	11 51.4
8	178 4.0	90 -23	17.2	96	229 8.7	-21 60.0	325 55.1	11 51.2
10	207 .1	91 -22	58.0	99	259 13.0	-22 .1	355 59.5	11 51.0
12	235 56.3	92 -22	38.3	101	289 17.2	-22 .1	26 3.8	11 50.8
14	264 52.6	92 -22	18.0	104	319 21.4	-22 .2	56 8.2	11 50.6
16	293 49.1	93 -21	57.2	107	349 25.7	-22 .3	86 12.5	11 50.4
18	322 45.8	94 -21	35.9	109	19 29.9	-22 .4	116 16.9	11 50.2
20	351 42.5	95 -21	14.0	112	49 34.2	-22 .5	146 21.3	11 50.0
22	20 39.5	95 -20	51.6	114	79 38.4	-22 .6	176 25.6	11 49.8
Δ					21	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	s	'	h min	min	'	'
00	6 57.9	.9	16.0	T _m	20 34	2.2	56.9 15.5
12	7 8.5	T _{m☉}	11 h 52.9 min	Starost	10.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 20	.3	219	-4.4	♄	16 42	.0	108	-1.9
♂	5 43	.1	274	.0	♂	10 16	.0	205	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 49.7	0 9.6	1 27.6	220 21.4	10 19.6	274 33.3	23 8.2
2	211 50.2	0 7.6	31 32.6	250 23.8	10 19.6	304 35.5	23 8.4
4	241 50.6	0 5.7	61 37.5	280 26.2	10 19.6	334 37.8	23 8.6
6	271 51.1	0 3.7	91 42.4	310 28.6	10 19.7	4 40.1	23 8.8
8	301 51.5	0 1.8	121 47.3	340 30.9	10 19.7	34 42.4	23 8.9
10	331 51.9	-0 1.1	151 52.3	10 33.3	10 19.7	64 44.7	23 9.1
12	1 52.4	-0 2.1	181 57.2	40 35.6	10 19.8	94 46.9	23 9.3
14	31 52.8	-0 4.0	212 2.1	70 38.0	10 19.8	124 49.2	23 9.4
16	61 53.3	-0 6.0	242 7.1	100 40.3	10 19.8	154 51.5	23 9.6
18	91 53.7	-0 7.9	272 12.0	130 42.6	10 19.8	184 53.8	23 9.8
20	121 54.1	-0 9.9	302 16.9	160 44.9	10 19.8	214 56.1	23 9.9
22	151 54.6	-0 11.8	332 21.8	190 47.2	10 19.8	244 58.4	23 10.1
Δ	2	-10		12	0	11	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 45	17 58	0 41	2 25	17 25	.0	...	.0
55	5 46	17 57	0 36	2 4	17 1	.4	0 34	3.8
50	5 47	17 57	0 32	1 49	16 42	.7	0 58	3.5
45	5 48	17 57	0 29	1 39	16 28	1.0	1 17	3.3
40	5 48	17 56	0 27	1 31	16 16	1.2	1 32	3.1
35	5 48	17 56	0 25	1 24	16 5	1.3	1 45	2.9
30	5 49	17 56	0 24	1 20	15 56	1.5	1 56	2.8
20	5 49	17 56	0 22	1 13	15 41	1.7	2 15	2.5
10	5 49	17 56	0 21	1 10	15 27	1.9	2 32	2.3
0	5 49	17 56	0 21	1 9	15 14	2.1	2 47	2.1
10	5 49	17 56	0 21	1 10	15 1	2.3	3 2	1.9
20	5 49	17 56	0 22	1 13	14 47	2.5	3 18	1.7
30	5 49	17 57	0 24	1 20	14 30	2.8	3 36	1.5
35	5 49	17 57	0 25	1 25	14 21	2.9	3 47	1.4
40	5 48	17 57	0 27	1 31	14 10	3.1	3 59	1.2
45	5 48	17 58	0 29	1 39	13 57	3.3	4 13	1.0
50	5 48	17 58	0 32	1 50	13 42	3.5	4 31	.8
55	5 47	17 59	0 36	2 5	13 22	3.9	4 53	.5
60	5 46	17 60	0 42	2 27	12 54	4.3	5 22	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	49 36.5	96 -20	28.7	117	109 42.7	-22 .7	206 30.0	11 49.6
2	78 33.8	97 -20	5.3	119	139 46.9	-22 .8	236 34.3	11 49.4
4	107 31.1	98 -19	41.4	122	169 51.1	-22 .9	266 38.7	11 49.1
6	136 28.6	98 -19	17.0	124	199 55.4	-22 1.0	296 43.1	11 48.9
8	165 26.3	99 -18	52.2	127	229 59.6	-22 1.1	326 47.4	11 48.7
10	194 24.1	100 -18	26.8	129	260 3.8	-22 1.2	356 51.8	11 48.5
12	223 22.0	100 -18	1.0	131	290 8.1	-22 1.3	26 56.2	11 48.3
14	252 20.1	101 -17	34.8	134	320 12.3	-22 1.4	57 .5	11 48.1
16	281 18.3	102 -17	8.1	136	350 16.5	-22 1.5	87 4.9	11 47.9
18	310 16.7	102 -16	40.9	138	20 20.8	-22 1.6	117 9.2	11 47.7
20	339 15.1	103 -16	13.3	140	50 25.0	-22 1.7	147 13.6	11 47.5
22	8 13.8	104 -15	45.3	142	80 29.2	-22 1.7	177 18.0	11 47.3
Δ					21	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	s	'	h min	min	'	'
00	7 19.1	.9	16.0	T _m	21 26	2.1	57.9 15.8
12	7 29.7	T _{m☉}	11 h 52.5 min	Starost	11.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 18	.3	219	-4.4	♄	16 39	.0	108	-1.9
♂	5 41	.1	273	.0	♂	10 13	.0	205	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	'	'	'								
0	181	55.0	-0	13.8	220	49.5	10 19.8	275	.7	23	10.3				
2	211	55.5	-0	15.7	32	31.7		305	3.0	23	10.4				
4	241	55.9	-0	17.7	62	36.6		335	5.3	23	10.6				
6	271	56.3	-0	19.6	92	41.6		5	7.6	23	10.8				
8	301	56.8	-0	21.6	122	46.5		35	9.9	23	10.9				
10	331	57.2	-0	23.5	152	51.4	11	.7	10	19.7	65	12.2	23	11.1	
12	1	57.7	-0	25.4	182	56.3		41	2.9	10	19.7	95	14.5	23	11.3
14	31	58.1	-0	27.4	213	1.3		71	5.1	10	19.7	125	16.8	23	11.4
16	61	58.5	-0	29.3	243	6.2		101	7.3	10	19.6	155	19.1	23	11.6
18	91	59.0	-0	31.3	273	11.1		131	9.5	10	19.6	185	21.5	23	11.8
20	121	59.4	-0	33.2	303	16.1		161	11.7	10	19.6	215	23.8	23	11.9
22	151	59.8	-0	35.2	333	21.0		191	13.9	10	19.5	245	26.1	23	12.1
Δ		2		-10					11		0		12		1

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 48	17 55	0 41	2 25	17 25	.0	1 45	4.3
55	5 48	17 55	0 36	2 4	17 11	.4	2 6	3.9
50	5 49	17 55	0 32	1 49	16 60	.6	2 22	3.5
45	5 49	17 55	0 29	1 39	16 51	.9	2 35	3.3
40	5 49	17 55	0 27	1 31	16 44	1.1	2 46	3.1
35	5 49	17 55	0 25	1 24	16 37	1.2	2 54	2.9
30	5 49	17 55	0 24	1 20	16 31	1.4	3 2	2.8
20	5 49	17 55	0 22	1 13	16 21	1.6	3 16	2.5
10	5 49	17 55	0 21	1 10	16 13	1.9	3 27	2.3
0	5 49	17 55	0 21	1 9	16 4	2.1	3 38	2.1
10	5 49	17 56	0 21	1 10	15 56	2.3	3 49	1.9
20	5 48	17 56	0 22	1 13	15 47	2.5	4 0	1.7
30	5 48	17 57	0 24	1 20	15 37	2.8	4 13	1.4
35	5 47	17 58	0 25	1 25	15 31	2.9	4 20	1.3
40	5 47	17 58	0 27	1 31	15 24	3.1	4 29	1.1
45	5 46	17 59	0 29	1 39	15 16	3.3	4 38	.9
50	5 46	17 60	0 32	1 50	15 7	3.6	4 50	.7
55	5 45	18 1	0 36	2 5	14 54	3.9	5 4	.4
60	5 43	18 2	0 42	2 27	14 38	4.3	5 23	.0

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	'	'	'	'							
0	37	12.5	104	-15	16.9	144	110	33.4	-22	1.8	207	22.3	11	47.1	
2	66	11.3	105	-14	48.1	146	140	37.7	-22	1.9	237	26.7	11	46.9	
4	95	10.3	105	-14	18.9	148	170	41.9	-22	2.0	267	31.1	11	46.7	
6	124	9.4	106	-13	49.3	150	200	46.1	-22	2.1	297	35.4	11	46.5	
8	153	8.6	106	-13	19.4	152	230	50.3	-22	2.2	327	39.8	11	46.3	
10	182	7.9	107	-12	49.1	153	260	54.6	-22	2.3	357	44.2	11	46.1	
12	211	7.3	107	-12	18.4	155	290	58.8	-22	2.4	27	48.5	11	45.9	
14	240	6.7	108	-11	47.4	157	321	3.0	-22	2.5	57	52.9	11	45.7	
16	269	6.3	108	-11	16.1	158	351	7.2	-22	2.6	87	57.3	11	45.5	
18	298	5.9	108	-10	44.4	160	21	11.4	-22	2.7	118	1.6	11	45.3	
20	327	5.6	109	-10	12.5	161	51	15.7	-22	2.8	148	6.0	11	45.1	
22	356	5.3	109	-9	40.3	163	81	19.9	-22	2.9	178	10.4	11	44.9	
Δ								21		0		22			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	7 40.3	.9	16.0	T _m	22 16	2.1	58.8	16.0
12	7 50.8	T _{m☉}	11 h 52.2 min	Starost	12.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 16	.3	218	-4.4	♄	16 35	.0	108	-1.9
	5 40	.1	273	.0	♅	10 9	.0	205	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	'	'	'								
0	182	.3	-0	37.1	221	16.0	10 19.5	275	28.4	23	12.2				
2	212	.7	-0	39.1	33	30.8		305	30.7	23	12.4				
4	242	1.1	-0	41.0	63	35.8		335	33.1	23	12.6				
6	272	1.6	-0	43.0	93	40.7		5	35.4	23	12.7				
8	302	2.0	-0	44.9	123	45.6		35	37.7	23	12.9				
10	332	2.5	-0	46.9	153	50.5	11	26.7	10	19.1	65	40.1	23	13.0	
12	2	2.9	-0	48.8	183	55.5		41	28.8	10	19.1	95	42.4	23	13.2
14	32	3.3	-0	50.7	214	.4		71	30.9	10	19.0	125	44.7	23	13.3
16	62	3.8	-0	52.7	244	5.3		101	32.9	10	18.9	155	47.1	23	13.5
18	92	4.2	-0	54.6	274	10.3		131	35.0	10	18.8	185	49.4	23	13.6
20	122	4.6	-0	56.6	304	15.2		161	37.1	10	18.7	215	51.8	23	13.8
22	152	5.1	-0	58.5	334	20.1		191	39.1	10	18.6	245	54.1	23	13.9
Δ		2		-10					10		0		12		1

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 50	17 52	0 41	2 24	17 25	.0	3 28	4.3
55	5 50	17 52	0 36	2 3	17 20	.3	3 39	3.9
50	5 50	17 53	0 32	1 49	17 16	.6	3 48	3.6
45	5 50	17 53	0 29	1 38	17 12	.9	3 54	3.3
40	5 50	17 53	0 27	1 30	17 9	1.1	3 60	3.1
35	5 50	17 53	0 25	1 24	17 7	1.2	4 5	2.9
30	5 50	17 53	0 24	1 20	17 5	1.4	4 9	2.8
20	5 49	17 54	0 22	1 13	17 1	1.6	4 16	2.5
10	5 49	17 54	0 21	1 10	16 57	1.9	4 22	2.3
0	5 49	17 55	0 21	1 9	16 54	2.1	4 28	2.1
10	5 48	17 56	0 21	1 10	16 51	2.3	4 34	1.9
20	5 47	17 57	0 22	1 13	16 47	2.5	4 40	1.6
30	5 46	17 58	0 24	1 20	16 44	2.8	4 47	1.4
35	5 46	17 58	0 25	1 25	16 41	3.0	4 51	1.2
40	5 45	17 59	0 27	1 31	16 39	3.2	4 55	1.0
45	5 44	18 0	0 29	1 39	16 36	3.4	5 0	.9
50	5 43	18 1	0 32	1 51	16 32	3.6	5 6	.6
55	5 42	18 3	0 36	2 6	16 28	3.9	5 14	.3
60	5 40	18 5	0 42	2 28	16 22	4.3	5 23	.0

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	'	'	'	'							
0	25	5.2	109	-9	7.7	164	111	24.1	-22	3.0	208	14.7	11	44.7	
2	54	5.0	109	-8	35.0	165	141	28.3	-22	3.1	238	19.1	11	44.5	
4	83	4.9	110	-8	1.9	166	171	32.5	-22	3.2	268	23.5	11	44.3	
6	112	4.8	110	-7	28.6	168	201	36.7	-22	3.3	298	27.8	11	44.1	
8	141	4.8	110	-6	55.1	169	231	40.9	-22	3.4	328	32.2	11	43.9	
10	170	4.7	110	-6	21.4	170	261	45.2	-22	3.5	358	36.6	11	43.7	
12	199	4.7	110	-5	47.4	171	291	49.4	-22	3.5	28	40.9	11	43.5	
14	228	4.7	110	-5	13.3	172	321	53.6	-22	3.6	58	45.3	11	43.3	
16	257	4.6	110	-4	39.0	173	351	57.8	-22	3.7	88	49.7	11	43.1	
18	286	4.6	110	-4	4.5	173	22	2.0	-22	3.8	118	54.1	11	42.9	
20	315	4.5	109	-3	29.9	174	52	6.2	-22	3.9	148	58.4	11	42.7	
22	344	4.3	109	-2	55.1	174	82	10.4	-22	4.0	179	2.8	11	42.5	
Δ								21		0		22			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	8 1.3	.9	16.0	T _m	23 6	2.1	59.7	16.3
12	8 11.7	T _{m☉}	11 h 51.8 min	Starost	13.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 14	.3	218	-4.4	♄	16 32	.0	108	-1.9

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	5.5	-1	.5	4	25.0	221	41.2	10	18.5	275	56.5	23	14.1
2	212	5.9	-1	2.4	34	30.0	251	43.2	10	18.4	305	58.8	23	14.3
4	242	6.4	-1	4.4	64	34.9	281	45.2	10	18.3	336	1.2	23	14.4
6	272	6.8	-1	6.3	94	39.8	311	47.3	10	18.2	6	3.5	23	14.6
8	302	7.2	-1	8.3	124	44.8	341	49.3	10	18.1	36	5.9	23	14.7
10	332	7.7	-1	10.2	154	49.7	11	51.3	10	18.0	66	8.3	23	14.9
12	2	8.1	-1	12.2	184	54.6	41	53.3	10	17.8	96	10.6	23	15.0
14	32	8.5	-1	14.1	214	59.5	71	55.2	10	17.7	126	13.0	23	15.1
16	62	8.9	-1	16.1	245	4.5	101	57.2	10	17.6	156	15.4	23	15.3
18	92	9.4	-1	18.0	275	9.4	131	59.2	10	17.4	186	17.7	23	15.4
20	122	9.8	-1	19.9	305	14.3	162	1.1	10	17.3	216	20.1	23	15.6
22	152	10.2	-1	21.9	335	19.3	192	3.1	10	17.1	246	22.5	23	15.7
Δ		2		-10				10		-1		12		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 53	17 49	0 41	2 23	17 25	.0	5 12	4.4
55	5 52	17 50	0 36	2 3	17 28	.4	5 13	4.0
50	5 52	17 50	0 32	1 49	17 31	.7	5 14	3.7
45	5 51	17 51	0 29	1 38	17 33	.9	5 14	3.4
40	5 51	17 51	0 27	1 30	17 34	1.1	5 15	3.2
35	5 51	17 52	0 25	1 24	17 36	1.3	5 15	3.0
30	5 50	17 52	0 24	1 20	17 37	1.4	5 16	2.8
20	5 50	17 53	0 22	1 13	17 40	1.7	5 16	2.6
10	5 49	17 54	0 21	1 10	17 42	1.9	5 17	2.3
0	5 48	17 55	0 21	1 9	17 44	2.1	5 18	2.1
10	5 47	17 56	0 21	1 10	17 46	2.4	5 18	1.9
20	5 46	17 57	0 22	1 13	17 49	2.6	5 19	1.7
30	5 45	17 58	0 24	1 20	17 51	2.9	5 20	1.4
35	5 44	17 59	0 25	1 25	17 53	3.0	5 20	1.2
40	5 43	18 0	0 27	1 31	17 54	3.2	5 20	1.1
45	5 42	18 1	0 29	1 40	17 56	3.4	5 21	.9
50	5 41	18 3	0 32	1 51	17 59	3.7	5 21	.6
55	5 39	18 5	0 36	2 6	18 2	4.0	5 22	.3
60	5 37	18 7	0 42	2 29	18 6	4.5	5 23	.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	13	4.2	109	-2	20.2	175	112	14.6	-22	4.1	209	7.2	11	42.3		
2	42	3.9	108	-1	45.2	175	142	18.8	-22	4.2	239	11.5	11	42.1		
4	71	3.6	108	-1	10.1	176	172	23.0	-22	4.3	269	15.9	11	41.9		
6	100	3.3	108	-0	34.9	176	202	27.2	-22	4.4	299	20.3	11	41.7		
8	129	2.8	107	0	.3	176	232	31.4	-22	4.5	329	24.7	11	41.5		
10	158	2.2	107	0	35.6	177	262	35.6	-22	4.6	359	29.0	11	41.3		
12	187	1.6	106	1	10.9	177	292	39.8	-22	4.7	29	33.4	11	41.1		
14	216	.8	106	1	46.2	177	322	44.0	-22	4.8	59	37.8	11	40.9		
16	244	59.9	105	2	21.6	177	352	48.2	-22	4.9	89	42.1	11	40.7		
18	273	58.9	104	2	56.9	177	22	52.4	-22	5.0	119	46.5	11	40.5		
20	302	57.7	103	3	32.2	176	52	56.6	-22	5.1	149	50.9	11	40.3		
22	331	56.4	103	4	7.5	176	83	.8	-22	5.2	179	55.3	11	40.1		
Δ							21		0		22			-1		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	8 22.1	.9	16.0	T _m	23 56	2.2	60.4	16.4	
12	8 32.5			T _{m☉}	11 h 51.5 min	Starost	14.5 d	Faza ☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	9 13	.3	217	-4.4	♄	16 29	.0	108	-1.9
♂	5 36	.1	272	.0	♂	10 2	.0	205	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	10.7	-1	23.8	5	24.2	222	5.0	10	17.0	276	24.9	23	15.9
2	212	11.1	-1	25.8	35	29.1	252	6.9	10	16.8	306	27.3	23	16.0
4	242	11.5	-1	27.7	65	34.0	282	8.8	10	16.7	336	29.6	23	16.2
6	272	12.0	-1	29.7	95	39.0	312	10.7	10	16.5	6	32.0	23	16.3
8	302	12.4	-1	31.6	125	43.9	342	12.6	10	16.3	36	34.4	23	16.5
10	332	12.8	-1	33.6	155	48.8	12	14.5	10	16.2	66	36.8	23	16.6
12	2	13.2	-1	35.5	185	53.8	42	16.4	10	16.0	96	39.2	23	16.7
14	32	13.7	-1	37.5	215	58.7	72	18.3	10	15.8	126	41.6	23	16.9
16	62	14.1	-1	39.4	246	3.6	102	20.2	10	15.6	156	44.0	23	17.0
18	92	14.5	-1	41.4	276	8.5	132	22.0	10	15.4	186	46.4	23	17.2
20	122	14.9	-1	43.3	306	13.5	162	23.9	10	15.3	216	48.8	23	17.3
22	152	15.4	-1	45.2	336	18.4	192	25.7	10	15.1	246	51.2	23	17.4
Δ		2		-10				9		-1		12		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 55	17 46	0 41	2 23	17 24	.0	6 57	4.6
55	5 54	17 47	0 36	2 3	17 37	.5	6 48	4.1
50	5 53	17 48	0 32	1 49	17 47	.8	6 41	3.8
45	5 52	17 49	0 29	1 38	17 54	1.0	6 36	3.5
40	5 52	17 50	0 27	1 30	18 1	1.2	6 31	3.3
35	5 51	17 50	0 25	1 24	18 7	1.4	6 27	3.1
30	5 51	17 51	0 24	1 19	18 12	1.6	6 24	2.9
20	5 50	17 52	0 22	1 13	18 21	1.8	6 18	2.7
10	5 49	17 53	0 21	1 10	18 28	2.0	6 13	2.4
0	5 48	17 54	0 21	1 9	18 36	2.3	6 8	2.2
10	5 47	17 56	0 21	1 10	18 43	2.5	6 4	2.0
20	5 45	17 57	0 22	1 13	18 51	2.7	5 59	1.7
30	5 44	17 59	0 24	1 20	19 1	3.0	5 53	1.5
35	5 43	17 60	0 25	1 25	19 6	3.1	5 50	1.3
40	5 42	18 1	0 27	1 31	19 12	3.3	5 46	1.2
45	5 41	18 3	0 29	1 40	19 19	3.5	5 42	1.0
50	5 39	18 4	0 32	1 51	19 28	3.8	5 37	.7
55	5 37	18 7	0 36	2 7	19 39	4.2	5 30	.4
60	5 34	18 9	0 42	2 30	19 53	4.7	5 23	.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	0	54.9	102	4	42.7	176	113	5.0	-22	5.3	209	59.6	11	39.9		
2	29	53.3	101	5	17.8	175	143	9.1	-22	5.4	240	4.0	11	39.7		
4	58	51.4	100	5	52.8	175	173	13.3	-22	5.5	270	8.4	11	39.5		
6	87	49.4	99	6	27.8	174	203	17.5	-22	5.6	300	12.8	11	39.3		
8	116	47.2	98	7	2.6	173	233	21.7	-22	5.7	330	17.1	11	39.1		
10	145	44.8	97	7	37.2	173	263	25.9	-22	5.8	0	21.5	11	38.9		
12	174	42.1	96	8	11.7	172	293	30.1	-22	5.9	30	25.9	11	38.7		
14	203	39.2	94	8	46.1	171	323	34.3	-22	5.9	60	30.3	11	38.5		
16	232	36.1	93	9	20.2	170	353	38.5	-22	6.0	90	34.6	11	38.3		
18	261	32.8	92	9	54.1	169	23	42.6	-22	6.1	120	39.0	11	38.1		
20	290	29.2	91	10	27.9	167	53	46.8	-22	6.2	150	43.4	11	38.0		
22	319	25.3	89	11	1.3	166	83	51.0	-22	6.3	180	47.8	11	37.8		
Δ							21		0		22			-1		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	182 15.8	- 1 47.2	6 23.3	222 27.5	10 14.9	276 53.6	23 17.6
2	212 16.2	- 1 49.1	36 28.3	252 29.3	10 14.7	306 56.0	23 17.7
4	242 16.6	- 1 51.1	66 33.2	282 31.1	10 14.4	336 58.4	23 17.9
6	272 17.1	- 1 53.0	96 38.1	312 32.9	10 14.2	7 .9	23 18.0
8	302 17.5	- 1 55.0	126 43.0	342 34.7	10 14.0	37 3.3	23 18.1
10	332 17.9	- 1 56.9	156 48.0	12 36.5	10 13.8	67 5.7	23 18.3
12	2 18.3	- 1 58.9	186 52.9	42 38.3	10 13.6	97 8.1	23 18.4
14	32 18.8	- 2 .8	216 57.8	72 40.1	10 13.3	127 10.5	23 18.5
16	62 19.2	- 2 2.7	247 2.7	102 41.8	10 13.1	157 13.0	23 18.7
18	92 19.6	- 2 4.7	277 7.7	132 43.6	10 12.9	187 15.4	23 18.8
20	122 20.0	- 2 6.6	307 12.6	162 45.3	10 12.6	217 17.8	23 18.9
22	152 20.4	- 2 8.6	337 17.5	192 47.1	10 12.4	247 20.3	23 19.1
Δ	2	-10		9	-1	12	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 57	17 43	0 41	2 22	17 25	.1	8 46	4.8
55	5 56	17 45	0 36	2 2	17 48	.7	8 26	4.2
50	5 55	17 46	0 32	1 48	18 5	1.0	8 11	3.8
45	5 54	17 47	0 29	1 38	18 19	1.3	7 60	3.6
40	5 53	17 48	0 27	1 30	18 31	1.5	7 50	3.3
35	5 52	17 49	0 25	1 24	18 40	1.6	7 42	3.2
30	5 51	17 50	0 24	1 19	18 49	1.8	7 34	3.0
20	5 50	17 51	0 22	1 13	19 4	2.0	7 22	2.8
10	5 49	17 53	0 21	1 10	19 17	2.2	7 11	2.5
0	5 48	17 54	0 21	1 9	19 30	2.4	7 1	2.3
10	5 46	17 56	0 21	1 10	19 43	2.6	6 51	2.1
20	5 45	17 57	0 22	1 14	19 56	2.8	6 40	1.9
30	5 43	17 59	0 24	1 20	20 12	3.0	6 28	1.6
35	5 42	18 1	0 25	1 25	20 21	3.2	6 21	1.5
40	5 40	18 2	0 27	1 32	20 32	3.4	6 14	1.3
45	5 39	18 4	0 29	1 40	20 44	3.6	6 4	1.1
50	5 37	18 6	0 32	1 52	20 59	3.8	5 54	.9
55	5 34	18 8	0 37	2 7	21 19	4.2	5 40	.5
60	5 31	18 12	0 42	2 31	21 45	4.9	5 23	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	'	'	'	'
0	348 21.2	88	11 34.5	165	113 55.2	-22 6.4	210 52.1	11 37.6
2	17 16.8	87	12 7.5	163	143 59.4	-22 6.5	240 56.5	11 37.4
4	46 12.2	85	12 40.1	162	174 3.5	-22 6.6	271 .9	11 37.2
6	75 7.2	84	13 12.5	160	204 7.7	-22 6.7	301 5.3	11 37.0
8	104 2.0	82	13 44.5	158	234 11.9	-22 6.8	331 9.6	11 36.8
10	132 56.4	81	14 16.1	157	264 16.1	-22 6.9	1 14.0	11 36.6
12	161 50.6	79	14 47.4	155	294 20.2	-22 7.0	31 18.4	11 36.4
14	190 44.4	78	15 18.4	153	324 24.4	-22 7.1	61 22.8	11 36.2
16	219 38.0	76	15 48.9	151	354 28.6	-22 7.2	91 27.2	11 36.0
18	248 31.2	74	16 19.0	149	24 32.8	-22 7.3	121 31.5	11 35.8
20	277 24.1	73	16 48.7	146	54 36.9	-22 7.4	151 35.9	11 35.6
22	306 16.6	71	17 18.0	144	84 41.1	-22 7.5	181 40.3	11 35.4
Δ					21	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	s	h min	min	'	'
00	9 3.3	.8	16.0	T _m	0 48	2.3	61.0 16.6
12	9 13.5	T _{m☉}	11 h 50.8 min	Starost	16.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 10	.3	216	-4.4	♄	16 22	.0	108	-1.9
♂	5 32	.1	270	.0	♂	9 55	.0	204	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	182 20.9	- 2 10.5	7 22.5	222 48.8	10 12.1	277 22.7	23 19.2
2	212 21.3	- 2 12.5	37 27.4	252 50.5	10 11.9	307 25.1	23 19.3
4	242 21.7	- 2 14.4	67 32.3	282 52.2	10 11.6	337 27.6	23 19.5
6	272 22.1	- 2 16.4	97 37.2	312 53.9	10 11.3	7 30.0	23 19.6
8	302 22.5	- 2 18.3	127 42.2	342 55.6	10 11.1	37 32.5	23 19.7
10	332 23.0	- 2 20.2	157 47.1	12 57.3	10 10.8	67 34.9	23 19.8
12	2 23.4	- 2 22.2	187 52.0	42 59.0	10 10.5	97 37.4	23 20.0
14	32 23.8	- 2 24.1	217 57.0	73 .7	10 10.3	127 39.8	23 20.1
16	62 24.2	- 2 26.1	248 1.9	103 2.3	10 10.0	157 42.3	23 20.2
18	92 24.6	- 2 28.0	278 6.8	133 4.0	10 9.7	187 44.8	23 20.4
20	122 25.0	- 2 30.0	308 11.7	163 5.6	10 9.4	217 47.2	23 20.5
22	152 25.5	- 2 31.9	338 16.7	193 7.3	10 9.1	247 49.7	23 20.6
Δ	2	-10		8	-1	12	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 60	17 40	0 41	2 22	17 28	.3	10 40	4.9
55	5 58	17 42	0 36	2 2	18 4	1.0	10 7	4.2
50	5 56	17 44	0 32	1 48	18 29	1.4	9 43	3.8
45	5 55	17 45	0 29	1 38	18 49	1.6	9 25	3.5
40	5 54	17 46	0 27	1 30	19 6	1.8	9 10	3.3
35	5 53	17 48	0 25	1 24	19 19	1.9	8 58	3.2
30	5 52	17 49	0 24	1 19	19 31	2.0	8 47	3.0
20	5 50	17 50	0 22	1 13	19 52	2.2	8 28	2.8
10	5 49	17 52	0 21	1 10	20 10	2.4	8 12	2.6
0	5 47	17 54	0 21	1 9	20 28	2.5	7 57	2.5
10	5 46	17 55	0 21	1 10	20 45	2.7	7 42	2.3
20	5 44	17 58	0 22	1 14	21 3	2.8	7 26	2.1
30	5 41	17 60	0 24	1 20	21 25	3.0	7 8	1.9
35	5 40	18 1	0 25	1 25	21 38	3.1	6 57	1.8
40	5 39	18 3	0 27	1 32	21 52	3.3	6 45	1.6
45	5 37	18 5	0 29	1 40	22 10	3.4	6 31	1.4
50	5 35	18 7	0 33	1 52	22 32	3.7	6 14	1.2
55	5 32	18 10	0 37	2 8	23 1	4.1	5 53	.8
60	5 28	18 14	0 42	2 32	23 43	4.9	5 24	.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	'	'	'	'
0	335 8.9	70	17 46.8	142	114 45.3	-22 7.6	211 44.7	11 35.2
2	4 .8	68	18 15.2	139	144 49.4	-22 7.7	241 49.1	11 35.0
4	32 52.4	66	18 43.0	137	174 53.6	-22 7.8	271 53.4	11 34.8
6	61 43.7	65	19 10.3	134	204 57.8	-22 7.9	301 57.8	11 34.6
8	90 34.6	63	19 37.2	131	235 1.9	-22 8.0	332 2.2	11 34.4
10	119 25.2	61	20 3.4	129	265 6.1	-22 8.1	2 6.6	11 34.2
12	148 15.5	60	20 29.2	126	295 10.3	-22 8.2	32 11.0	11 34.0
14	177 5.5	58	20 54.3	123	325 14.4	-22 8.3	62 15.4	11 33.8
16	205 55.1	57	21 18.9	120	355 18.6	-22 8.4	92 19.7	11 33.6
18	234 44.4	55	21 42.9	117	25 22.8	-22 8.5	122 24.1	11 33.4
20	263 33.4	54	22 6.3	114	55 26.9	-22 8.6	152 28.5	11 33.2
22	292 22.1	52	22 29.1	111	85 31.1	-22 8.7	182 32.9	11 33.0
Δ					21	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	s	h min	min	'	'
00	9 23.6	.8	16.0	T _m	1 43	2.5	60.9 16.6
12	9 33.7	T _{m☉}	11 h 50.4 min	Starost	17.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 8	.3	215	-4.4	♄	16 19	.0	107	-1.9
♂	5 30	.1	270	-.1	♂	9 52	.0	204	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	182 25.9	- 2 33.8	8 21.6	223 8.9	10 8.8	277 52.1	23 20.7	
2	212 26.3	- 2 35.8	38 26.5	253 10.5	10 8.5	307 54.6	23 20.9	
4	242 26.7	- 2 37.7	68 31.5	283 12.1	10 8.2	337 57.1	23 21.0	
6	272 27.1	- 2 39.7	98 36.4	313 13.7	10 7.9	7 59.6	23 21.1	
8	302 27.5	- 2 41.6	128 41.3	343 15.3	10 7.5	38 2.0	23 21.2	
10	332 27.9	- 2 43.6	158 46.2	13 16.9	10 7.2	68 4.5	23 21.4	
12	2 28.3	- 2 45.5	188 51.2	43 18.5	10 6.9	98 7.0	23 21.5	
14	32 28.8	- 2 47.4	218 56.1	73 20.1	10 6.6	128 9.5	23 21.6	
16	62 29.2	- 2 49.4	249 1.0	103 21.6	10 6.2	158 12.0	23 21.7	
18	92 29.6	- 2 51.3	279 6.0	133 23.2	10 5.9	188 14.5	23 21.9	
20	122 30.0	- 2 53.3	309 10.9	163 24.7	10 5.6	218 17.0	23 22.0	
22	152 30.4	- 2 55.2	339 15.8	193 26.3	10 5.2	248 19.5	23 22.1	
Δ	2	-10		8	-2	12	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 2	17 37	0 41	2 21	17 36	.9	12 38	4.6
55	5 60	17 40	0 36	2 2	18 28	1.6	11 47	3.8
50	5 58	17 42	0 32	1 48	19 2	1.9	11 14	3.5
45	5 56	17 43	0 29	1 38	19 28	2.1	10 50	3.3
40	5 55	17 45	0 27	1 30	19 48	2.2	10 30	3.2
35	5 54	17 46	0 25	1 24	20 6	2.3	10 14	3.0
30	5 52	17 47	0 24	1 19	20 20	2.3	9 60	3.0
20	5 51	17 49	0 22	1 13	20 46	2.4	9 36	2.8
10	5 49	17 51	0 21	1 10	21 8	2.5	9 15	2.7
0	5 47	17 53	0 21	1 9	21 28	2.6	8 56	2.6
10	5 45	17 55	0 21	1 10	21 49	2.7	8 37	2.5
20	5 43	17 58	0 22	1 14	22 11	2.8	8 17	2.3
30	5 40	18 0	0 24	1 20	22 37	2.9	7 53	2.2
35	5 39	18 2	0 25	1 25	22 53	2.9	7 40	2.1
40	5 37	18 4	0 27	1 32	23 11	3.0	7 24	2.0
45	5 35	18 6	0 30	1 41	23 33	3.1	7 5	1.8
50	5 32	18 9	0 33	1 52	...	.0	6 42	1.6
55	5 29	18 12	0 37	2 9	...	.0	6 11	1.2
60	5 25	18 17	0 42	2 33	...	.0	5 27	.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	321 10.5	51 22	51.2	107	115 35.2	-22 8.8	212 37.3	11 32.9
2	349 58.6	49 23	12.7	104	145 39.4	-22 8.9	242 41.7	11 32.7
4	18 46.5	48 23	33.5	101	175 43.5	-22 9.0	272 46.0	11 32.5
6	47 34.0	46 23	53.7	97	205 47.7	-22 9.1	302 50.4	11 32.3
8	76 21.3	45 24	13.2	94	235 51.8	-22 9.2	332 54.8	11 32.1
10	105 8.3	44 24	31.9	90	265 56.0	-22 9.3	2 59.2	11 31.9
12	133 55.1	43 24	50.0	87	296 .2	-22 9.3	33 3.6	11 31.7
14	162 41.6	42 25	7.4	83	326 4.3	-22 9.4	63 8.0	11 31.5
16	191 28.0	41 25	24.1	80	356 8.5	-22 9.5	93 12.3	11 31.3
18	220 14.1	40 25	40.0	76	26 12.6	-22 9.6	123 16.7	11 31.1
20	249 .0	39 25	55.2	72	56 16.8	-22 9.7	153 21.1	11 30.9
22	277 45.8	38 26	9.6	68	86 20.9	-22 9.8	183 25.5	11 30.7
Δ					21	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	'	h min	min	'		
00	9 43.7	.8	16.0	T _m	2 42	2.5	60.5	16.5	
12	9 53.6	T _{m☉}	11 h 50.1 min	Starost	18.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	9 7	.3	215	-4.4	♄	16 15	.0	107	-1.9
♂	5 28	.2	270	-1.1	♂	9 48	.0	204	.8

1. OKTOBAR

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	182 30.8	- 2 57.1	9 20.7	223 27.8	10 4.9	278 22.0	23 22.2	
2	212 31.2	- 2 59.1	39 25.7	253 29.4	10 4.5	308 24.5	23 22.3	
4	242 31.6	- 3 1.0	69 30.6	283 30.9	10 4.2	338 27.0	23 22.5	
6	272 32.0	- 3 3.0	99 35.5	313 32.4	10 3.8	8 29.5	23 22.6	
8	302 32.4	- 3 4.9	129 40.5	343 33.9	10 3.4	38 32.0	23 22.7	
10	332 32.8	- 3 6.8	159 45.4	13 35.4	10 3.1	68 34.5	23 22.8	
12	2 33.3	- 3 8.8	189 50.3	43 36.9	10 2.7	98 37.0	23 22.9	
14	32 33.7	- 3 10.7	219 55.2	73 38.4	10 2.3	128 39.5	23 23.0	
16	62 34.1	- 3 12.7	250 .2	103 39.9	10 1.9	158 42.0	23 23.2	
18	92 34.5	- 3 14.6	280 5.1	133 41.3	10 1.5	188 44.6	23 23.3	
20	122 34.9	- 3 16.5	310 10.0	163 42.8	10 1.1	218 47.1	23 23.4	
22	152 35.3	- 3 18.5	340 15.0	193 44.2	10 .7	248 49.6	23 23.5	
Δ	2	-10		7	-2	13	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 4	17 34	0 41	2 21	17 57	2.3	14 27	3.2
55	6 1	17 37	0 36	2 2	19 7	2.5	13 18	2.9
50	5 59	17 39	0 32	1 48	19 48	2.5	12 38	2.9
45	5 57	17 41	0 29	1 38	20 17	2.5	12 8	2.8
40	5 56	17 43	0 27	1 30	20 41	2.6	11 46	2.8
35	5 54	17 45	0 25	1 24	20 60	2.6	11 27	2.7
30	5 53	17 46	0 24	1 19	21 16	2.6	11 11	2.7
20	5 51	17 49	0 22	1 13	21 44	2.6	10 43	2.7
10	5 49	17 51	0 21	1 10	22 8	2.6	10 20	2.6
0	5 47	17 53	0 21	1 9	22 31	2.6	9 58	2.6
10	5 44	17 55	0 21	1 10	22 53	2.6	9 36	2.6
20	5 42	17 58	0 22	1 14	23 18	2.6	9 13	2.5
30	5 39	18 1	0 24	1 21	23 46	2.5	8 46	2.5
35	5 37	18 3	0 25	1 26	...	.0	8 30	2.4
40	5 35	18 5	0 27	1 32	...	.0	8 11	2.4
45	5 33	18 7	0 30	1 41	...	.0	7 49	2.3
50	5 30	18 10	0 33	1 53	0 0	3.2	7 20	2.2
55	5 27	18 14	0 37	2 9	0 39	3.4	6 41	2.0
60	5 22	18 19	0 42	2 34	1 42	4.1	5 38	1.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	306 31.3	37 26	23.3	65	116 25.0	-22 9.9	213 29.9	11 30.5
2	335 16.8	37 26	36.2	61	146 29.2	-22 10.0	243 34.3	11 30.3
4	4 2.1	36 26	48.4	57	176 33.3	-22 10.1	273 38.7	11 30.1
6	32 47.3	35 26	59.8	53	206 37.5	-22 10.2	303 43.1	11 29.9
8	61 32.4	35 27	10.4	49	236 41.6	-22 10.3	333 47.4	11 29.7
10	90 17.4	35 27	20.3	45	266 45.8	-22 10.4	3 51.8	11 29.6
12	119 2.3	35 27	29.4	42	296 49.9	-22 10.5	33 56.2	11 29.4
14	147 47.2	34 27	37.7	38	326 54.0	-22 10.6	64 .6	11 29.2
16	176 32.1	34 27	45.2	34	356 58.2	-22 10.7	94 5.0	11 29.0
18	205 17.0	35 27	51.9	30	27 2.3	-22 10.8	124 9.4	11 28.8
20	234 2.0	35 27	57.8	26	57 6.5	-22 10.9	154 13.8	11 28.6
22	262 46.9	35 28	3.0	22	87 10.6	-22 11.0	184 18.2	11 28.4
Δ					21	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	'	h min	min	'		
00	10 3.4	.8	16.0	T _m	3 43	2.6	59.9	16.3	
12	10 13.2	T _{m☉}	11 h 49.8 min	Starost	19.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	9 6	.3	214	-4.4	♄	16 12	.0	107	-1.8
♂	5 26	.2	269	-1.1	♂	9 45	.0	204	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	182 35.7	- 3 20.4	10 19.9	223 45.7	10 .3	278 52.2	23 23.6	
2	212 36.1	- 3 22.4	40 24.8	253 47.1	9 59.9	308 54.7	23 23.7	
4	242 36.5	- 3 24.3	70 29.7	283 48.6	9 59.5	338 57.2	23 23.9	
6	272 36.9	- 3 26.2	100 34.7	313 50.0	9 59.1	8 59.8	23 24.0	
8	302 37.3	- 3 28.2	130 39.6	343 51.4	9 58.7	39 2.3	23 24.1	
10	332 37.7	- 3 30.1	160 44.5	13 52.8	9 58.3	69 4.9	23 24.2	
12	2 38.1	- 3 32.0	190 49.4	43 54.2	9 57.9	99 7.4	23 24.3	
14	32 38.5	- 3 34.0	220 54.4	73 55.6	9 57.4	129 9.9	23 24.4	
16	62 38.9	- 3 35.9	250 59.3	103 57.0	9 57.0	159 12.5	23 24.5	
18	92 39.3	- 3 37.9	281 4.2	133 58.4	9 56.6	189 15.1	23 24.6	
20	122 39.7	- 3 39.8	311 9.2	163 59.8	9 56.1	219 17.6	23 24.7	
22	152 40.1	- 3 41.7	341 14.1	194 1.1	9 55.7	249 20.2	23 24.9	
Δ	2	-10		7	-2	13	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 7	17 31	0 41	2 21	18 52	3.8	15 43	1.3
55	6 3	17 34	0 36	2 1	20 6	3.2	14 29	1.9
50	6 1	17 37	0 32	1 48	20 48	3.0	13 46	2.1
45	5 59	17 40	0 29	1 38	21 19	2.9	13 16	2.2
40	5 57	17 42	0 27	1 30	21 42	2.8	12 52	2.3
35	5 55	17 43	0 25	1 24	22 1	2.7	12 33	2.3
30	5 54	17 45	0 24	1 19	22 18	2.7	12 16	2.4
20	5 51	17 48	0 22	1 13	22 46	2.6	11 48	2.4
10	5 49	17 50	0 21	1 10	23 10	2.5	11 23	2.5
0	5 46	17 53	0 21	1 9	23 33	2.4	11 1	2.5
10	5 44	17 55	0 21	1 10	23 55	2.4	10 38	2.6
20	5 41	17 58	0 22	1 14	...	.0	10 13	2.6
30	5 38	18 2	0 24	1 21	...	.0	9 45	2.7
35	5 36	18 4	0 25	1 26	0 3	2.5	9 28	2.7
40	5 34	18 6	0 27	1 32	0 22	2.5	9 8	2.7
45	5 31	18 9	0 30	1 41	0 46	2.5	8 44	2.8
50	5 28	18 12	0 33	1 53	1 17	2.5	8 13	2.8
55	5 24	18 16	0 37	2 10	2 0	2.4	7 30	2.9
60	5 19	18 21	0 43	2 36	3 19	2.1	6 11	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	291 31.9	35 28 7.4	18	117 14.7	-22 11.1	214 22.6	11 28.2	
2	320 17.0	36 28 11.0	14	147 18.9	-22 11.2	244 27.0	11 28.0	
4	349 2.2	37 28 13.8	10	177 23.0	-22 11.3	274 31.3	11 27.8	
6	17 47.5	37 28 15.8	6	207 27.1	-22 11.4	304 35.7	11 27.6	
8	46 33.0	38 28 17.1	3	237 31.3	-22 11.5	334 40.1	11 27.4	
10	75 18.6	39 28 17.6	-1	267 35.4	-22 11.6	4 44.5	11 27.2	
12	104 4.4	40 28 17.4	-5	297 39.5	-22 11.7	34 48.9	11 27.1	
14	132 50.3	41 28 16.4	-9	327 43.7	-22 11.8	64 53.3	11 26.9	
16	161 36.5	42 28 14.6	-13	357 47.8	-22 11.9	94 57.7	11 26.7	
18	190 23.0	43 28 12.1	-16	27 51.9	-22 12.0	125 2.1	11 26.5	
20	219 9.6	45 28 8.8	-20	57 56.0	-22 12.1	155 6.5	11 26.3	
22	247 56.5	46 28 4.8	-23	88 .2	-22 12.2	185 10.9	11 26.1	
Δ				21	0	22	-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	10 22.9	.8	16.0	T _m	4 46	2.5	59.2 16.1		
12	10 32.5	T _{m☉}	11 h 49.5 min	Starost	20.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♀	h min	'	°	
♂	9 5	.3	213	-4.4	♂	16 9	.0	107	-1.8
♂	5 24	.2	269	-1.1	♂	9 41	.0	204	.8

3. OKTOBAR

SREDA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	182 40.5	- 3 43.7	11 19.0	224 2.5	9 55.2	279 22.7	23 25.0	
2	212 40.9	- 3 45.6	41 23.9	254 3.9	9 54.8	309 25.3	23 25.1	
4	242 41.3	- 3 47.5	71 28.9	284 5.2	9 54.3	339 27.9	23 25.2	
6	272 41.6	- 3 49.5	101 33.8	314 6.6	9 53.9	9 30.4	23 25.3	
8	302 42.0	- 3 51.4	131 38.7	344 7.9	9 53.4	39 33.0	23 25.4	
10	332 42.4	- 3 53.3	161 43.7	14 9.2	9 52.9	69 35.6	23 25.5	
12	2 42.8	- 3 55.3	191 48.6	44 10.5	9 52.5	99 38.2	23 25.6	
14	32 43.2	- 3 57.2	221 53.5	74 11.9	9 52.0	129 40.8	23 25.7	
16	62 43.6	- 3 59.1	251 58.4	104 13.2	9 51.5	159 43.3	23 25.8	
18	92 44.0	- 4 1.1	282 3.4	134 14.5	9 51.0	189 45.9	23 25.9	
20	122 44.4	- 4 3.0	312 8.3	164 15.8	9 50.5	219 48.5	23 26.0	
22	152 44.8	- 4 4.9	342 13.2	194 17.0	9 50.0	249 51.1	23 26.2	
Δ	2	-10		7	-2	13	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 9	17 28	0 41	2 20	20 24	4.3	16 16	.5
55	6 5	17 32	0 36	2 1	21 24	3.6	15 15	1.2
50	6 2	17 35	0 32	1 48	22 1	3.3	14 37	1.5
45	5 60	17 38	0 29	1 38	22 28	3.1	14 9	1.7
40	5 58	17 40	0 27	1 30	22 50	2.9	13 47	1.8
35	5 56	17 42	0 25	1 24	23 7	2.8	13 29	1.9
30	5 54	17 44	0 24	1 19	23 23	2.7	13 13	2.0
20	5 51	17 47	0 22	1 13	23 48	2.5	12 46	2.1
10	5 49	17 50	0 21	1 10	...	.0	12 23	2.3
0	5 46	17 52	0 21	1 9	...	.0	12 1	2.4
10	5 43	17 55	0 21	1 10	...	.0	11 39	2.5
20	5 40	17 58	0 22	1 14	0 19	2.3	11 16	2.6
30	5 37	18 2	0 24	1 21	0 47	2.2	10 49	2.7
35	5 34	18 4	0 25	1 26	1 4	2.1	10 32	2.8
40	5 32	18 7	0 27	1 33	1 23	2.0	10 13	2.9
45	5 29	18 10	0 30	1 41	1 46	1.9	9 50	3.0
50	5 26	18 14	0 33	1 54	2 16	1.8	9 21	3.2
55	5 22	18 18	0 37	2 11	2 58	1.5	8 40	3.5
60	5 16	18 24	0 43	2 37	4 10	.7	7 28	4.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	276 43.8	48 28 .1	-27	118 4.3	-22 12.3	215 15.3	11 25.9	
2	305 31.3	49 27 54.7	-31	148 8.4	-22 12.4	245 19.7	11 25.7	
4	334 19.1	51 27 48.6	-34	178 12.5	-22 12.5	275 24.1	11 25.5	
6	3 7.2	52 27 41.8	-37	208 16.7	-22 12.6	305 28.5	11 25.3	
8	31 55.7	54 27 34.3	-41	238 20.8	-22 12.7	335 32.9	11 25.1	
10	60 44.6	56 27 26.1	-44	268 24.9	-22 12.8	5 37.2	11 24.9	
12	89 33.8	58 27 17.2	-47	298 29.0	-22 12.9	35 41.6	11 24.8	
14	118 23.3	60 27 7.7	-51	328 33.1	-22 13.0	65 46.0	11 24.6	
16	147 13.3	62 26 57.6	-54	358 37.2	-22 13.1	95 50.4	11 24.4	
18	176 3.7	64 26 46.8	-57	28 41.4	-22 13.2	125 54.8	11 24.2	
20	204 54.4	66 26 35.4	-60	58 45.5	-22 13.3	155 59.2	11 24.0	
22	233 45.6	68 26 23.4	-63	88 49.6	-22 13.4	186 3.6	11 23.8	
Δ				21	0	22	-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	10 42.0	.8	16.0	T _m	5 47	2.4	58.4 15.9		
12	10 51.5	T _{m☉}	11 h 49.1 min	Starost	21.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♀	h min	'	°	
♂	9 3	.3	213	-4.4	♂	16 6	.0	107	-1.8
♂	5 22	.2	268	-1.1	♂	9 38	.0	204	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	45.2	-4	6.9	12	18.2	224	18.3	9	49.5	279	53.7	23	26.3
2	212	45.6	-4	8.8	42	23.1	254	19.6	9	49.0	309	56.3	23	26.4
4	242	45.9	-4	10.7	72	28.0	284	20.9	9	48.5	339	58.9	23	26.5
6	272	46.3	-4	12.6	102	32.9	314	22.1	9	48.0	10	1.5	23	26.6
8	302	46.7	-4	14.6	132	37.9	344	23.4	9	47.5	40	4.1	23	26.7
10	332	47.1	-4	16.5	162	42.8	14	24.6	9	47.0	70	6.8	23	26.8
12	2	47.5	-4	18.4	192	47.7	44	25.9	9	46.5	100	9.4	23	26.9
14	32	47.9	-4	20.4	222	52.7	74	27.1	9	46.0	130	12.0	23	27.0
16	62	48.3	-4	22.3	252	57.6	104	28.3	9	45.4	160	14.6	23	27.1
18	92	48.6	-4	24.2	283	2.5	134	29.6	9	44.9	190	17.2	23	27.2
20	122	49.0	-4	26.1	313	7.4	164	30.8	9	44.4	220	19.9	23	27.3
22	152	49.4	-4	28.1	343	12.4	194	32.0	9	43.8	250	22.5	23	27.4
Δ	2	-10					6	-3			13	1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 12	17 25	0 41	2 20	22 7	4.2	16 27	.2
55	6 7	17 29	0 36	2 1	22 50	3.6	15 43	.7
50	6 4	17 33	0 32	1 48	23 19	3.3	15 12	1.0
45	6 1	17 36	0 29	1 38	23 42	3.0	14 49	1.3
40	5 59	17 38	0 27	1 30	23 59	2.9	14 30	1.4
35	5 57	17 41	0 25	1 24	...	.0	14 15	1.6
30	5 55	17 42	0 24	1 19	...	.0	14 1	1.7
20	5 51	17 46	0 22	1 13	...	.0	13 37	1.9
10	5 48	17 49	0 21	1 10	0 11	2.4	13 17	2.0
0	5 46	17 52	0 21	1 9	0 31	2.3	12 58	2.2
10	5 43	17 55	0 21	1 10	0 52	2.1	12 39	2.3
20	5 39	17 59	0 22	1 14	1 14	2.0	12 18	2.5
30	5 35	18 3	0 24	1 21	1 39	1.8	11 54	2.7
35	5 33	18 5	0 25	1 26	1 54	1.7	11 39	2.8
40	5 30	18 8	0 27	1 33	2 12	1.6	11 23	2.9
45	5 27	18 11	0 30	1 42	2 32	1.4	11 3	3.1
50	5 24	18 15	0 33	1 54	2 59	1.2	10 38	3.3
55	5 19	18 20	0 37	2 11	3 34	.9	10 4	3.7
60	5 13	18 26	0 43	2 39	4 28	.2	9 12	4.3
S								

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	262	37.2	70	26	10.8	-66	118	53.7	-22	13.5	216	8.0	11	23.6
2	291	29.2	72	25	57.6	-69	148	57.8	-22	13.6	246	12.4	11	23.4
4	320	21.6	74	25	43.8	-72	179	1.9	-22	13.7	276	16.8	11	23.2
6	349	14.5	77	25	29.4	-74	209	6.0	-22	13.8	306	21.2	11	23.1
8	18	7.9	79	25	14.5	-77	239	10.2	-22	13.9	336	25.6	11	22.9
10	47	1.6	81	24	59.1	-80	269	14.3	-22	14.0	6	30.0	11	22.7
12	75	55.9	83	24	43.1	-82	299	18.4	-22	14.1	36	34.4	11	22.5
14	104	50.5	86	24	26.6	-85	329	22.5	-22	14.2	66	38.8	11	22.3
16	133	45.6	88	24	9.7	-87	359	26.6	-22	14.3	96	43.2	11	22.1
18	162	41.2	90	23	52.2	-90	29	30.7	-22	14.4	126	47.6	11	21.9
20	191	37.2	92	23	34.2	-92	59	34.8	-22	14.5	156	52.0	11	21.7
22	220	33.7	95	23	15.8	-94	89	38.9	-22	14.6	186	56.4	11	21.5
Δ							21	0			22	-1		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	11	.9	.8	16.0	T _m	6 45	2.2	57.6	15.7
12	11	10.1	T _m ☉	11 h 48.8 min	Starost	22.5 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	9 2	.3	212	-4.4	♄	16 2	.0	107	-1.8
♂	5 20	.2	268	-1.1	♂	9 34	.0	204	.8

5. OKTOBAR

PETAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	49.8	-4	30.0	13	17.3	224	33.2	9	43.3	280	25.1	23	27.5
2	212	50.2	-4	31.9	43	22.2	254	34.4	9	42.7	310	27.8	23	27.6
4	242	50.5	-4	33.9	73	27.2	284	35.6	9	42.2	340	30.4	23	27.7
6	272	50.9	-4	35.8	103	32.1	314	36.8	9	41.6	10	33.0	23	27.8
8	302	51.3	-4	37.7	133	37.0	344	38.0	9	41.1	40	35.7	23	27.9
10	332	51.7	-4	39.6	163	41.9	14	39.1	9	40.5	70	38.3	23	28.0
12	2	52.1	-4	41.6	193	46.9	44	40.3	9	39.9	100	41.0	23	28.1
14	32	52.4	-4	43.5	223	51.8	74	41.5	9	39.3	130	43.6	23	28.2
16	62	52.8	-4	45.4	253	56.7	104	42.6	9	38.8	160	46.3	23	28.3
18	92	53.2	-4	47.3	284	1.7	134	43.8	9	38.2	190	48.9	23	28.4
20	122	53.6	-4	49.3	314	6.6	164	44.9	9	37.6	220	51.6	23	28.5
22	152	53.9	-4	51.2	344	11.5	194	46.0	9	37.0	250	54.3	23	28.6
Δ	2	-10					6	-3			13	0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 14	17 22	0 41	2 20	23 47	3.9	16 31	.1
55	6 9	17 27	0 36	2 1	...	.0	15 60	.5
50	6 5	17 31	0 32	1 48	...	.0	15 37	.8
45	6 2	17 34	0 29	1 37	...	.0	15 19	1.0
40	5 60	17 37	0 27	1 30	...	.0	15 4	1.2
35	5 57	17 39	0 25	1 24	0 14	2.7	14 52	1.3
30	5 55	17 41	0 24	1 19	0 27	2.6	14 41	1.4
20	5 52	17 45	0 22	1 13	0 49	2.4	14 22	1.6
10	5 48	17 48	0 21	1 10	1 8	2.2	14 5	1.8
0	5 45	17 52	0 21	1 9	1 25	2.1	13 50	2.0
10	5 42	17 55	0 21	1 10	1 43	1.9	13 34	2.1
20	5 38	17 59	0 22	1 14	2 2	1.7	13 17	2.3
30	5 34	18 3	0 24	1 21	2 23	1.5	12 57	2.5
35	5 32	18 6	0 26	1 26	2 36	1.4	12 46	2.7
40	5 29	18 9	0 27	1 33	2 50	1.3	12 33	2.8
45	5 25	18 12	0 30	1 42	3 7	1.1	12 17	3.0
50	5 21	18 17	0 33	1 54	3 28	.9	11 57	3.2
55	5 16	18 22	0 37	2 12	4 33	.6	11 32	3.6
60	5 10	18 29	0 43	2 40	5 33	.1	10 55	4.1
S								

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	249	30.6	97	22	56.9	-97	119	43.0	-22	14.7	217	.8	11	21.4
2	278	28.0	99	22	37.6	-99	149	47.1	-22	14.8	247	5.2	11	21.2
4	307	25.8	101	22	17.8	-101	179	51.2	-22	14.9	277	9.6	11	21.0
6	336	24.1	104	21	57.7	-103	209	55.3	-22	15.0	307	14.0	11	20.8
8	5	22.8	106	21	37.1	-105	239	59.4	-22	15.1	337	18.4	11	20.6
10	34	22.0	108	21	16.1	-107	270	3.5	-22	15.2	7	22.8	11	20.4
12	63	21.5	110	20	54.8	-109	300	7.6	-22	15.3	37	27.2	11	20.2
14	92	21.6	112	20	33.0	-110	330	11.7	-22	15.4	67	31.7	11	20.0
16	121	22.0	114	20	11.0	-112	0	15.8	-22	15.5	97	36.1	11	19.9
18	150	22.8	116	19	48.5	-114	30	19.9	-22	15.6	127	40.5	11	19.7
20	179	24.1	118	19	25.7	-116	60	24.0	-22	15.7	157	44.9	11	19.5
22	208	25.8	120	19	2.6	-117	90	28.1	-22	15.8	187	49.3	11	19.3
Δ							20	0			22	-1		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	11						

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	182 54.3	- 4 53.1	14 16.4	224 47.2	9 36.4	280 56.9	23 28.7	
2	212 54.7	- 4 55.0	44 21.4	254 48.3	9 35.8	310 59.6	23 28.8	
4	242 55.1	- 4 56.9	74 26.3	284 49.4	9 35.2	341 2.3	23 28.9	
6	272 55.4	- 4 58.9	104 31.2	314 50.5	9 34.6	11 5.0	23 29.0	
8	302 55.8	- 5 .8	134 36.1	344 51.6	9 34.0	41 7.6	23 29.1	
10	332 56.2	- 5 2.7	164 41.1	14 52.7	9 33.4	71 10.3	23 29.2	
12	2 56.5	- 5 4.6	194 46.0	44 53.8	9 32.8	101 13.0	23 29.3	
14	32 56.9	- 5 6.5	224 50.9	74 54.9	9 32.2	131 15.7	23 29.3	
16	62 57.3	- 5 8.5	254 55.9	104 56.0	9 31.6	161 18.4	23 29.4	
18	92 57.6	- 5 10.4	285 .8	134 57.1	9 30.9	191 21.1	23 29.5	
20	122 58.0	- 5 12.3	315 5.7	164 58.2	9 30.3	221 23.8	23 29.6	
22	152 58.4	- 5 14.2	345 10.6	194 59.2	9 29.7	251 26.5	23 29.7	
Δ	2	-10		5	-3	13	0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 16	17 19	0 41	2 20	. . .	.0	16 32	.0
55	6 11	17 24	0 36	2 1	0 17	3.5	16 12	.4
50	6 7	17 29	0 32	1 47	0 38	3.2	15 56	.6
45	6 4	17 32	0 29	1 37	0 55	2.9	15 43	.8
40	6 1	17 35	0 27	1 30	1 8	2.7	15 32	1.0
35	5 58	17 38	0 25	1 24	1 20	2.6	15 23	1.1
30	5 56	17 40	0 24	1 19	1 29	2.5	15 15	1.2
20	5 52	17 44	0 22	1 13	1 46	2.3	15 1	1.5
10	5 48	17 48	0 21	1 10	2 1	2.1	14 49	1.7
0	5 45	17 52	0 21	1 9	2 15	1.9	14 37	1.8
10	5 41	17 55	0 21	1 10	2 29	1.7	14 25	2.0
20	5 37	17 59	0 22	1 14	2 43	1.5	14 13	2.2
30	5 33	18 4	0 24	1 21	2 60	1.3	13 58	2.4
35	5 30	18 7	0 26	1 26	3 10	1.2	13 50	2.5
40	5 27	18 10	0 27	1 33	3 21	1.1	13 40	2.7
45	5 24	18 14	0 30	1 42	3 33	.9	13 29	2.9
50	5 19	18 18	0 33	1 55	3 49	.7	13 15	3.1
55	5 14	18 24	0 37	2 13	4 9	.4	12 57	3.4
60	5 7	18 31	0 43	2 42	4 35	.0	12 33	3.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	237 27.8	122	18 39.2	-119	120 32.2	-22 15.9	217 53.7	11 19.1
2	266 30.3	124	18 15.5	-120	150 36.3	-22 16.0	247 58.1	11 18.9
4	295 33.2	126	17 51.5	-122	180 40.4	-22 16.1	278 2.5	11 18.7
6	324 36.4	128	17 27.1	-123	210 44.4	-22 16.2	308 6.9	11 18.5
8	353 40.0	130	17 2.6	-124	240 48.5	-22 16.3	338 11.3	11 18.4
10	22 44.0	132	16 37.7	-126	270 52.6	-22 16.4	8 15.7	11 18.2
12	51 48.3	133	16 12.6	-127	300 56.7	-22 16.5	38 20.1	11 18.0
14	80 53.0	135	15 47.3	-128	331 .8	-22 16.6	68 24.5	11 17.8
16	109 58.0	137	15 21.7	-129	1 4.9	-22 16.6	98 28.9	11 17.6
18	139 3.4	138	14 55.9	-130	31 9.0	-22 16.7	128 33.3	11 17.4
20	168 9.1	140	14 29.8	-131	61 13.0	-22 16.8	158 37.8	11 17.2
22	197 15.1	142	14 3.6	-132	91 17.1	-22 16.9	188 42.2	11 17.1
Δ					20	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	11 37.4	.7	16.0	T _m	8 26	1.9	56.3	15.3	
12	11 46.3	T _{m☉}	11 h 48.2 min	Starost	24.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	9 1	.3	211	-4.4	♄	15 56	.0	106	-1.8
♂	5 16	.2	267	-.2	♂	9 27	.0	204	.8

7. OKTOBAR

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	182 58.7	- 5 16.1	15 15.6	225 .3	9 29.0	281 29.2	23 29.8	
2	212 59.1	- 5 18.1	45 20.5	255 1.3	9 28.4	311 31.9	23 29.9	
4	242 59.5	- 5 20.0	75 25.4	285 2.4	9 27.7	341 34.6	23 30.0	
6	272 59.8	- 5 21.9	105 30.4	315 3.4	9 27.1	11 37.3	23 30.1	
8	303 .2	- 5 23.8	135 35.3	345 4.5	9 26.4	41 40.0	23 30.2	
10	333 .6	- 5 25.7	165 40.2	15 5.5	9 25.8	71 42.7	23 30.3	
12	3 .9	- 5 27.6	195 45.1	45 6.5	9 25.1	101 45.5	23 30.4	
14	33 1.3	- 5 29.5	225 50.1	75 7.6	9 24.4	131 48.2	23 30.5	
16	63 1.6	- 5 31.5	255 55.0	105 8.6	9 23.8	161 50.9	23 30.6	
18	93 2.0	- 5 33.4	285 59.9	135 9.6	9 23.1	191 53.6	23 30.6	
20	123 2.3	- 5 35.3	316 4.9	165 10.6	9 22.4	221 56.4	23 30.7	
22	153 2.7	- 5 37.2	346 9.8	195 11.6	9 21.7	251 59.1	23 30.8	
Δ	2	-10		5	-3	14	0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 19	17 16	0 41	2 19	1 22	3.7	16 32	.0
55	6 13	17 22	0 36	2 1	1 40	3.3	16 20	.3
50	6 8	17 27	0 32	1 47	1 54	3.0	16 10	.5
45	6 5	17 30	0 29	1 37	2 5	2.8	16 2	.7
40	6 2	17 34	0 27	1 30	2 14	2.6	15 56	.9
35	5 59	17 36	0 25	1 24	2 22	2.5	15 50	1.0
30	5 57	17 39	0 24	1 19	2 29	2.4	15 45	1.1
20	5 52	17 43	0 22	1 13	2 41	2.1	15 36	1.4
10	5 48	17 47	0 21	1 10	2 51	1.9	15 28	1.5
0	5 45	17 51	0 21	1 9	3 0	1.8	15 21	1.7
10	5 41	17 55	0 21	1 10	3 10	1.6	15 14	1.9
20	5 37	17 60	0 22	1 14	3 20	1.4	15 5	2.1
30	5 32	18 5	0 24	1 21	3 32	1.2	14 56	2.3
35	5 29	18 8	0 26	1 27	3 38	1.1	14 51	2.4
40	5 26	18 11	0 27	1 34	3 46	.9	14 45	2.6
45	5 22	18 15	0 30	1 43	3 55	.8	14 38	2.8
50	5 17	18 20	0 33	1 55	4 5	.6	14 29	3.0
55	5 11	18 26	0 37	2 14	4 18	.3	14 18	3.2
60	5 4	18 34	0 43	2 43	4 35	.0	14 4	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	226 21.4	143	13 37.2	-133	121 21.2	-22 17.0	218 46.6	11 16.9
2	255 28.0	145	13 10.5	-134	151 25.3	-22 17.1	248 51.0	11 16.7
4	284 34.9	146	12 43.7	-135	181 29.4	-22 17.2	278 55.4	11 16.5
6	313 42.1	147	12 16.8	-136	211 33.5	-22 17.3	308 59.8	11 16.3
8	342 49.5	149	11 49.6	-136	241 37.5	-22 17.4	339 4.2	11 16.1
10	11 57.3	150	11 22.3	-137	271 41.6	-22 17.5	9 8.6	11 15.9
12	41 5.3	151	10 54.9	-138	301 45.7	-22 17.6	39 13.0	11 15.8
14	70 13.5	152	10 27.3	-139	331 49.8	-22 17.7	69 17.4	11 15.6
16	99 22.0	154	9 59.6	-139	1 53.8	-22 17.8	99 21.9	11 15.4
18	128 30.7	155	9 31.8	-140	31 57.9	-22 17.9	129 26.3	11 15.2
20	157 39.6	156	9 3.8	-140	62 2.0	-22 18.0	159 30.7	11 15.0
22	186 48.8	157	8 35.8	-141	92 6.1	-22 18.1	189 35.1	11 14.8
Δ					20	0	22	-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	11 55.1	.7	16.0	T _m	9 11	1.7	55.7	15.2	
12	12 3.8	T _{m☉}	11 h 47.9 min	Starost	25.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	8 60	.3	210	-4.4	♄	15 52	.0	106	-1.8
♂	5 14	.2	266	-.2	♂	9 24	.0	204	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	3.1	-5	39.1	16	14.7	225	12.6	9	21.0	282	1.9	23	30.9
2	213	3.4	-5	41.0	46	19.6	255	13.6	9	20.4	312	4.6	23	31.0
4	243	3.8	-5	42.9	76	24.6	285	14.6	9	19.7	342	7.4	23	31.1
6	273	4.1	-5	44.8	106	29.5	315	15.5	9	19.0	12	10.1	23	31.2
8	303	4.5	-5	46.8	136	34.4	345	16.5	9	18.3	42	12.9	23	31.3
10	333	4.8	-5	48.7	166	39.4	15	17.5	9	17.6	72	15.6	23	31.4
12	3	5.2	-5	50.6	196	44.3	45	18.4	9	16.9	102	18.4	23	31.4
14	33	5.5	-5	52.5	226	49.2	75	19.4	9	16.1	132	21.1	23	31.5
16	63	5.9	-5	54.4	256	54.1	105	20.3	9	15.4	162	23.9	23	31.6
18	93	6.2	-5	56.3	286	59.1	135	21.3	9	14.7	192	26.7	23	31.7
20	123	6.6	-5	58.2	317	4.0	165	22.2	9	14.0	222	29.4	23	31.8
22	153	6.9	-6	.1	347	8.9	195	23.2	9	13.3	252	32.2	23	31.9
Δ		2		-10			5			-4		14		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 21	17 13	0 42	2 19	2 50	3.5	16 32	.0
55	6 15	17 19	0 36	2 1	2 59	3.2	16 27	.3
50	6 10	17 24	0 32	1 47	3 7	2.9	16 23	.5
45	6 6	17 29	0 29	1 37	3 13	2.7	16 20	.7
40	6 3	17 32	0 27	1 30	3 17	2.6	16 17	.8
35	5 60	17 35	0 25	1 24	3 22	2.4	16 15	1.0
30	5 57	17 38	0 24	1 19	3 25	2.3	16 12	1.1
20	5 53	17 42	0 22	1 13	3 32	2.1	16 9	1.3
10	5 48	17 47	0 21	1 10	3 37	1.9	16 5	1.5
0	5 44	17 51	0 21	1 9	3 43	1.7	16 2	1.7
10	5 40	17 55	0 21	1 10	3 48	1.5	15 59	1.8
20	5 36	17 60	0 22	1 14	3 54	1.3	15 56	2.0
30	5 31	18 5	0 24	1 21	4 0	1.1	15 52	2.3
35	5 27	18 8	0 26	1 27	4 4	1.0	15 50	2.4
40	5 24	18 12	0 27	1 34	4 8	.8	15 47	2.5
45	5 20	18 16	0 30	1 43	4 13	.7	15 44	2.7
50	5 15	18 21	0 33	1 56	4 18	.5	15 40	2.9
55	5 9	18 28	0 37	2 15	4 25	.3	15 36	3.2
60	5 1	18 36	0 44	2 45	4 34	.0	15 30	3.5
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	215	58.1	158	8	7.6	-141	122	10.1	-22	18.2	219	39.5	11	14.7		
2	245	7.7	159	7	39.4	-142	152	14.2	-22	18.3	249	43.9	11	14.5		
4	274	17.4	160	7	11.1	-142	182	18.3	-22	18.4	279	48.3	11	14.3		
6	303	27.3	160	6	42.7	-142	212	22.3	-22	18.5	309	52.8	11	14.1		
8	332	37.4	161	6	14.2	-143	242	26.4	-22	18.6	339	57.2	11	13.9		
10	1	47.6	162	5	45.7	-143	272	30.5	-22	18.7	10	1.6	11	13.7		
12	30	58.0	163	5	17.1	-143	302	34.5	-22	18.8	40	6.0	11	13.6		
14	60	8.5	163	4	48.4	-143	332	38.6	-22	18.9	70	10.4	11	13.4		
16	89	19.2	164	4	19.8	-144	2	42.7	-22	19.0	100	14.8	11	13.2		
18	118	30.0	165	3	51.1	-144	32	46.7	-22	19.1	130	19.3	11	13.0		
20	147	40.9	165	3	22.3	-144	62	50.8	-22	19.2	160	23.7	11	12.8		
22	176	51.9	166	2	53.6	-144	92	54.9	-22	19.3	190	28.1	11	12.7		
Δ							20			0		22			-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	12 12.4	.7	16.0	T _m	9 53	1.7	55.2	15.0	
12	12 20.9	T _{m☉}	11 h 47.7 min	Starost	26.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	8 59	.3	209	-4.4	♄	15 49	.0	106	-1.8
♂	5 11	.2	266	-.2	♂	9 20	.0	203	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	7.3	-6	2.0	17	13.9	225	24.1	9	12.5	282	35.0	23	32.0
2	213	7.6	-6	3.9	47	18.8	255	25.0	9	11.8	312	37.8	23	32.1
4	243	8.0	-6	5.8	77	23.7	285	25.9	9	11.0	342	40.6	23	32.1
6	273	8.3	-6	7.7	107	28.6	315	26.9	9	10.3	12	43.4	23	32.2
8	303	8.7	-6	9.6	137	33.6	345	27.8	9	9.6	42	46.1	23	32.3
10	333	9.0	-6	11.5	167	38.5	15	28.7	9	8.8	72	48.9	23	32.4
12	3	9.4	-6	13.4	197	43.4	45	29.6	9	8.1	102	51.7	23	32.5
14	33	9.7	-6	15.3	227	48.3	75	30.5	9	7.3	132	54.5	23	32.6
16	63	10.0	-6	17.2	257	53.3	105	31.3	9	6.5	162	57.3	23	32.7
18	93	10.4	-6	19.1	287	58.2	135	32.2	9	5.8	193	.2	23	32.8
20	123	10.7	-6	21.0	318	3.1	165	33.1	9	5.0	223	3.0	23	32.8
22	153	11.1	-6	22.9	348	8.1	195	34.0	9	4.2	253	5.8	23	32.9
Δ		2		-10			4			-4		14		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 24	17 10	0 42	2 19	4 14	3.5	16 31	.0
55	6 17	17 17	0 36	2 1	4 16	3.1	16 33	.3
50	6 12	17 22	0 32	1 47	4 17	2.9	16 35	.5
45	6 7	17 27	0 29	1 37	4 18	2.7	16 36	.7
40	6 4	17 30	0 27	1 30	4 19	2.5	16 37	.8
35	6 1	17 34	0 25	1 24	4 20	2.4	16 38	1.0
30	5 58	17 37	0 24	1 19	4 20	2.2	16 39	1.1
20	5 53	17 42	0 22	1 13	4 21	2.0	16 40	1.3
10	5 48	17 46	0 21	1 10	4 22	1.8	16 41	1.5
0	5 44	17 51	0 21	1 9	4 23	1.7	16 42	1.7
10	5 40	17 55	0 21	1 10	4 24	1.5	16 44	1.8
20	5 35	18 0	0 22	1 14	4 25	1.3	16 45	2.0
30	5 29	18 6	0 24	1 22	4 27	1.1	16 46	2.2
35	5 26	18 9	0 26	1 27	4 27	1.0	16 47	2.4
40	5 22	18 13	0 28	1 34	4 28	.8	16 48	2.5
45	5 18	18 18	0 30	1 44	4 29	.7	16 49	2.7
50	5 13	18 23	0 33	1 57	4 30	.5	16 50	2.9
55	5 6	18 30	0 38	2 16	4 32	.3	16 52	3.1
60	4 58	18 38	0 44	2 47	4 34	.0	16 53	3.5
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	206	3.0	166	2	24.8	-144	122	58.9	-22	19.4	220	32.5	11	12.5		
2	235	14.2	166	1	56.1	-144	153	3.0	-22	19.5	250	36.9	11	12.3		
4	264	25.5	167	1	27.3	-144	183	7.0	-22	19.6	280	41.3	11	12.1		
6	293	36.8	167	0	58.5	-144	213	11.1	-22	19.7	310	45.8	11	11.9		
8	322	48.3	167	0	29.8	-144	243	15.2	-22	19.8	340	50.2	11	11.7		
10	351	59.8	168	0	1.0	-144	273	19.2	-22	19.9	10	54.6	11	11.6		
12	21	11.3	168	-0	27.7	-143	303	23.3	-22	20.0	40	59.0	11	11.4		
14	50	22.8	168	-0	56.3	-143	333	27.3	-22	20.1	71	3.4	11	11.2		
16	79	34.5	168	-1	24.9	-143	3	31.4	-22	20.2	101	7.9	11	11.0		
18	108	46.1	168	-1	53.5	-143	33	35.4	-22	20.3	131	12.3	11	10.8		
20	137	57.7	168	-2	22.1	-142	63	39.5	-22	20.4	161	16.7	11	10.7		
22	167	9.4	168	-2	50.5	-142	93	43.6	-22	20.5	191	21.1	11	10.5		
Δ							20			0		22			-1	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s</					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 11.4 - 6 24.8		18 13.0	225 34.9 9 3.5	283 8.6 23 33.0		
2	213 11.7 - 6 26.7		48 17.9	255 35.7 9 2.7	313 11.4 23 33.1		
4	243 12.1 - 6 28.6		78 22.8	285 36.6 9 1.9	343 14.2 23 33.2		
6	273 12.4 - 6 30.5		108 27.8	315 37.4 9 1.1	13 17.1 23 33.3		
8	303 12.7 - 6 32.4		138 32.7	345 38.3 9 .3	43 19.9 23 33.3		
10	333 13.1 - 6 34.3		168 37.6	15 39.1 8 59.5	73 22.7 23 33.4		
12	3 13.4 - 6 36.2		198 42.6	45 40.0 8 58.7	103 25.6 23 33.5		
14	33 13.7 - 6 38.1		228 47.5	75 40.8 8 57.9	133 28.4 23 33.6		
16	63 14.1 - 6 40.0		258 52.4	105 41.6 8 57.1	163 31.3 23 33.7		
18	93 14.4 - 6 41.9		288 57.3	135 42.5 8 56.3	193 34.1 23 33.8		
20	123 14.7 - 6 43.8		319 2.3	165 43.3 8 55.5	223 37.0 23 33.8		
22	153 15.1 - 6 45.7		349 7.2	195 44.1 8 54.7	253 39.8 23 33.9		
Δ	2	-9		4	-4	14	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 26	17 7	0 42	2 19	5 37	3.5	16 30	.0
55	6 19	17 14	0 36	2 1	5 31	3.1	16 39	.3
50	6 13	17 20	0 32	1 47	5 26	2.9	16 46	.5
45	6 9	17 25	0 29	1 37	5 22	2.7	16 52	.7
40	6 5	17 29	0 27	1 30	5 19	2.5	16 57	.9
35	6 1	17 32	0 25	1 24	5 16	2.4	17 1	1.0
30	5 58	17 35	0 24	1 19	5 14	2.2	17 5	1.1
20	5 53	17 41	0 22	1 13	5 10	2.0	17 11	1.3
10	5 48	17 46	0 21	1 10	5 6	1.8	17 17	1.5
0	5 44	17 50	0 21	1 9	5 3	1.7	17 22	1.7
10	5 39	17 55	0 21	1 11	4 60	1.5	17 28	1.9
20	5 34	18 0	0 22	1 14	4 56	1.3	17 33	2.0
30	5 28	18 6	0 24	1 22	4 53	1.1	17 40	2.3
35	5 25	18 10	0 26	1 27	4 50	1.0	17 44	2.4
40	5 21	18 14	0 28	1 34	4 48	.8	17 48	2.5
45	5 16	18 19	0 30	1 44	4 45	.7	17 53	2.7
50	5 11	18 25	0 33	1 57	4 42	.5	17 59	2.9
55	5 4	18 32	0 38	2 17	4 38	.3	18 7	3.2
60	4 55	18 41	0 44	2 49	4 33	.0	18 16	3.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	196 21.0 168 - 3 18.9 -142		123 47.6 -22 20.6	221 25.6 11 10.3				
2	225 32.7 168 - 3 47.3 -141		153 51.7 -22 20.7	251 30.0 11 10.1				
4	254 44.3 168 - 4 15.5 -141		183 55.7 -22 20.8	281 34.4 11 9.9				
6	283 55.9 168 - 4 43.7 -140		213 59.8 -22 20.9	311 38.8 11 9.8				
8	313 7.4 168 - 5 11.8 -140		244 3.8 -22 21.0	341 43.2 11 9.6				
10	342 19.0 167 - 5 39.7 -139		274 7.8 -22 21.1	11 47.7 11 9.4				
12	11 30.5 167 - 6 7.6 -139		304 11.9 -22 21.2	41 52.1 11 9.2				
14	40 41.9 167 - 6 35.4 -138		334 15.9 -22 21.3	71 56.5 11 9.0				
16	69 53.3 166 - 7 3.0 -138		4 20.0 -22 21.4	102 .9 11 8.9				
18	99 4.6 166 - 7 30.6 -137		34 24.0 -22 21.5	132 5.4 11 8.7				
20	128 15.8 166 - 7 58.0 -136		64 28.1 -22 21.6	162 9.8 11 8.5				
22	157 26.9 165 - 8 25.2 -136		94 32.1 -22 21.7	192 14.2 11 8.3				
Δ			20	0	22		-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	12 45.7	.7	16.0	T _m	11 13	1.7	54.5 14.8		
12	12 53.7	T _{m☉}	11 h 47.1 min	Starost	28.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	.	°	°	♃	h min / ' / "	.	°	°
♂	8 57	.3	207	-4.4	♃	15 43	.0	106	-1.8
	5 7	.2	265	-.2	♄	9 13	.0	203	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 15.4 - 6 47.6		19 12.1	225 44.9 8 53.8	283 42.7 23 34.0		
2	213 15.7 - 6 49.5		49 17.1	255 45.7 8 53.0	313 45.5 23 34.1		
4	243 16.0 - 6 51.4		79 22.0	285 46.5 8 52.2	343 48.4 23 34.2		
6	273 16.4 - 6 53.2		109 26.9	315 47.3 8 51.4	13 51.3 23 34.3		
8	303 16.7 - 6 55.1		139 31.8	345 48.1 8 50.5	43 54.1 23 34.3		
10	333 17.0 - 6 57.0		169 36.8	15 48.9 8 49.7	73 57.0 23 34.4		
12	3 17.3 - 6 58.9		199 41.7	45 49.7 8 48.8	103 59.9 23 34.5		
14	33 17.7 - 7 .8		229 46.6	75 50.5 8 48.0	134 2.8 23 34.6		
16	63 18.0 - 7 2.7		259 51.6	105 51.2 8 47.1	164 5.7 23 34.7		
18	93 18.3 - 7 4.6		289 56.5	135 52.0 8 46.3	194 8.5 23 34.7		
20	123 18.6 - 7 6.5		320 1.4	165 52.8 8 45.4	224 11.4 23 34.8		
22	153 18.9 - 7 8.3		350 6.3	195 53.5 8 44.6	254 14.3 23 34.9		
Δ	2	-9		4	-4	14	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 28	17 4	0 42	2 19	7 0	3.6	16 29	.0
55	6 21	17 12	0 36	2 0	6 46	3.2	16 46	.4
50	6 15	17 18	0 32	1 47	6 35	2.9	16 59	.6
45	6 10	17 23	0 29	1 37	6 27	2.7	17 9	.8
40	6 6	17 27	0 27	1 30	6 19	2.5	17 18	1.0
35	6 2	17 31	0 25	1 24	6 13	2.4	17 25	1.1
30	5 59	17 34	0 24	1 19	6 8	2.3	17 32	1.2
20	5 53	17 40	0 22	1 13	5 59	2.1	17 43	1.4
10	5 48	17 45	0 21	1 10	5 51	1.9	17 53	1.6
0	5 44	17 50	0 21	1 9	5 43	1.7	18 3	1.8
10	5 39	17 55	0 21	1 11	5 36	1.6	18 12	1.9
20	5 33	18 1	0 22	1 15	5 28	1.4	18 23	2.1
30	5 27	18 7	0 24	1 22	5 19	1.2	18 34	2.3
35	5 23	18 11	0 26	1 27	5 14	1.1	18 41	2.4
40	5 19	18 15	0 28	1 35	5 8	.9	18 49	2.6
45	5 14	18 20	0 30	1 44	5 2	.8	18 58	2.7
50	5 9	18 26	0 33	1 58	4 54	.6	19 9	2.9
55	5 1	18 34	0 38	2 18	4 44	.3	19 22	3.2
60	4 52	18 43	0 44	2 52	4 32	.0	19 40	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	186 38.0 165 - 8 52.3 -135		124 36.2 -22 21.8	222 18.7 11 8.1				
2	215 48.9 164 - 9 19.3 -134		154 40.2 -22 21.9	252 23.1 11 8.0				
4	244 59.8 164 - 9 46.1 -133		184 44.2 -22 22.0	282 27.5 11 7.8				
6	274 10.5 163 -10 12.8 -132		214 48.3 -22 22.1	312 31.9 11 7.6				
8	303 21.1 162 -10 39.3 -132		244 52.3 -22 22.2	342 36.4 11 7.4				
10	332 31.6 162 -11 5.6 -131		274 56.4 -22 22.3	12 40.8 11 7.2				
12	1 41.9 161 -11 31.8 -130		305 .4 -22 22.4	42 45.2 11 7.1				
14	30 52.2 160 -11 57.7 -129		335 4.4 -22 22.5	72 49.7 11 6.9				
16	60 2.2 160 -12 23.5 -128		5 8.5 -22 22.6	102 54.1 11 6.7				
18	89 12.1 159 -12 49.1 -127		35 12.5 -22 22.7	132 58.5 11 6.5				
20	118 21.9 158 -13 14.4 -126		65 16.5 -22 22.8	163 2.9 11 6.4				
22	147 31.5 157 -13 39.6 -125		95 20.6 -22 22.9	193 7.4 11 6.2				
Δ			20	0	22		-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	13 1.7	.6	16.0	T _m	11 53	1.7	54.2 14.8		
12	13 9.5	T _{m☉}	11 h 46.8 min	Starost	29.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	.	°	°	♃	h min / ' / "	.	°	°
♂	8 57	.3	207	-4.4	♃	15 39	.0	105	-1.8
	5 5	.2	265	-.2	♄	9 9	.0	203	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS						
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂					
h	°	'	°	'	'	'	'					
0	183	19.3	-7	10.2	225	54.3	8 43.7	284	17.2	23	35.0	
2	213	19.6	-7	12.1	255	55.0	8 42.8	314	20.1	23	35.1	
4	243	19.9	-7	14.0	285	55.8	8 41.9	344	23.0	23	35.1	
6	273	20.2	-7	15.9	315	56.5	8 41.1	14	25.9	23	35.2	
8	303	20.5	-7	17.8	345	57.3	8 40.2	44	28.9	23	35.3	
10	333	20.8	-7	19.6	15	58.0	8 39.3	74	31.8	23	35.4	
12	3	21.2	-7	21.5	45	58.7	8 38.4	104	34.7	23	35.5	
14	33	21.5	-7	23.4	75	59.5	8 37.5	134	37.6	23	35.5	
16	63	21.8	-7	25.3	106	.2	8 36.6	164	40.5	23	35.6	
18	93	22.1	-7	27.1	136	.9	8 35.7	194	43.5	23	35.7	
20	123	22.4	-7	29.0	166	1.6	8 34.8	224	46.4	23	35.8	
22	153	22.7	-7	30.9	196	2.3	8 33.9	254	49.3	23	35.9	
Δ		2		-9		4		-4		15		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 31	17 1	0 42	2 19	8 26	3.7	16 29	.1
55	6 23	17 10	0 36	2 0	8 2	3.2	16 55	.5
50	6 16	17 16	0 32	1 47	7 45	3.0	17 14	.8
45	6 11	17 21	0 29	1 37	7 32	2.7	17 29	1.0
40	6 7	17 26	0 27	1 30	7 20	2.6	17 41	1.1
35	6 3	17 30	0 25	1 24	7 11	2.4	17 52	1.3
30	5 60	17 33	0 24	1 19	7 3	2.3	18 1	1.4
20	5 54	17 39	0 22	1 13	6 48	2.1	18 18	1.6
10	5 48	17 45	0 21	1 10	6 36	2.0	18 32	1.7
0	5 43	17 50	0 21	1 9	6 25	1.8	18 45	1.9
10	5 38	17 55	0 21	1 11	6 13	1.7	18 59	2.0
20	5 32	18 1	0 22	1 15	6 1	1.5	19 13	2.2
30	5 26	18 8	0 24	1 22	5 47	1.3	19 29	2.3
35	5 22	18 12	0 26	1 28	5 39	1.2	19 39	2.5
40	5 18	18 16	0 28	1 35	5 30	1.0	19 50	2.6
45	5 13	18 21	0 30	1 45	5 20	.9	20 3	2.7
50	5 6	18 28	0 33	1 58	5 8	.7	20 19	3.0
55	4 59	18 36	0 38	2 19	4 52	.4	20 39	3.3
60	4 49	18 46	0 45	2 54	4 32	.0	21 7	3.7

UT	MESEC				JUPITER				SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♃	δ _♃	Δ	S _♃	δ _♃	Δ	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	176	40.9	156	-14	4.5	-124	125	24.6	-22	23.0	223	11.8	11	6.0
2	205	50.2	155	-14	29.2	-122	155	28.6	-22	23.1	253	16.2	11	5.8
4	234	59.2	154	-14	53.7	-121	185	32.7	-22	23.2	283	20.7	11	5.7
6	264	8.1	153	-15	17.9	-120	215	36.7	-22	23.3	313	25.1	11	5.5
8	293	16.8	152	-15	41.9	-119	245	40.7	-22	23.4	343	29.5	11	5.3
10	322	25.3	151	-16	5.7	-117	275	44.7	-22	23.5	13	34.0	11	5.1
12	351	33.6	150	-16	29.1	-116	305	48.8	-22	23.6	43	38.4	11	4.9
14	20	41.7	149	-16	52.4	-115	335	52.8	-22	23.7	73	42.8	11	4.8
16	49	49.5	148	-17	15.3	-113	5	56.8	-22	23.8	103	47.3	11	4.6
18	78	57.2	147	-17	38.0	-112	36	.8	-22	23.9	133	51.7	11	4.4
20	108	4.6	146	-18	.4	-110	66	4.9	-22	24.0	163	56.1	11	4.2
22	137	11.8	145	-18	22.5	-109	96	8.9	-22	24.1	194	.6	11	4.1
Δ							20			0	22			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	13 17.2	.6	16.0	T _m	12 35	1.8	54.0	14.7
12	13 24.7	T _m ☉	11 h 46.6 min	Starost	.8 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	8 56	.3	206	-4.4	♃	15 36	.0	105	-1.8
♂	5 2	.2	264	-.2	♃	9 6	.0	203	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS						
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂					
h	°	'	°	'	'	'	'					
0	183	23.0	-7	32.8	226	3.0	8 33.0	284	52.3	23	35.9	
2	213	23.3	-7	34.6	256	3.7	8 32.1	314	55.2	23	36.0	
4	243	23.6	-7	36.5	286	4.4	8 31.2	344	58.2	23	36.1	
6	273	23.9	-7	38.4	316	5.1	8 30.3	15	1.1	23	36.2	
8	303	24.2	-7	40.3	346	5.8	8 29.3	45	4.1	23	36.3	
10	333	24.5	-7	42.1	16	6.5	8 28.4	75	7.0	23	36.3	
12	3	24.8	-7	44.0	46	7.2	8 27.5	105	10.0	23	36.4	
14	33	25.1	-7	45.9	76	7.8	8 26.6	135	12.9	23	36.5	
16	63	25.4	-7	47.8	106	8.5	8 25.6	165	15.9	23	36.6	
18	93	25.7	-7	49.6	136	9.2	8 24.7	195	18.9	23	36.7	
20	123	26.0	-7	51.5	166	9.8	8 23.7	225	21.9	23	36.7	
22	153	26.3	-7	53.4	196	10.5	8 22.8	255	24.8	23	36.8	
Δ		2		-9		3		-5		15		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 33	16 58	0 42	2 19	9 55	3.8	16 31	.2
55	6 25	17 7	0 36	2 0	9 20	3.3	17 7	.7
50	6 18	17 14	0 32	1 47	8 56	3.0	17 32	1.0
45	6 12	17 20	0 29	1 37	8 37	2.7	17 52	1.2
40	6 8	17 24	0 27	1 30	8 22	2.6	18 9	1.4
35	6 4	17 28	0 25	1 24	8 9	2.5	18 22	1.5
30	6 0	17 32	0 24	1 19	7 58	2.4	18 34	1.6
20	5 54	17 38	0 22	1 13	7 39	2.2	18 55	1.7
10	5 48	17 44	0 21	1 10	7 23	2.0	19 13	1.8
0	5 43	17 50	0 21	1 9	7 8	1.9	19 30	2.0
10	5 38	17 55	0 21	1 11	6 53	1.8	19 47	2.1
20	5 32	18 1	0 22	1 15	6 37	1.6	20 5	2.2
30	5 25	18 8	0 24	1 22	6 18	1.5	20 26	2.4
35	5 21	18 13	0 26	1 28	6 8	1.4	20 38	2.5
40	5 16	18 17	0 28	1 35	5 56	1.2	20 52	2.6
45	5 11	18 23	0 30	1 45	5 41	1.1	21 9	2.7
50	5 4	18 29	0 34	1 59	5 24	.9	21 30	2.9
55	4 56	18 38	0 38	2 20	5 2	.6	21 58	3.2
60	4 46	18 48	0 45	2 57	4 32	.1	22 37	3.8

UT	MESEC				JUPITER				SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♃	δ _♃	Δ	S _♃	δ _♃	Δ	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	166	18.8	144	-18	44.3	-107	126	12.9	-22	24.2	224	5.0	11	3.9
2	195	25.5	142	-19	5.8	-106	156	16.9	-22	24.3	254	9.4	11	3.7
4	224	32.0	141	-19	26.9	-104	186	21.0	-22	24.4	284	13.9	11	3.5
6	253	38.2	140	-19	47.8	-103	216	25.0	-22	24.5	314	18.3	11	3.4
8	282	44.3	139	-20	8.3	-101	246	29.0	-22	24.6	344	22.8	11	3.2
10	311	50.0	138	-20	28.5	-99	276	33.0	-22	24.7	14	27.2	11	3.0
12	340	55.5	136	-20	48.4	-98	306	37.0	-22	24.8	44	31.6	11	2.8
14	10	.8	135	-21	7.9	-96	336	41.0	-22	24.9	74	36.1	11	2.7
16	39	5.8	134	-21	27.1	-94	6	45.1	-22	25.0	104	40.5	11	2.5
18	68	10.5	132	-21	45.9	-92	36	49.1	-22	25.1	134	44.9	11	2.3
20	97	15.0	131	-22	4.3	-90	66	53.1	-22	25.2	164	49.4	11	2.1
22	126	19.2	130	-22	22.4	-88	96	57.1	-22	25.3	194	53.8	11	2.0
Δ							20			0	22			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	13 32.2	.6	16.1	T _m	13 19	1.9	53.9	14.7
12	13 39.5	T _m ☉	11 h 46.3 min	Starost	1.8 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	8 56	.3	205	-4.4	♃	15 33	.0	105	-1.8
♂	5 0	.2	264	-.3	♃	9 2	.0	203	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 26.6 - 7 55.2		22 9.5	226 11.2 8 21.8	285 27.8 23 36.9		
2	213 26.9 - 7 57.1		52 14.5	256 11.8 8 20.9	315 30.8 23 37.0		
4	243 27.2 - 7 59.0		82 19.4	286 12.5 8 19.9	345 33.8 23 37.1		
6	273 27.5 - 8 .8		112 24.3	316 13.1 8 18.9	15 36.8 23 37.1		
8	303 27.8 - 8 2.7		142 29.3	346 13.7 8 18.0	45 39.8 23 37.2		
10	333 28.1 - 8 4.5		172 34.2	16 14.4 8 17.0	75 42.8 23 37.3		
12	3 28.4 - 8 6.4		202 39.1	46 15.0 8 16.0	105 45.8 23 37.4		
14	33 28.7 - 8 8.3		232 44.0	76 15.6 8 15.1	135 48.8 23 37.4		
16	63 29.0 - 8 10.1		262 49.0	106 16.2 8 14.1	165 51.8 23 37.5		
18	93 29.3 - 8 12.0		292 53.9	136 16.9 8 13.1	195 54.8 23 37.6		
20	123 29.6 - 8 13.8		322 58.8	166 17.5 8 12.1	225 57.8 23 37.7		
22	153 29.8 - 8 15.7		353 3.8	196 18.1 8 11.1	256 .9 23 37.8		
Δ	1	-9		3	-5	15	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 36	16 55	0 42	2 19	11 26	3.8	16 35	.5
55	6 27	17 5	0 36	2 0	10 39	3.1	17 24	1.1
50	6 20	17 12	0 32	1 47	10 7	2.8	17 57	1.4
45	6 14	17 18	0 29	1 37	9 43	2.7	18 21	1.5
40	6 9	17 23	0 27	1 30	9 24	2.5	18 41	1.6
35	6 5	17 27	0 25	1 24	9 9	2.5	18 58	1.7
30	6 1	17 31	0 24	1 20	8 55	2.4	19 12	1.8
20	5 54	17 38	0 22	1 13	8 32	2.2	19 36	1.9
10	5 48	17 44	0 21	1 10	8 12	2.1	19 57	2.0
0	5 43	17 49	0 21	1 9	7 54	2.0	20 17	2.1
10	5 37	17 55	0 21	1 11	7 35	1.9	20 37	2.2
20	5 31	18 2	0 22	1 15	7 16	1.8	20 58	2.2
30	5 24	18 9	0 24	1 22	6 53	1.7	21 23	2.4
35	5 19	18 13	0 26	1 28	6 40	1.6	21 37	2.4
40	5 15	18 18	0 28	1 35	6 25	1.5	21 54	2.5
45	5 9	18 24	0 30	1 46	6 7	1.4	22 14	2.6
50	5 2	18 31	0 34	1 60	5 45	1.2	22 40	2.7
55	4 54	18 40	0 38	2 21	5 17	.9	23 15	3.0
60	4 43	18 51	0 45	2 60	4 35	.3	...	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	155 23.2 129 -22 40.1 -87		127 1.1 -22 25.4	224 58.3 11 1.8				
2	184 26.9 127 -22 57.4 -85		157 5.1 -22 25.5	255 2.7 11 1.6				
4	213 30.3 126 -23 14.3 -83		187 9.1 -22 25.6	285 7.2 11 1.5				
6	242 33.5 125 -23 30.8 -81		217 13.2 -22 25.7	315 11.6 11 1.3				
8	271 36.4 123 -23 46.9 -78		247 17.2 -22 25.8	345 16.0 11 1.1				
10	300 39.1 122 -24 2.6 -76		277 21.2 -22 25.9	15 20.5 11 .9				
12	329 41.5 121 -24 17.9 -74		307 25.2 -22 26.0	45 24.9 11 .8				
14	358 43.6 119 -24 32.7 -72		337 29.2 -22 26.1	75 29.4 11 .6				
16	27 45.5 118 -24 47.1 -70		7 33.2 -22 26.1	105 33.8 11 .4				
18	56 47.1 117 -25 1.1 -68		37 37.2 -22 26.2	135 38.3 11 .2				
20	85 48.4 116 -25 14.6 -65		67 41.2 -22 26.3	165 42.7 11 .1				
22	114 49.5 114 -25 27.7 -63		97 45.2 -22 26.4	195 47.1 10 59.9				
Δ			20	0	22		-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	13 46.7	.6	16.1	T _m	14 5	2.1	54.0 14.7		
12	13 53.7	T _{m☉}	11 h 46.1 min	Starost	2.8 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	8 55	.3	204	-4.4	♃	15 30	.0	105	-1.8
♂	4 58	.2	263	-.3	♄	8 59	.0	203	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 30.1 - 8 17.6		23 8.7	226 18.7 8 10.1	286 3.9 23 37.8		
2	213 30.4 - 8 19.4		53 13.6	256 19.3 8 9.1	316 6.9 23 37.9		
4	243 30.7 - 8 21.3		83 18.5	286 19.9 8 8.1	346 9.9 23 38.0		
6	273 31.0 - 8 23.1		113 23.5	316 20.5 8 7.1	16 13.0 23 38.1		
8	303 31.3 - 8 25.0		143 28.4	346 21.1 8 6.1	46 16.0 23 38.1		
10	333 31.5 - 8 26.8		173 33.3	16 21.7 8 5.1	76 19.1 23 38.2		
12	3 31.8 - 8 28.7		203 38.3	46 22.3 8 4.1	106 22.1 23 38.3		
14	33 32.1 - 8 30.5		233 43.2	76 22.8 8 3.1	136 25.2 23 38.4		
16	63 32.4 - 8 32.4		263 48.1	106 23.4 8 2.0	166 28.2 23 38.5		
18	93 32.7 - 8 34.2		293 53.0	136 24.0 8 1.0	196 31.3 23 38.5		
20	123 32.9 - 8 36.1		323 58.0	166 24.5 7 60.0	226 34.3 23 38.6		
22	153 33.2 - 8 37.9		354 2.9	196 25.1 7 59.0	256 37.4 23 38.7		
Δ	1	-9		3	-5	15	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 38	16 52	0 42	2 19	12 57	3.3	16 46	1.2
55	6 29	17 2	0 37	2 0	11 54	2.8	17 51	1.7
50	6 21	17 10	0 33	1 47	11 15	2.6	18 30	1.8
45	6 15	17 16	0 30	1 37	10 47	2.5	18 58	1.9
40	6 10	17 21	0 27	1 30	10 26	2.4	19 20	2.0
35	6 6	17 26	0 25	1 24	10 8	2.4	19 39	2.0
30	6 2	17 30	0 24	1 20	9 52	2.3	19 55	2.0
20	5 55	17 37	0 22	1 13	9 26	2.2	20 22	2.1
10	5 48	17 43	0 21	1 10	9 3	2.2	20 45	2.1
0	5 43	17 49	0 21	1 9	8 42	2.1	21 7	2.2
10	5 37	17 55	0 21	1 11	8 22	2.1	21 29	2.2
20	5 30	18 2	0 22	1 15	7 59	2.0	21 52	2.2
30	5 23	18 10	0 24	1 23	7 34	1.9	22 19	2.3
35	5 18	18 14	0 26	1 28	7 18	1.9	22 35	2.3
40	5 13	18 19	0 28	1 36	7 1	1.8	22 54	2.3
45	5 7	18 25	0 30	1 46	6 40	1.7	23 17	2.3
50	5 0	18 33	0 34	2 0	6 14	1.6	23 46	2.4
55	4 51	18 42	0 39	2 23	5 38	1.4	...	.0
60	4 40	18 53	0 45	3 3	4 43	.8	0 10	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	143 50.4 113 -25 40.3 -61		127 49.2 -22 26.5	225 51.6 10 59.7				
2	172 51.0 112 -25 52.5 -58		157 53.2 -22 26.6	255 56.0 10 59.6				
4	201 51.3 111 -26 4.1 -56		187 57.2 -22 26.7	286 .5 10 59.4				
6	230 51.5 109 -26 15.3 -54		218 1.2 -22 26.8	316 4.9 10 59.2				
8	259 51.4 108 -26 26.1 -51		248 5.2 -22 26.9	346 9.4 10 59.0				
10	288 51.0 107 -26 36.3 -49		278 9.2 -22 27.0	16 13.8 10 58.9				
12	317 50.4 106 -26 46.0 -46		308 13.2 -22 27.1	46 18.3 10 58.7				
14	346 49.6 105 -26 55.3 -44		338 17.2 -22 27.2	76 22.7 10 58.5				
16	15 48.6 104 -27 4.0 -41		8 21.2 -22 27.3	106 27.2 10 58.4				
18	44 47.4 103 -27 12.2 -39		38 25.2 -22 27.4	136 31.6 10 58.2				
20	73 46.0 102 -27 20.0 -36		68 29.2 -22 27.5	166 36.1 10 58.0				
22	102 44.4 101 -27 27.1 -33		98 33.2 -22 27.6	196 40.5 10 57.9				
Δ			20	0	22		-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	14 .7	.6	16.1	T _m	14 55	2.1	54.1 14.7		
12	14 7.4	T _{m☉}	11 h 45.9 min	Starost	3.8 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	8 55	.2	203	-4.4	♃	15 27	.0	105	-1.8
♂	4 55	.2	263	-.3	♄	8 55	.0	203	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 33.5	- 8 39.8	24 7.8	226 25.7	7 57.9	286 40.5	23 38.8
2	213 33.8	- 8 41.6	54 12.8	256 26.2	7 56.9	316 43.5	23 38.8
4	243 34.0	- 8 43.5	84 17.7	286 26.8	7 55.8	346 46.6	23 38.9
6	273 34.3	- 8 45.3	114 22.6	316 27.3	7 54.8	16 49.7	23 39.0
8	303 34.6	- 8 47.2	144 27.5	346 27.9	7 53.7	46 52.8	23 39.1
10	333 34.8	- 8 49.0	174 32.5	16 28.4	7 52.7	76 55.9	23 39.2
12	3 35.1	- 8 50.8	204 37.4	46 29.0	7 51.6	106 59.0	23 39.2
14	33 35.4	- 8 52.7	234 42.3	76 29.5	7 50.6	137 2.1	23 39.3
16	63 35.6	- 8 54.5	264 47.2	106 30.0	7 49.5	167 5.2	23 39.4
18	93 35.9	- 8 56.4	294 52.2	136 30.6	7 48.4	197 8.3	23 39.5
20	123 36.2	- 8 58.2	324 57.1	166 31.1	7 47.4	227 11.4	23 39.6
22	153 36.4	- 9 .0	355 2.0	196 31.6	7 46.3	257 14.5	23 39.6
Δ	1	-9		3	-5	15	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 41	16 50	0 42	2 19	14 16	2.0	17 15	2.6
55	6 31	16 60	0 37	2 1	12 60	2.1	18 31	2.4
50	6 23	17 8	0 33	1 47	12 17	2.2	19 14	2.4
45	6 16	17 14	0 30	1 38	11 47	2.2	19 44	2.3
40	6 11	17 20	0 27	1 30	11 24	2.2	20 8	2.3
35	6 6	17 24	0 25	1 24	11 4	2.2	20 27	2.3
30	6 2	17 29	0 24	1 20	10 48	2.2	20 44	2.3
20	5 55	17 36	0 22	1 13	10 20	2.2	21 12	2.3
10	5 49	17 43	0 21	1 10	9 56	2.2	21 36	2.2
0	5 42	17 49	0 21	1 10	9 33	2.2	21 59	2.2
10	5 36	17 55	0 21	1 11	9 11	2.2	22 21	2.2
20	5 29	18 2	0 22	1 15	8 47	2.2	22 45	2.1
30	5 21	18 10	0 24	1 23	8 20	2.2	23 13	2.1
35	5 17	18 15	0 26	1 29	8 3	2.2	23 30	2.1
40	5 12	18 20	0 28	1 36	7 44	2.2	23 49	2.0
45	5 6	18 27	0 30	1 46	7 21	2.1	.. .	.0
50	4 58	18 34	0 34	2 1	6 52	2.1	.. .	.0
55	4 49	18 44	0 39	2 24	6 11	2.1	0 26	2.5
60	4 37	18 56	0 46	3 6	5 2	1.9	1 35	2.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	131 42.5	100 -27	33.8 -31	128 37.2	-22 27.7	226 45.0	10 57.7	
2	160 40.6	99 -27	40.0 -28	158 41.2	-22 27.8	256 49.4	10 57.5	
4	189 38.4	98 -27	45.6 -25	188 45.2	-22 27.9	286 53.9	10 57.3	
6	218 36.0	97 -27	50.6 -23	218 49.2	-22 28.0	316 58.3	10 57.2	
8	247 33.5	97 -27	55.2 -20	248 53.2	-22 28.1	347 2.8	10 57.0	
10	276 30.9	96 -27	59.1 -17	278 57.2	-22 28.2	17 7.2	10 56.8	
12	305 28.1	95 -28	2.6 -14	309 1.1	-22 28.3	47 11.7	10 56.7	
14	334 25.2	95 -28	5.5 -12	339 5.1	-22 28.4	77 16.1	10 56.5	
16	3 22.1	94 -28	7.8 -9	9 9.1	-22 28.5	107 20.6	10 56.3	
18	32 18.9	94 -28	9.6 -6	39 13.1	-22 28.6	137 25.0	10 56.2	
20	61 15.6	93 -28	10.8 -3	69 17.1	-22 28.7	167 29.5	10 56.0	
22	90 12.2	93 -28	11.4 0	99 21.1	-22 28.8	197 33.9	10 55.8	
Δ				20	0	22	-1	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	14 14.1	.5	16.1	T _m	15 46	2.2	54.3 14.8
12	14 20.6	T _{m☉}	11 h 45.7 min	Starost	4.8 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	'	h	min	'	°	'
♀	8 54	.2	202	-4.4	♃	15 23	.0	104	-1.8
♂	4 53	.2	263	-.3	♄	8 52	.0	203	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 36.7	- 9 1.9	25 7.0	226 32.1	7 45.2	287 17.6	23 39.7
2	213 37.0	- 9 3.7	55 11.9	256 32.6	7 44.1	317 20.7	23 39.8
4	243 37.2	- 9 5.5	85 16.8	286 33.1	7 43.1	347 23.8	23 39.9
6	273 37.5	- 9 7.4	115 21.7	316 33.7	7 42.0	17 27.0	23 39.9
8	303 37.7	- 9 9.2	145 26.7	346 34.2	7 40.9	47 30.1	23 40.0
10	333 38.0	- 9 11.0	175 31.6	16 34.7	7 39.8	77 33.2	23 40.1
12	3 38.3	- 9 12.9	205 36.5	46 35.2	7 38.7	107 36.4	23 40.2
14	33 38.5	- 9 14.7	235 41.5	76 35.6	7 37.6	137 39.5	23 40.3
16	63 38.8	- 9 16.5	265 46.4	106 36.1	7 36.5	167 42.6	23 40.3
18	93 39.0	- 9 18.4	295 51.3	136 36.6	7 35.4	197 45.8	23 40.4
20	123 39.3	- 9 20.2	325 56.2	166 37.1	7 34.3	227 48.9	23 40.5
22	153 39.5	- 9 22.0	356 1.2	196 37.6	7 33.2	257 52.1	23 40.6
Δ	1	-9		2	-5	16	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 43	16 47	0 42	2 19	15 3	.8	18 17	3.7
55	6 33	16 57	0 37	2 1	13 51	1.5	19 29	3.1
50	6 24	17 6	0 33	1 47	13 9	1.7	20 11	2.8
45	6 18	17 13	0 30	1 38	12 39	1.8	20 40	2.7
40	6 12	17 18	0 27	1 30	12 16	1.9	21 3	2.6
35	6 7	17 23	0 26	1 24	11 57	2.0	21 22	2.5
30	6 3	17 28	0 24	1 20	11 40	2.0	21 39	2.5
20	5 55	17 35	0 22	1 14	11 12	2.1	22 6	2.4
10	5 49	17 42	0 21	1 10	10 48	2.2	22 30	2.3
0	5 42	17 49	0 21	1 10	10 26	2.2	22 52	2.2
10	5 36	17 55	0 21	1 11	10 4	2.3	23 13	2.1
20	5 29	18 3	0 22	1 15	9 40	2.3	23 37	2.0
30	5 20	18 11	0 24	1 23	9 12	2.4	.. .	.0
35	5 16	18 16	0 26	1 29	8 55	2.4	.. .	.0
40	5 10	18 21	0 28	1 36	8 36	2.5	.. .	.0
45	5 4	18 28	0 31	1 47	8 12	2.5	0 13	2.0
50	4 56	18 36	0 34	2 2	7 43	2.6	0 43	1.9
55	4 47	18 46	0 39	2 25	7 0	2.8	1 25	1.8
60	4 34	18 59	0 46	3 10	5 46	3.2	2 39	1.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	119 8.7	92 -28	11.5 2	129 25.1	-22 28.9	227 38.4	10 55.7	
2	148 5.2	92 -28	11.0 5	159 29.1	-22 29.0	257 42.9	10 55.5	
4	177 1.5	91 -28	9.9 8	189 33.0	-22 29.1	287 47.3	10 55.3	
6	205 57.8	91 -28	8.3 11	219 37.0	-22 29.2	317 51.8	10 55.2	
8	234 54.1	91 -28	6.1 14	249 41.0	-22 29.3	347 56.2	10 55.0	
10	263 50.3	91 -28	3.3 17	279 45.0	-22 29.4	18 .7	10 54.8	
12	292 46.5	91 -28	.0 20	309 49.0	-22 29.5	48 5.1	10 54.7	
14	321 42.6	91 -27	56.0 23	339 52.9	-22 29.6	78 9.6	10 54.5	
16	350 38.7	91 -27	51.5 25	9 56.9	-22 29.7	108 14.1	10 54.3	
18	19 34.8	91 -27	46.4 28	40 .9	-22 29.8	138 18.5	10 54.2	
20	48 30.9	91 -27	40.8 31	70 4.9	-22 29.9	168 23.0	10 54.0	
22	77 27.1	91 -27	34.5 34	100 8.9	-22 30.0	198 27.4	10 53.8	
Δ				20	0	22	-1	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	14 27.0	.5	16.1	T _m	16 39	2.2	54.7 14.9
12	14 33.1	T _{m☉}	11 h 45.5 min	Starost	5.8 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	'	h	min	'	°	'
♀	8 54	.2	201	-4.3	♃	15 20	.0	104	-1.8
♂	4 50	.2	262	-.3	♄	8 48	.0	203	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 39.8 - 9 23.8		26 6.1	226 38.1 7 32.0		287 55.3 23 40.6	
2	213 40.0 - 9 25.7		56 11.0	256 38.5 7 30.9		317 58.4 23 40.7	
4	243 40.3 - 9 27.5		86 16.0	286 39.0 7 29.8		348 1.6 23 40.8	
6	273 40.5 - 9 29.3		116 20.9	316 39.5 7 28.7		18 4.8 23 40.9	
8	303 40.8 - 9 31.1		146 25.8	346 39.9 7 27.5		48 7.9 23 41.0	
10	333 41.0 - 9 32.9		176 30.7	16 40.4 7 26.4		78 11.1 23 41.0	
12	3 41.3 - 9 34.8		206 35.7	46 40.9 7 25.3		108 14.3 23 41.1	
14	33 41.5 - 9 36.6		236 40.6	76 41.3 7 24.1		138 17.5 23 41.2	
16	63 41.7 - 9 38.4		266 45.5	106 41.8 7 23.0		168 20.7 23 41.3	
18	93 42.0 - 9 40.2		296 50.5	136 42.2 7 21.8		198 23.9 23 41.4	
20	123 42.2 - 9 42.0		326 55.4	166 42.6 7 20.7		228 27.1 23 41.4	
22	153 42.5 - 9 43.8		357 .3	196 43.1 7 19.5		258 30.3 23 41.5	
Δ	1 -9			2 -6		16 0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 46	16 44	0 42	2 19	15 24	.3	19 46	4.1
55	6 35	16 55	0 37	2 1	14 26	1.0	20 43	3.5
50	6 26	17 4	0 33	1 47	13 50	1.3	21 19	3.2
45	6 19	17 11	0 30	1 38	13 23	1.5	21 45	3.0
40	6 13	17 17	0 27	1 30	13 2	1.6	22 6	2.8
35	6 8	17 22	0 26	1 24	12 44	1.7	22 23	2.7
30	6 4	17 27	0 24	1 20	12 29	1.8	22 38	2.6
20	5 56	17 35	0 22	1 14	12 2	1.9	23 3	2.4
10	5 49	17 42	0 21	1 10	11 40	2.1	23 24	2.3
0	5 42	17 49	0 21	1 10	11 19	2.2	23 44	2.1
10	5 35	17 56	0 21	1 11	10 58	2.3	...	.0
20	5 28	18 3	0 22	1 15	10 35	2.4	...	.0
30	5 19	18 12	0 25	1 23	10 9	2.5	0 4	1.9
35	5 14	18 17	0 26	1 29	9 53	2.6	0 20	1.8
40	5 9	18 23	0 28	1 37	9 35	2.7	0 38	1.8
45	5 2	18 29	0 31	1 47	9 13	2.8	1 1	1.6
50	4 54	18 37	0 34	2 3	8 46	3.0	1 29	1.5
55	4 44	18 48	0 39	2 27	8 7	3.3	2 8	1.2
60	4 31	19 1	0 46	3 14	7 4	4.0	3 12	.6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	106 23.2 91 -27 27.7	37	130 12.8 -22 30.1		228 31.9	10 53.7		
2	135 19.4 91 -27 20.3	40	160 16.8 -22 30.2		258 36.4	10 53.5		
4	164 15.6 91 -27 12.3	43	190 20.8 -22 30.3		288 40.8	10 53.3		
6	193 11.8 91 -27 3.8	46	220 24.8 -22 30.3		318 45.3	10 53.2		
8	222 8.1 92 -26 54.7	48	250 28.7 -22 30.4		348 49.7	10 53.0		
10	251 4.5 92 -26 45.0	51	280 32.7 -22 30.5		18 54.2	10 52.8		
12	280 .9 92 -26 34.7	54	310 36.7 -22 30.6		48 58.7	10 52.7		
14	308 57.4 93 -26 23.9	57	340 40.6 -22 30.7		79 3.1	10 52.5		
16	337 54.0 93 -26 12.5	60	10 44.6 -22 30.8		109 7.6	10 52.3		
18	6 50.6 94 -26 .6	63	40 48.6 -22 30.9		139 12.1	10 52.2		
20	35 47.4 94 -25 48.1	65	70 52.6 -22 31.0		169 16.5	10 52.0		
22	64 44.3 95 -25 35.0	68	100 56.5 -22 31.1		199 21.0	10 51.8		
Δ			20 0		22	-1		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	14 39.3	.5	16.1	T _m	17 32	2.2	55.3 15.1
12	14 45.2	T _{m☉}	11 h 45.3 min	Starost	6.8 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 53	.2	201	-4.3	♄	15 17	.0	104	-1.8
♂	4 48	.2	262	-.4	♂	8 45	.0	202	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 42.7 - 9 45.7		27 5.2	226 43.5 7 18.4		288 33.5 23 41.6	
2	213 42.9 - 9 47.5		57 10.2	256 44.0 7 17.2		318 36.7 23 41.7	
4	243 43.2 - 9 49.3		87 15.1	286 44.4 7 16.1		348 39.9 23 41.8	
6	273 43.4 - 9 51.1		117 20.0	316 44.8 7 14.9		18 43.1 23 41.8	
8	303 43.7 - 9 52.9		147 25.0	346 45.2 7 13.7		48 46.3 23 41.9	
10	333 43.9 - 9 54.7		177 29.9	16 45.7 7 12.6		78 49.6 23 42.0	
12	3 44.1 - 9 56.5		207 34.8	46 46.1 7 11.4		108 52.8 23 42.1	
14	33 44.3 - 9 58.3		237 39.7	76 46.5 7 10.2		138 56.0 23 42.2	
16	63 44.6 -10 .1		267 44.7	106 46.9 7 9.0		168 59.3 23 42.2	
18	93 44.8 -10 1.9		297 49.6	136 47.3 7 7.8		199 2.5 23 42.3	
20	123 45.0 -10 3.7		327 54.5	166 47.7 7 6.6		229 5.8 23 42.4	
22	153 45.3 -10 5.5		357 59.5	196 48.1 7 5.4		259 9.0 23 42.5	
Δ	1 -9			2 -6		16 0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 48	16 41	0 43	2 19	15 32	.1	21 26	4.2
55	6 37	16 53	0 37	2 1	14 50	.7	22 7	3.7
50	6 28	17 2	0 33	1 48	14 21	1.0	22 35	3.3
45	6 20	17 9	0 30	1 38	13 58	1.2	22 56	3.1
40	6 14	17 15	0 27	1 30	13 40	1.4	23 13	2.9
35	6 9	17 21	0 26	1 24	13 25	1.5	23 27	2.8
30	6 4	17 26	0 24	1 20	13 12	1.6	23 40	2.6
20	5 56	17 34	0 22	1 14	12 49	1.8	...	.0
10	5 49	17 41	0 21	1 11	12 30	2.0	...	.0
0	5 42	17 48	0 21	1 10	12 11	2.1	...	.0
10	5 35	17 56	0 21	1 11	11 53	2.3	0 4	2.0
20	5 27	18 3	0 22	1 16	11 33	2.4	0 25	1.9
30	5 18	18 12	0 25	1 23	11 10	2.6	0 50	1.7
35	5 13	18 18	0 26	1 29	10 56	2.7	1 4	1.6
40	5 7	18 24	0 28	1 37	10 41	2.9	1 20	1.5
45	5 0	18 31	0 31	1 48	10 22	3.0	1 40	1.3
50	4 52	18 39	0 34	2 4	9 58	3.3	2 5	1.1
55	4 42	18 50	0 39	2 28	9 27	3.6	2 37	.8
60	4 28	19 4	0 47	3 19	8 40	4.2	3 26	.2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	93 41.2 95 -25 21.4	71	131 .5 -22 31.2		229 25.4	10 51.7		
2	122 38.3 96 -25 7.2	74	161 4.5 -22 31.3		259 29.9	10 51.5		
4	151 35.5 96 -24 52.5	76	191 8.4 -22 31.4		289 34.4	10 51.4		
6	180 32.8 97 -24 37.2	79	221 12.4 -22 31.5		319 38.8	10 51.2		
8	209 30.2 98 -24 21.4	82	251 16.4 -22 31.6		349 43.3	10 51.0		
10	238 27.7 98 -24 5.1	84	281 20.3 -22 31.7		19 47.8	10 50.9		
12	267 25.4 99 -23 48.2	87	311 24.3 -22 31.8		49 52.2	10 50.7		
14	296 23.2 100 -23 30.8	90	341 28.2 -22 31.9		79 56.7	10 50.5		
16	325 21.2 100 -23 12.9	92	11 32.2 -22 32.0		110 1.2	10 50.4		
18	354 19.2 101 -22 54.5	95	41 36.2 -22 32.1		140 5.7	10 50.2		
20	23 17.4 102 -22 35.6	97	71 40.1 -22 32.2		170 10.1	10 50.0		
22	52 15.8 102 -22 16.1	100	101 44.1 -22 32.3		200 14.6	10 49.9		
Δ			20 0		22	-1		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	14 51.0	.5	16.1	T _m	18 24	2.1	55.9 15.2
12	14 56.6	T _{m☉}	11 h 45.1 min	Starost	7.8 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 53	.2	200	-4.3	♄	15 14	.0	104	-1.8
♂	4 45	.2	261	-.4	♂	8 41	.0	202	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	183	45.5	-10	7.3	28	4.4	226	48.5	7	4.3	289	12.3	23	42.6	
2	213	45.7	-10	9.1	58	9.3	256	48.9	7	3.1	319	15.5	23	42.7	
4	243	45.9	-10	10.9	88	14.2	286	49.3	7	1.9	349	18.8	23	42.7	
6	273	46.2	-10	12.7	118	19.2	316	49.7	7	.6	19	22.0	23	42.8	
8	303	46.4	-10	14.5	148	24.1	346	50.1	6	59.4	49	25.3	23	42.9	
10	333	46.6	-10	16.3	178	29.0	16	50.5	6	58.2	79	28.6	23	43.0	
12	3	46.8	-10	18.1	208	33.9	46	50.8	6	57.0	109	31.9	23	43.1	
14	33	47.0	-10	19.9	238	38.9	76	51.2	6	55.8	139	35.1	23	43.1	
16	63	47.3	-10	21.7	268	43.8	106	51.6	6	54.6	169	38.4	23	43.2	
18	93	47.5	-10	23.5	298	48.7	136	52.0	6	53.4	199	41.7	23	43.3	
20	123	47.7	-10	25.3	328	53.7	166	52.3	6	52.1	229	45.0	23	43.4	
22	153	47.9	-10	27.1	358	58.6	196	52.7	6	50.9	259	48.3	23	43.5	
Δ		1		-9				2		-6			16		0

UT	MESEC				JUPITER			SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	81	14.3	103	-21	56.2	102	131	48.1	-22	32.4	230	19.1	10	49.7	
2	110	12.9	104	-21	35.7	105	161	52.0	-22	32.5	260	23.5	10	49.6	
4	139	11.7	105	-21	14.8	107	191	56.0	-22	32.6	290	28.0	10	49.4	
6	168	10.6	105	-20	53.3	110	221	59.9	-22	32.7	320	32.5	10	49.2	
8	197	9.6	106	-20	31.4	112	252	3.9	-22	32.8	350	36.9	10	49.1	
10	226	8.8	107	-20	9.0	114	282	7.8	-22	32.9	20	41.4	10	48.9	
12	255	8.2	107	-19	46.2	117	312	11.8	-22	33.0	50	45.9	10	48.8	
14	284	7.6	108	-19	22.9	119	342	15.7	-22	33.0	80	50.4	10	48.6	
16	313	7.2	109	-18	59.1	121	12	19.7	-22	33.1	110	54.8	10	48.4	
18	342	6.9	109	-18	34.9	123	42	23.7	-22	33.2	140	59.3	10	48.3	
20	11	6.8	110	-18	10.3	125	72	27.6	-22	33.3	171	3.8	10	48.1	
22	40	6.7	110	-17	45.2	128	102	31.6	-22	33.4	201	8.3	10	48.0	
Δ								20		0			22		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 51	16 38	0 43	2 19	15 35	.0	23 7	4.2
55	6 39	16 50	0 37	2 1	15 6	.5	23 35	3.7
50	6 29	16 60	0 33	1 48	14 44	.8	23 55	3.4
45	6 22	17 7	0 30	1 38	14 27	1.0	...	.0
40	6 15	17 14	0 27	1 30	14 13	1.2	...	.0
35	6 10	17 20	0 26	1 24	14 1	1.3	...	.0
30	6 5	17 24	0 24	1 20	13 51	1.5	...	.0
20	5 56	17 33	0 22	1 14	13 33	1.7	0 1	2.4
10	5 49	17 41	0 21	1 11	13 17	1.9	0 19	2.3
0	5 42	17 48	0 21	1 10	13 2	2.1	0 36	2.1
10	5 34	17 56	0 21	1 11	12 47	2.2	0 52	1.9
20	5 26	18 4	0 23	1 16	12 31	2.4	1 10	1.7
30	5 17	18 13	0 25	1 24	12 13	2.7	1 31	1.5
35	5 12	18 19	0 26	1 30	12 2	2.8	1 42	1.4
40	5 6	18 25	0 28	1 38	11 49	3.0	1 56	1.3
45	4 59	18 32	0 31	1 49	11 35	3.1	2 12	1.1
50	4 50	18 41	0 34	2 4	11 17	3.4	2 32	.9
55	4 39	18 52	0 39	2 30	10 53	3.7	2 57	.6
60	4 25	19 6	0 47	3 25	10 20	4.2	3 32	.1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s	'	h min	min	'	'	
00	15 2.1	.4	16.1	T _m	19 14	2.0	56.8	15.5
12	15 7.4	T _{m☉}	11 h 44.9 min	Starost	8.8 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 53	.2	199	-4.3	♄	15 11	.0	104	-1.8
♂	4 43	.2	261	-.4	♂	8 37	.0	202	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	183	48.1	-10	28.9	29	3.5	226	53.1	6	49.7	289	51.6	23	43.6	
2	213	48.3	-10	30.7	59	8.4	256	53.4	6	48.4	319	54.9	23	43.6	
4	243	48.5	-10	32.4	89	13.4	286	53.8	6	47.2	349	58.2	23	43.7	
6	273	48.7	-10	34.2	119	18.3	316	54.1	6	45.9	20	1.6	23	43.8	
8	303	49.0	-10	36.0	149	23.2	346	54.5	6	44.7	50	4.9	23	43.9	
10	333	49.2	-10	37.8	179	28.2	16	54.8	6	43.4	80	8.2	23	44.0	
12	3	49.4	-10	39.6	209	33.1	46	55.2	6	42.2	110	11.5	23	44.1	
14	33	49.6	-10	41.4	239	38.0	76	55.5	6	40.9	140	14.8	23	44.1	
16	63	49.8	-10	43.1	269	42.9	106	55.9	6	39.7	170	18.2	23	44.2	
18	93	50.0	-10	44.9	299	47.9	136	56.2	6	38.4	200	21.5	23	44.3	
20	123	50.2	-10	46.7	329	52.8	166	56.5	6	37.2	230	24.9	23	44.4	
22	153	50.4	-10	48.5	359	57.7	196	56.9	6	35.9	260	28.2	23	44.5	
Δ		1		-9				2		-6			17		0

UT	MESEC				JUPITER			SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	69	6.8	111	-17	19.7	130	132	35.5	-22	33.5	231	12.7	10	47.8	
2	98	7.0	112	-16	53.7	132	162	39.5	-22	33.6	261	17.2	10	47.6	
4	127	7.4	112	-16	27.4	134	192	43.4	-22	33.7	291	21.7	10	47.5	
6	156	7.8	113	-16	.6	136	222	47.4	-22	33.8	321	26.2	10	47.3	
8	185	8.3	113	-15	33.5	138	252	51.3	-22	33.9	351	30.6	10	47.2	
10	214	8.9	114	-15	5.9	140	282	55.3	-22	34.0	21	35.1	10	47.0	
12	243	9.7	114	-14	38.0	141	312	59.2	-22	34.1	51	39.6	10	46.8	
14	272	10.5	114	-14	9.7	143	343	3.1	-22	34.2	81	44.1	10	46.7	
16	301	11.3	115	-13	41.0	145	13	7.1	-22	34.3	111	48.6	10	46.5	
18	330	12.3	115	-13	12.0	147	43	11.0	-22	34.4	141	53.0	10	46.4	
20	359	13.3	115	-12	42.6	149	73	15.0	-22	34.5	171	57.5	10	46.2	
22	28	14.4	116	-12	12.9	150	103	18.9	-22	34.6	202	2.0	10	46.1	
Δ								20		0			22		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 53	16 35	0 43	2 19	15 36	.0	...	.0
55	6 41	16 48	0 37	2 1	15 17	.4	...	.0
50	6 31	16 58	0 33	1 48	15 3	.7	...	.0
45	6 23	17 6	0 30	1 38	14 51	.9	0 11	3.2
40	6 16	17 13	0 27	1 30	14 42	1.1	0 23	3.0
35	6 11	17 18	0 26	1 24	14 33	1.2	0 34	2.8
30	6 6	17 23	0 24	1 20	14 26	1.4	0 43	2.7
20	5 57	17 32	0 22	1 14	14 13	1.6	0 59	2.4
10	5 49	17 40	0 21	1 11	14 2	1.8	1 13	2.2
0	5 41	17 48	0 21	1 10	13 52	2.0	1 26	2.0
10	5 34	17 56	0 21	1 12	13 41	2.2	1 39	1.8
20	5 26	18 4	0 23	1 16	13 30	2.4	1 52	1.6
30	5 16	18 14	0 25	1 24	13 17	2.7	2 8	1.4
35	5 11	18 19	0 26	1 30	13 9	2.8	2 16	1.3
40	5 4	18 26	0 28	1 38	13 0	3.0	2 26	1.1
45	4 57	18 33	0 31	1 49	12 50	3.2	2 38	.9
50	4 48	18 42	0 35	2 5	12 38	3.4	2 52	.7
55	4 37	18 54	0 40	2 32	12 22	3.8	3 10	.4
60	4 22	19 9	0 47	3 31	12 1	4.2	3 34	.0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	15 12.6	.4	16.1	T _m	20 3	2.0	57.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 50.6	-10 50.2	30 2.7	226 57.2	6 34.6	290 31.6	23 44.6
2	213 50.8	-10 52.0	60 7.6	256 57.5	6 33.3	320 34.9	23 44.7
4	243 51.0	-10 53.8	90 12.5	286 57.8	6 32.1	350 38.3	23 44.7
6	273 51.2	-10 55.6	120 17.4	316 58.1	6 30.8	20 41.6	23 44.8
8	303 51.4	-10 57.3	150 22.4	346 58.5	6 29.5	50 45.0	23 44.9
10	333 51.6	-10 59.1	180 27.3	16 58.8	6 28.2	80 48.4	23 45.0
12	3 51.8	-11 .9	210 32.2	46 59.1	6 26.9	110 51.8	23 45.1
14	33 52.0	-11 2.6	240 37.2	76 59.4	6 25.6	140 55.1	23 45.2
16	63 52.1	-11 4.4	270 42.1	106 59.7	6 24.3	170 58.5	23 45.3
18	93 52.3	-11 6.2	300 47.0	137 .0	6 23.0	201 1.9	23 45.3
20	123 52.5	-11 7.9	330 51.9	167 .3	6 21.7	231 5.3	23 45.4
22	153 52.7	-11 9.7	0 56.9	197 .6	6 20.4	261 8.7	23 45.5
Δ	1	-9		2	-6	17	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 56	16 32	0 43	2 19	15 36	.0	0 49	4.2
55	6 43	16 46	0 37	2 1	15 26	.3	1 5	3.8
50	6 32	16 56	0 33	1 48	15 19	.6	1 17	3.5
45	6 24	17 4	0 30	1 38	15 13	.8	1 27	3.2
40	6 17	17 11	0 28	1 30	15 8	1.0	1 35	3.0
35	6 11	17 17	0 26	1 25	15 3	1.2	1 42	2.9
30	6 6	17 22	0 24	1 20	14 59	1.3	1 47	2.7
20	5 57	17 32	0 22	1 14	14 52	1.6	1 58	2.5
10	5 49	17 40	0 21	1 11	14 46	1.8	2 7	2.2
0	5 41	17 48	0 21	1 10	14 40	2.0	2 15	2.0
10	5 33	17 56	0 21	1 12	14 34	2.2	2 23	1.8
20	5 25	18 5	0 23	1 16	14 28	2.5	2 32	1.6
30	5 15	18 14	0 25	1 24	14 21	2.7	2 41	1.4
35	5 9	18 20	0 26	1 30	14 17	2.9	2 47	1.2
40	5 3	18 27	0 28	1 38	14 12	3.1	2 53	1.0
45	4 55	18 35	0 31	1 50	14 7	3.3	3 1	.9
50	4 46	18 44	0 35	2 6	14 0	3.5	3 10	.6
55	4 35	18 56	0 40	2 33	13 52	3.8	3 20	.4
60	4 19	19 11	0 48	3 39	13 41	4.2	3 35	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	57 15.5	116 -11	42.9	152	133 22.9	-22 34.7	232 6.5	10 45.9
2	86 16.7	116 -11	12.5	153	163 26.8	-22 34.8	262 11.0	10 45.7
4	115 17.9	116 -10	41.8	155	193 30.7	-22 34.9	292 15.4	10 45.6
6	144 19.2	116 -10	10.8	156	223 34.7	-22 35.0	322 19.9	10 45.4
8	173 20.4	116 -9	39.5	158	253 38.6	-22 35.0	352 24.4	10 45.3
10	202 21.7	116 -9	8.0	159	283 42.6	-22 35.1	22 28.9	10 45.1
12	231 23.0	116 -8	36.1	161	313 46.5	-22 35.2	52 33.4	10 45.0
14	260 24.3	116 -8	4.0	162	343 50.4	-22 35.3	82 37.9	10 44.8
16	289 25.6	116 -7	31.7	163	13 54.4	-22 35.4	112 42.4	10 44.6
18	318 26.9	116 -6	59.1	164	43 58.3	-22 35.5	142 46.8	10 44.5
20	347 28.1	116 -6	26.2	165	74 2.3	-22 35.6	172 51.3	10 44.3
22	16 29.3	116 -5	53.2	166	104 6.2	-22 35.7	202 55.8	10 44.2
Δ					20	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	s	'	h min	min	'	'
00	15 22.5	.4	16.1	T _m	20 52	2.0	58.7 16.0
12	15 27.1	T _{m☉}	11 h 44.6 min	Starost	10.8 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 52	.2	197	-4.3	♄	15 4	.0	103	-1.8
♂	4 37	.2	260	-.4	♂	8 30	.0	202	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 52.9	-11 11.5	31 1.8	227 .9	6 19.1	291 12.1	23 45.6
2	213 53.1	-11 13.2	61 6.7	257 1.2	6 17.8	321 15.5	23 45.7
4	243 53.3	-11 15.0	91 11.7	287 1.5	6 16.5	351 18.9	23 45.8
6	273 53.4	-11 16.7	121 16.6	317 1.8	6 15.2	21 22.3	23 45.9
8	303 53.6	-11 18.5	151 21.5	347 2.0	6 13.9	51 25.8	23 46.0
10	333 53.8	-11 20.2	181 26.4	17 2.3	6 12.6	81 29.2	23 46.0
12	3 54.0	-11 22.0	211 31.4	47 2.6	6 11.2	111 32.6	23 46.1
14	33 54.2	-11 23.8	241 36.3	77 2.9	6 9.9	141 36.0	23 46.2
16	63 54.3	-11 25.5	271 41.2	107 3.1	6 8.6	171 39.5	23 46.3
18	93 54.5	-11 27.3	301 46.1	137 3.4	6 7.2	201 42.9	23 46.4
20	123 54.7	-11 29.0	331 51.1	167 3.7	6 5.9	231 46.4	23 46.5
22	153 54.9	-11 30.8	1 56.0	197 3.9	6 4.6	261 49.8	23 46.6
Δ	1	-9		1	-7	17	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 58	16 30	0 43	2 20	15 36	.0	2 30	4.3
55	6 45	16 43	0 37	2 1	15 35	.4	2 36	3.9
50	6 34	16 54	0 33	1 48	15 34	.6	2 41	3.6
45	6 26	17 3	0 30	1 38	15 33	.9	2 44	3.3
40	6 18	17 10	0 28	1 30	15 33	1.1	2 47	3.1
35	6 12	17 16	0 26	1 25	15 32	1.2	2 50	2.9
30	6 7	17 21	0 24	1 20	15 31	1.4	2 52	2.8
20	5 57	17 31	0 22	1 14	15 31	1.6	2 57	2.5
10	5 49	17 40	0 21	1 11	15 30	1.9	3 0	2.3
0	5 41	17 48	0 21	1 10	15 29	2.1	3 3	2.1
10	5 33	17 56	0 21	1 12	15 28	2.3	3 7	1.8
20	5 24	18 5	0 23	1 16	15 28	2.6	3 10	1.6
30	5 14	18 15	0 25	1 24	15 27	2.8	3 14	1.4
35	5 8	18 21	0 26	1 30	15 26	3.0	3 16	1.2
40	5 1	18 28	0 28	1 39	15 26	3.2	3 19	1.0
45	4 54	18 36	0 31	1 50	15 25	3.4	3 22	.8
50	4 44	18 46	0 35	2 7	15 25	3.6	3 25	.6
55	4 32	18 58	0 40	2 35	15 24	3.9	3 29	.3
60	4 17	19 14	0 48	3 49	15 23	4.3	3 34	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	45 30.4	115 -5	19.9	167	134 10.1	-22 35.8	233 .3	10 44.0
2	74 31.5	115 -4	46.4	168	164 14.1	-22 35.9	263 4.8	10 43.9
4	103 32.5	115 -4	12.8	169	194 18.0	-22 36.0	293 9.3	10 43.7
6	132 33.5	114 -3	38.9	170	224 21.9	-22 36.1	323 13.8	10 43.6
8	161 34.3	114 -3	5.0	171	254 25.9	-22 36.2	353 18.2	10 43.4
10	190 35.1	113 -2	30.8	171	284 29.8	-22 36.3	23 22.7	10 43.2
12	219 35.7	113 -1	56.5	172	314 33.7	-22 36.4	53 27.2	10 43.1
14	248 36.3	112 -1	22.1	173	344 37.6	-22 36.5	83 31.7	10 42.9
16	277 36.7	111 -0	47.6	173	14 41.6	-22 36.6	113 36.2	10 42.8
18	306 36.9	111 -0	13.0	173	44 45.5	-22 36.6	143 40.7	10 42.6
20	335 37.1	110 0	21.7	174	74 49.4	-22 36.7	173 45.2	10 42.5
22	4 37.0	109 0	56.5	174	104 53.4	-22 36.8	203 49.7	10 42.3
Δ					20	0	22	-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	s	'	h min	min	'	'
00	15 31.7	.4	16.1	T _m	21 41	2.1	59.6 16.2
12	15 36.0	T _{m☉}	11 h 44.4 min	Starost	11.8 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 52	.2	196	-4.3	♄	15 1	.0	103	-1.8
♂	4 35	.2	260	-.4	♂	8 27	.0	202	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	55.0	-11	32.5	32	.9	227	4.2	6	3.2	291	53.3	23	46.7
2	213	55.2	-11	34.2	62	5.9	257	4.5	6	1.9	321	56.7	23	46.8
4	243	55.4	-11	36.0	92	10.8	287	4.7	6	.5	352	.2	23	46.9
6	273	55.5	-11	37.7	122	15.7	317	5.0	5	59.2	22	3.6	23	46.9
8	303	55.7	-11	39.5	152	20.6	347	5.2	5	57.8	52	7.1	23	47.0
10	333	55.9	-11	41.2	182	25.6	17	5.5	5	56.5	82	10.6	23	47.1
12	3	56.0	-11	43.0	212	30.5	47	5.7	5	55.1	112	14.1	23	47.2
14	33	56.2	-11	44.7	242	35.4	77	6.0	5	53.7	142	17.5	23	47.3
16	63	56.4	-11	46.4	272	40.4	107	6.2	5	52.4	172	21.0	23	47.4
18	93	56.5	-11	48.2	302	45.3	137	6.5	5	51.0	202	24.5	23	47.5
20	123	56.7	-11	49.9	332	50.2	167	6.7	5	49.6	232	28.0	23	47.6
22	153	56.8	-11	51.6	2	55.1	197	6.9	5	48.3	262	31.5	23	47.7
Δ		1		-9				1		-7		17		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 1	16 27	0 43	2 20	15 36	.0	4 12	4.4
55	6 47	16 41	0 37	2 1	15 44	.4	4 9	4.0
50	6 36	16 52	0 33	1 48	15 49	.7	4 6	3.7
45	6 27	17 1	0 30	1 38	15 54	1.0	4 4	3.4
40	6 20	17 8	0 28	1 31	15 58	1.2	4 2	3.2
35	6 13	17 15	0 26	1 25	16 2	1.3	4 0	3.0
30	6 8	17 21	0 24	1 20	16 5	1.5	3 59	2.9
20	5 58	17 30	0 22	1 14	16 10	1.8	3 57	2.6
10	5 49	17 39	0 21	1 11	16 15	2.0	3 55	2.4
0	5 41	17 48	0 21	1 10	16 19	2.2	3 53	2.1
10	5 33	17 56	0 22	1 12	16 24	2.4	3 51	1.9
20	5 23	18 5	0 23	1 16	16 29	2.7	3 49	1.7
30	5 13	18 16	0 25	1 24	16 35	2.9	3 46	1.4
35	5 7	18 22	0 26	1 31	16 38	3.1	3 45	1.3
40	5 0	18 29	0 28	1 39	16 42	3.3	3 44	1.1
45	4 52	18 37	0 31	1 51	16 46	3.5	3 42	.9
50	4 42	18 47	0 35	2 8	16 52	3.8	3 40	.7
55	4 30	19 0	0 40	2 37	16 58	4.1	3 37	.4
60	4 14	19 17	0 48	4 7	17 7	4.6	3 34	.0
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	33	36.8	108	1	31.3	174	134	57.3	-22	36.9	233	54.2	10	42.2
2	62	36.4	107	2	6.2	174	165	1.2	-22	37.0	263	58.7	10	42.0
4	91	35.9	106	2	41.1	175	195	5.1	-22	37.1	294	3.2	10	41.9
6	120	35.1	105	3	16.0	175	225	9.1	-22	37.2	324	7.6	10	41.7
8	149	34.1	104	3	50.9	174	255	13.0	-22	37.3	354	12.1	10	41.6
10	178	32.9	103	4	25.8	174	285	16.9	-22	37.4	24	16.6	10	41.4
12	207	31.5	102	5	.6	174	315	20.8	-22	37.5	54	21.1	10	41.2
14	236	29.8	100	5	35.4	174	345	24.7	-22	37.6	84	25.6	10	41.1
16	265	27.9	99	6	10.2	173	15	28.7	-22	37.7	114	30.1	10	40.9
18	294	25.7	98	6	44.8	173	45	32.6	-22	37.8	144	34.6	10	40.8
20	323	23.2	96	7	19.4	172	75	36.5	-22	37.9	174	39.1	10	40.6
22	352	20.5	95	7	53.9	172	105	40.4	-22	38.0	204	43.6	10	40.5
Δ							20		0		22			-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	15 40.3	.3	16.1	T _m	22 32	2.2	60.4	16.5	
12	15 44.3	T _{m☉}	11 h 44.3 min	Starost	12.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 52	.2	195	-4.3	♄	14 55	.0	103	-1.8
♂	4 32	.2	260	-.5	♂	8 23	.0	202	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	57.0	-11	53.4	33	.1	227	7.1	5	46.9	292	35.0	23	47.8
2	213	57.2	-11	55.1	63	5.0	257	7.4	5	45.5	322	38.5	23	47.9
4	243	57.3	-11	56.8	93	9.9	287	7.6	5	44.1	352	42.1	23	48.0
6	273	57.5	-11	58.6	123	14.9	317	7.8	5	42.7	22	45.6	23	48.1
8	303	57.6	-12	.3	153	19.8	347	8.0	5	41.3	52	49.1	23	48.2
10	333	57.8	-12	2.0	183	24.7	17	8.3	5	39.9	82	52.6	23	48.3
12	3	57.9	-12	3.7	213	29.6	47	8.5	5	38.5	112	56.2	23	48.3
14	33	58.1	-12	5.5	243	34.6	77	8.7	5	37.1	142	59.7	23	48.4
16	63	58.2	-12	7.2	273	39.5	107	8.9	5	35.7	173	3.2	23	48.5
18	93	58.4	-12	8.9	303	44.4	137	9.1	5	34.3	203	6.8	23	48.6
20	123	58.5	-12	10.6	333	49.4	167	9.3	5	32.9	233	10.3	23	48.7
22	153	58.7	-12	12.3	3	54.3	197	9.5	5	31.5	263	13.9	23	48.8
Δ		1		-9				1		-7		18		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 3	16 24	0 44	2 20	15 37	.1	5 59	4.7
55	6 49	16 39	0 38	2 2	15 54	.6	5 45	4.2
50	6 37	16 50	0 33	1 48	16 7	.9	5 35	3.8
45	6 28	16 59	0 30	1 38	16 17	1.2	5 26	3.6
40	6 21	17 7	0 28	1 31	16 26	1.4	5 19	3.4
35	6 14	17 14	0 26	1 25	16 34	1.5	5 13	3.2
30	6 8	17 20	0 24	1 20	16 41	1.7	5 8	3.0
20	5 58	17 30	0 22	1 14	16 52	1.9	4 59	2.7
10	5 49	17 39	0 21	1 11	17 3	2.2	4 51	2.5
0	5 41	17 48	0 21	1 10	17 13	2.4	4 44	2.3
10	5 32	17 56	0 22	1 12	17 23	2.6	4 37	2.1
20	5 23	18 6	0 23	1 16	17 33	2.8	4 29	1.8
30	5 12	18 17	0 25	1 25	17 46	3.1	4 21	1.6
35	5 6	18 23	0 26	1 31	17 53	3.2	4 16	1.4
40	4 59	18 30	0 29	1 40	18 1	3.4	4 10	1.2
45	4 50	18 39	0 31	1 51	18 11	3.6	4 4	1.0
50	4 40	18 49	0 35	2 9	18 22	3.9	3 56	.8
55	4 28	19 2	0 41	2 39	18 37	4.3	3 46	.5
60	4 11	19 19	0 49	:::	18 57	4.9	3 34	.0
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	21	17.5	93	8	28.2	171	135	44.3	-22	38.0	234	48.1	10	40.3
2	50	14.2	92	9	2.3	170	165	48.3	-22	38.1	264	52.6	10	40.2
4	79	10.5	90	9	36.3	169	195	52.2	-22	38.2	294	57.1	10	40.0
6	108	6.6	89	10	10.2	168	225	56.1	-22	38.3	325	1.6	10	39.9
8	137	2.3	87	10	43.8	167	256	.0	-22	38.4	355	6.1	10	39.7
10	165	57.7	85	11	17.2	166	286	3.9	-22	38.5	25	10.6	10	39.6
12	194	52.7	83	11	50.3	165	316	7.8	-22	38.6	55	15.1	10	39.4
14	223	47.4	82	12	23.2	163	346	11.8	-22	38.7	85	19.6	10	39.3
16	252	41.7	80	12	55.9	162	16	15.7	-22	38.8	115	24.1	10	39.1
18	281	35.7	78	13	28.2	160	46	19.6	-22	38.9	145	28.6	10	39.0
20	310	29.3	76	14	.2	158	76	23.5	-22	39.0	175	33.1	10	38.8
22	339	22.5	74	14	31.9	157	106	27.4	-22	39.1	205	37.6	10	38.7
Δ							20		0		23			-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	'	h min	min	'	'	
00	15 48.2	.3	16.1	T _m	23 26	2.4	61.1	16.6
12	15 51.8	T _{m☉}	11 h 44.1 min	Starost	13.8 d	Faza	☉	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	183	58.8	-12	14.1	33	59.2	227	9.7	5	30.1	293	17.4	23	48.9
2	213	58.9	-12	15.8	64	4.1	257	9.9	5	28.7	323	21.0	23	49.0
4	243	59.1	-12	17.5	94	9.1	287	10.1	5	27.3	353	24.6	23	49.1
6	273	59.2	-12	19.2	124	14.0	317	10.3	5	25.9	23	28.1	23	49.2
8	303	59.4	-12	20.9	154	18.9	347	10.5	5	24.4	53	31.7	23	49.3
10	333	59.5	-12	22.6	184	23.9	17	10.7	5	23.0	83	35.3	23	49.4
12	3	59.6	-12	24.3	214	28.8	47	10.9	5	21.6	113	38.9	23	49.5
14	33	59.8	-12	26.0	244	33.7	77	11.1	5	20.1	143	42.5	23	49.6
16	63	59.9	-12	27.7	274	38.6	107	11.2	5	18.7	173	46.1	23	49.7
18	94	.0	-12	29.4	304	43.6	137	11.4	5	17.3	203	49.7	23	49.8
20	124	.2	-12	31.1	334	48.5	167	11.6	5	15.8	233	53.3	23	49.9
22	154	.3	-12	32.8	4	53.4	197	11.8	5	14.4	263	56.9	23	50.0
Δ		1		-9				1		-7		18		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 6	16 21	0 44	2 20	15 39	.2	7 52	5.0
55	6 51	16 37	0 38	2 2	16 7	.9	7 26	4.3
50	6 39	16 48	0 33	1 48	16 29	1.2	7 7	3.9
45	6 30	16 58	0 30	1 38	16 45	1.5	6 52	3.6
40	6 22	17 6	0 28	1 31	16 59	1.7	6 40	3.4
35	6 15	17 13	0 26	1 25	17 11	1.8	6 29	3.3
30	6 9	17 19	0 24	1 20	17 21	2.0	6 20	3.1
20	5 59	17 29	0 22	1 14	17 39	2.2	6 5	2.9
10	5 49	17 39	0 21	1 11	17 55	2.4	5 52	2.7
0	5 41	17 47	0 21	1 10	18 10	2.6	5 39	2.5
10	5 32	17 56	0 22	1 12	18 25	2.7	5 27	2.3
20	5 22	18 6	0 23	1 17	18 41	2.9	5 13	2.1
30	5 11	18 17	0 25	1 25	18 59	3.1	4 58	1.8
35	5 5	18 24	0 27	1 31	19 10	3.3	4 50	1.7
40	4 57	18 31	0 29	1 40	19 23	3.4	4 40	1.5
45	4 49	18 40	0 31	1 52	19 38	3.6	4 29	1.3
50	4 38	18 51	0 35	2 10	19 56	3.9	4 15	1.0
55	4 25	19 4	0 41	2 42	20 20	4.3	3 58	.7
60	4 8	19 22	0 49	:::	20 54	5.1	3 35	.1
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	8	15.3	72	15	3.2	155	136	31.3	-22	39.2	235	42.1	10	38.5
2	37	7.8	70	15	34.2	153	166	35.2	-22	39.2	265	46.6	10	38.4
4	65	59.9	68	16	4.8	151	196	39.1	-22	39.3	295	51.1	10	38.2
6	94	51.5	66	16	35.0	149	226	43.0	-22	39.4	325	55.6	10	38.1
8	123	42.8	64	17	4.7	147	256	47.0	-22	39.5	356	.1	10	37.9
10	152	33.6	62	17	34.1	144	286	50.9	-22	39.6	26	4.6	10	37.8
12	181	24.1	60	18	2.9	142	316	54.8	-22	39.7	56	9.1	10	37.6
14	210	14.2	58	18	31.3	139	346	58.7	-22	39.8	86	13.7	10	37.5
16	239	3.8	56	18	59.2	137	17	2.6	-22	39.9	116	18.2	10	37.4
18	267	53.1	54	19	26.5	134	47	6.5	-22	40.0	146	22.7	10	37.2
20	296	41.9	52	19	53.3	131	77	10.4	-22	40.1	176	27.2	10	37.1
22	325	30.4	50	20	19.6	129	107	14.3	-22	40.2	206	31.7	10	36.9
Δ								20		0		23		-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	15 55.4	.3	16.1	T _m	1.0	61.4	16.7		
12	15 58.6	T _{m☉}	11 h 44.0 min	Starost	14.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	8 51	.2	193	-4.3	♄	14 52	.0	103	-1.7
♂	4 26	.2	259	-5	♂	8 16	.0	202	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	184	.4	-12	34.6	34	58.4	227	12.0	5	12.9	294	.5	23	50.1
2	214	.5	-12	36.2	65	3.3	257	12.1	5	11.5	324	4.1	23	50.2
4	244	.7	-12	37.9	95	8.2	287	12.3	5	10.0	354	7.7	23	50.3
6	274	.8	-12	39.6	125	13.1	317	12.5	5	8.6	24	11.3	23	50.4
8	304	.9	-12	41.3	155	18.1	347	12.6	5	7.1	54	15.0	23	50.5
10	334	1.0	-12	43.0	185	23.0	17	12.8	5	5.7	84	18.6	23	50.6
12	4	1.2	-12	44.7	215	27.9	47	12.9	5	4.2	114	22.3	23	50.7
14	34	1.3	-12	46.4	245	32.8	77	13.1	5	2.7	144	25.9	23	50.8
16	64	1.4	-12	48.1	275	37.8	107	13.2	5	1.3	174	29.5	23	50.9
18	94	1.5	-12	49.8	305	42.7	137	13.4	4	59.8	204	33.2	23	51.0
20	124	1.6	-12	51.5	335	47.6	167	13.5	4	58.3	234	36.9	23	51.1
22	154	1.7	-12	53.2	5	52.6	197	13.7	4	56.9	264	40.5	23	51.3
Δ		1		-8				1		-7		18		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 8	16 19	0 44	2 21	15 45	.6	9 51	4.9
55	6 53	16 34	0 38	2 2	16 28	1.4	9 9	4.1
50	6 41	16 47	0 33	1 49	16 58	1.7	8 41	3.8
45	6 31	16 56	0 30	1 39	17 21	1.9	8 19	3.5
40	6 23	17 4	0 28	1 31	17 39	2.1	8 2	3.4
35	6 16	17 11	0 26	1 25	17 55	2.2	7 48	3.2
30	6 10	17 18	0 24	1 20	18 8	2.3	7 35	3.1
20	5 59	17 29	0 23	1 14	18 32	2.4	7 14	2.9
10	5 50	17 38	0 21	1 11	18 52	2.6	6 55	2.8
0	5 41	17 47	0 21	1 10	19 11	2.7	6 38	2.6
10	5 31	17 57	0 22	1 12	19 30	2.8	6 21	2.5
20	5 22	18 7	0 23	1 17	19 51	2.9	6 3	2.3
30	5 10	18 18	0 25	1 25	20 15	3.1	5 42	2.1
35	5 4	18 25	0 27	1 32	20 29	3.1	5 30	2.0
40	4 56	18 33	0 29	1 40	20 45	3.3	5 16	1.9
45	4 47	18 42	0 32	1 53	21 5	3.4	4 60	1.7
50	4 36	18 52	0 35	2 11	21 30	3.6	4 40	1.4
55	4 23	19 6	0 41	2 44	22 4	3.9	4 14	1.0
60	4 5	19 24	0 50	:::	22 55	4.7	3 38	.3
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	354	18.4	48	20	45.3	126	137	18.2	-22	40.3	236	36.2	10	36.8
2	23	6.1	46	21	10.4	123	167	22.1	-22	40.3	266	40.7	10	36.6
4	51	53.3	44	21	34.9	119	197	26.0	-22	40.4	296	45.2	10	36.5
6	80	40.2	43	21	58.8	116	227	29.9	-22	40.5	326	49.7	10	36.3
8	109	26.8	41	22	22.1	113	257	33.8	-22	40.6	356	54.2	10	36.2
10	138	12.9	39	22	44.7	110	287	37.7	-22	40.7	26	58.7	10	36.0
12	166	58.7	37	23	6.6	106	317	41.6	-22	40.8	57	3.3	10	35.9
14	195	44.2	36	23	27.9	103	347	45.5	-22	40.9	87	7.8	10	35.7
16	224	29.3	34	23	48.4	99	17	49.4	-22	41.0	117	12.3	10	35.6
18	253	14.1	32	24	8.2	96	47	53.3	-22	41.1	147	16.8	10	35.5
20	281	58.6	31	24	27.4	92	77	57.2	-22	41.2	177	21.3	10	35.3
22	310	42.8	30	24	45.7	88	108	1.1	-22	41.3	207	25.8	10	35.2
Δ								19		0		23		-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	16 1.8	.2	16.1	T _m	0 24	2.6	61.4	16.7
12	16 4.7	T _{m☉}	11 h 43.9 min	Starost	15.8 d	Faza	☉	
PLANETE								
Pl.								

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	1.8	-12	54.9	35	57.5	227	13.8	4	55.4	294	44.2	23	51.4	
2	214	2.0	-12	56.5	66	2.4	257	14.0	4	53.9	324	47.9	23	51.5	
4	244	2.1	-12	58.2	96	7.3	287	14.1	4	52.4	354	51.5	23	51.6	
6	274	2.2	-12	59.9	126	12.3	317	14.3	4	50.9	24	55.2	23	51.7	
8	304	2.3	-13	1.6	156	17.2	347	14.4	4	49.4	54	58.9	23	51.8	
10	334	2.4	-13	3.3	186	22.1	17	14.5	4	47.9	85	2.6	23	51.9	
12	4	2.5	-13	4.9	216	27.1	47	14.7	4	46.4	115	6.3	23	52.0	
14	34	2.6	-13	6.6	246	32.0	77	14.8	4	44.9	145	10.0	23	52.1	
16	64	2.7	-13	8.3	276	36.9	107	14.9	4	43.4	175	13.7	23	52.2	
18	94	2.8	-13	10.0	306	41.8	137	15.0	4	41.9	205	17.4	23	52.3	
20	124	2.9	-13	11.6	336	46.8	167	15.2	4	40.4	235	21.1	23	52.4	
22	154	3.0	-13	13.3	6	51.7	197	15.3	4	38.9	265	24.8	23	52.5	
Δ		1		-8				1		-7			18		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 11	16 16	0 44	2 21	15 60	1.7	11 49	4.0
55	6 55	16 32	0 38	2 2	17 1	2.2	10 49	3.5
50	6 42	16 45	0 34	1 49	17 39	2.4	10 12	3.3
45	6 32	16 55	0 30	1 39	18 7	2.4	9 44	3.2
40	6 24	17 3	0 28	1 31	18 29	2.5	9 23	3.1
35	6 17	17 10	0 26	1 25	18 47	2.5	9 5	3.0
30	6 11	17 17	0 25	1 21	19 3	2.6	8 50	2.9
20	5 59	17 28	0 23	1 14	19 30	2.6	8 24	2.9
10	5 50	17 38	0 22	1 11	19 53	2.7	8 2	2.8
0	5 40	17 47	0 21	1 11	20 15	2.7	7 41	2.7
10	5 31	17 57	0 22	1 12	20 37	2.7	7 20	2.6
20	5 21	18 7	0 23	1 17	21 1	2.8	6 58	2.5
30	5 9	18 19	0 25	1 25	21 28	2.8	6 33	2.4
35	5 2	18 26	0 27	1 32	21 44	2.8	6 18	2.4
40	4 55	18 34	0 29	1 41	22 3	2.8	6 0	2.3
45	4 46	18 43	0 32	1 53	22 26	2.9	5 40	2.2
50	4 35	18 54	0 36	2 12	22 56	2.9	5 14	2.0
55	4 21	19 8	0 41	2 46	23 37	3.0	4 39	1.7
60	4 2	19 27	0 50	:::	...	.0	3 46	.9
S								

UT	MESEC				JUPITER			SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	339	26.7	28	25	3.4	84	138	5.0	-22	41.3	237	30.3	10	35.0	
2	8	10.3	27	25	20.2	80	168	8.9	-22	41.4	267	34.9	10	34.9	
4	36	53.7	26	25	36.3	77	198	12.8	-22	41.5	297	39.4	10	34.7	
6	65	36.9	25	25	51.6	73	228	16.7	-22	41.6	327	43.9	10	34.6	
8	94	19.9	24	26	6.1	69	258	20.6	-22	41.7	357	48.4	10	34.4	
10	123	2.7	23	26	19.8	65	288	24.5	-22	41.8	27	52.9	10	34.3	
12	151	45.3	22	26	32.8	61	318	28.3	-22	41.9	57	57.4	10	34.2	
14	180	27.7	22	26	44.9	56	348	32.2	-22	42.0	88	2.0	10	34.0	
16	209	10.0	21	26	56.1	52	18	36.1	-22	42.1	118	6.5	10	33.9	
18	237	52.3	21	27	6.6	48	48	40.0	-22	42.2	148	11.0	10	33.7	
20	266	34.4	20	27	16.2	44	78	43.9	-22	42.2	178	15.5	10	33.6	
22	295	16.5	20	27	25.0	40	108	47.8	-22	42.3	208	20.0	10	33.4	
Δ								19		0			23		-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s		h min	min	'	'		
00	16	7.5	.2	16.1	T _m	1 26	2.7	61.1	16.6
12	16	10.0	T _{m☉}	11 h 43.8 min	Starost	16.8 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 51	.2	191	-4.3	♄	14 46	.0	102	-1.7
	4 21	.2	259	-5	♅	8 9	.0	202	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	3.1	-13	15.0	36	56.6	227	15.4	4	37.4	295	28.6	23	52.7	
2	214	3.2	-13	16.6	67	1.6	257	15.5	4	35.9	325	32.3	23	52.8	
4	244	3.3	-13	18.3	97	6.5	287	15.6	4	34.4	355	36.0	23	52.9	
6	274	3.4	-13	20.0	127	11.4	317	15.7	4	32.9	25	39.8	23	53.0	
8	304	3.4	-13	21.6	157	16.3	347	15.8	4	31.4	55	43.5	23	53.1	
10	334	3.5	-13	23.3	187	21.3	17	16.0	4	29.8	85	47.3	23	53.2	
12	4	3.6	-13	24.9	217	26.2	47	16.1	4	28.3	115	51.0	23	53.3	
14	34	3.7	-13	26.6	247	31.1	77	16.2	4	26.8	145	54.8	23	53.4	
16	64	3.8	-13	28.3	277	36.1	107	16.3	4	25.2	175	58.5	23	53.5	
18	94	3.9	-13	29.9	307	41.0	137	16.4	4	23.7	206	2.3	23	53.7	
20	124	4.0	-13	31.6	337	45.9	167	16.5	4	22.2	236	6.1	23	53.8	
22	154	4.0	-13	33.2	7	50.8	197	16.6	4	20.6	266	9.9	23	53.9	
Δ		0		-8				1		-8			19		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 13	16 13	0 44	2 21	16 40	3.4	13 25	2.1
55	6 57	16 30	0 38	2 2	17 54	3.1	12 12	2.4
50	6 44	16 43	0 34	1 49	18 36	3.0	11 30	2.5
45	6 34	16 53	0 30	1 39	19 6	2.9	11 0	2.5
40	6 25	17 2	0 28	1 31	19 29	2.8	10 37	2.6
35	6 18	17 9	0 26	1 25	19 48	2.8	10 17	2.6
30	6 11	17 16	0 25	1 21	20 5	2.8	10 1	2.6
20	5 60	17 27	0 23	1 14	20 33	2.7	9 33	2.6
10	5 50	17 38	0 22	1 11	20 57	2.6	9 9	2.7
0	5 40	17 47	0 21	1 11	21 20	2.6	8 46	2.7
10	5 31	17 57	0 22	1 12	21 43	2.5	8 24	2.7
20	5 20	18 7	0 23	1 17	22 7	2.5	7 60	2.7
30	5 8	18 20	0 25	1 26	22 35	2.4	7 31	2.7
35	5 1	18 27	0 27	1 32	22 52	2.4	7 15	2.7
40	4 53	18 35	0 29	1 41	23 11	2.3	6 55	2.7
45	4 44	18 44	0 32	1 54	23 35	2.2	6 32	2.7
50	4 33	18 56	0 36	2 13	...	.0	6 2	2.7
55	4 18	19 10	0 42	2 49	...	.0	5 20	2.7
60	3 59	19 30	0 51	:::	0 50	3.1	4 8	2.6
S								

UT	MESEC				JUPITER			SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	323	58.6	20	27	33.0	36	138	51.7	-22	42.4	238	24.6	10	33.3	
2	352	40.6	20	27	40.1	31	168	55.6	-22	42.5	268	29.1	10	33.2	
4	21	22.6	20	27	46.4	27	198	59.5	-22	42.6	298	33.6	10	33.0	
6	50	4.7	21	27	51.8	23	229	3.3	-22	42.7	328	38.1	10	32.9	
8	78	46.9	21	27	56.4	19	259	7.2	-22	42.8	358	42.6	10	32.7	
10	107	29.1	22	28	.2	15	289	11.1	-22	42.9	28	47.2	10	32.6	
12	136	11.5	22	28	3.1	11	319	15.0	-22	43.0	58	51.7	10	32.5	
14	164	54.0	23	28	5.2	6	349	18.9	-22	43.0	88	56.2	10	32.3	
16	193	36.6	24	28	6.5	2	19	22.8	-22	43.1	119	.7	10	32.2	
18	222	19.4	25	28	7.0	-2	49	26.6	-22	43.2	149	5.3	10	32.0	
20	251	2.5	26	28	6.6	-6	79	30.5	-22	43.3	179	9.8	10	31.9	
22	279	45.7	28	28	5.5	-10	109	34.4	-22	43.4	209	14.3	10	31.8	
Δ								19		0			23		-1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s		h min	min	'	'
00	16						

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	4.1	-13	34.9	37	55.8	227	16.6	4	19.1	296	13.6	23	54.0	
2	214	4.2	-13	36.5	68	.7	257	16.7	4	17.5	326	17.4	23	54.1	
4	244	4.3	-13	38.2	98	5.6	287	16.8	4	16.0	356	21.2	23	54.2	
6	274	4.4	-13	39.8	128	10.6	317	16.9	4	14.5	26	25.0	23	54.4	
8	304	4.4	-13	41.5	158	15.5	347	17.0	4	12.9	56	28.8	23	54.5	
10	334	4.5	-13	43.1	188	20.4	17	17.1	4	11.3	86	32.6	23	54.6	
12	4	4.6	-13	44.7	218	25.3	47	17.2	4	9.8	116	36.4	23	54.7	
14	34	4.6	-13	46.4	248	30.3	77	17.2	4	8.2	146	40.3	23	54.8	
16	64	4.7	-13	48.0	278	35.2	107	17.3	4	6.7	176	44.1	23	54.9	
18	94	4.8	-13	49.7	308	40.1	137	17.4	4	5.1	206	47.9	23	55.1	
20	124	4.8	-13	51.3	338	45.0	167	17.4	4	3.5	236	51.7	23	55.2	
22	154	4.9	-13	52.9	8	50.0	197	17.5	4	2.0	266	55.6	23	55.3	
Δ		0		-8			0			-8		19			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 16	16 10	0 45	2 22	18 3	4.3	14 15	.8
55	6 59	16 28	0 38	2 3	19 8	3.6	13 10	1.5
50	6 46	16 41	0 34	1 49	19 47	3.3	12 30	1.7
45	6 35	16 52	0 30	1 39	20 15	3.1	12 1	1.9
40	6 26	17 1	0 28	1 31	20 37	3.0	11 38	2.0
35	6 19	17 8	0 26	1 25	20 56	2.9	11 20	2.1
30	6 12	17 15	0 25	1 21	21 11	2.8	11 3	2.2
20	6 0	17 27	0 23	1 15	21 38	2.6	10 36	2.3
10	5 50	17 37	0 22	1 11	22 1	2.5	10 12	2.4
0	5 40	17 47	0 21	1 11	22 22	2.4	9 50	2.5
10	5 30	17 57	0 22	1 13	22 44	2.3	9 28	2.6
20	5 20	18 8	0 23	1 17	23 6	2.2	9 4	2.7
30	5 7	18 20	0 25	1 26	23 33	2.0	8 36	2.8
35	5 0	18 28	0 27	1 33	23 48	1.9	8 20	2.9
40	4 52	18 36	0 29	1 42	.. .	.0	8 0	2.9
45	4 42	18 46	0 32	1 55	.. .	.0	7 37	3.0
50	4 31	18 58	0 36	2 15	0 5	2.1	7 7	3.2
55	4 16	19 13	0 42	2 52	0 48	1.9	6 24	3.4
60	3 57	19 32	0 51	:::	2 4	1.2	5 9	4.2
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	308	29.2	29	28	3.5	-14	139	38.3	-22	43.5	239	18.8	10	31.6	
2	337	13.0	30	28	.7	-18	169	42.2	-22	43.6	269	23.4	10	31.5	
4	5	57.1	32	27	57.2	-22	199	46.1	-22	43.7	299	27.9	10	31.3	
6	34	41.5	34	27	52.9	-25	229	49.9	-22	43.8	329	32.4	10	31.2	
8	63	26.2	35	27	47.8	-29	259	53.8	-22	43.8	359	36.9	10	31.1	
10	92	11.3	37	27	42.0	-33	289	57.7	-22	43.9	29	41.5	10	30.9	
12	120	56.7	39	27	35.4	-37	320	1.6	-22	44.0	59	46.0	10	30.8	
14	149	42.5	41	27	28.1	-40	350	5.4	-22	44.1	89	50.5	10	30.6	
16	178	28.7	43	27	20.1	-44	20	9.3	-22	44.2	119	55.1	10	30.5	
18	207	15.3	45	27	11.4	-47	50	13.2	-22	44.3	149	59.6	10	30.4	
20	236	2.4	47	27	1.9	-51	80	17.1	-22	44.4	180	4.1	10	30.2	
22	264	49.9	50	26	51.8	-54	110	20.9	-22	44.5	210	8.7	10	30.1	
Δ							19			0		23			-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	16	16.7	.1	16.1	T _m	3 35	2.5	59.6	16.3
12	16	18.4	T _{m☉}	11 h 43.7 min	Starost	18.8 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	8 51	.2	189	-4.3	♃	14 40	.0	102	-1.7
♂	4 15	.2	258	-6	♄	8 2	.0	201	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	5.0	-13	54.6	38	54.9	227	17.6	4	.4	296	59.4	23	55.4	
2	214	5.0	-13	56.2	68	59.8	257	17.7	3	58.8	327	3.3	23	55.5	
4	244	5.1	-13	57.8	99	4.8	287	17.7	3	57.2	357	7.1	23	55.7	
6	274	5.2	-13	59.4	129	9.7	317	17.8	3	55.7	27	11.0	23	55.8	
8	304	5.2	-14	1.1	159	14.6	347	17.8	3	54.1	57	14.8	23	55.9	
10	334	5.3	-14	2.7	189	19.5	17	17.9	3	52.5	87	18.7	23	56.0	
12	4	5.3	-14	4.3	219	24.5	47	17.9	3	50.9	117	22.6	23	56.2	
14	34	5.4	-14	5.9	249	29.4	77	18.0	3	49.3	147	26.5	23	56.3	
16	64	5.4	-14	7.6	279	34.3	107	18.1	3	47.7	177	30.3	23	56.4	
18	94	5.5	-14	9.2	309	39.3	137	18.1	3	46.1	207	34.2	23	56.5	
20	124	5.5	-14	10.8	339	44.2	167	18.1	3	44.5	237	38.1	23	56.7	
22	154	5.6	-14	12.4	9	49.1	197	18.2	3	42.9	267	42.0	23	56.8	
Δ		0		-8			0			-8		19			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 19	16 8	0 45	2 22	19 46	4.3	14 33	.3
55	7 1	16 26	0 38	2 3	20 34	3.7	13 45	.9
50	6 47	16 39	0 34	1 49	21 6	3.3	13 12	1.2
45	6 36	16 50	0 30	1 39	21 30	3.1	12 47	1.4
40	6 27	16 59	0 28	1 31	21 49	2.9	12 27	1.6
35	6 20	17 7	0 26	1 25	22 4	2.8	12 11	1.7
30	6 13	17 14	0 25	1 21	22 18	2.7	11 56	1.8
20	6 1	17 26	0 23	1 15	22 41	2.5	11 32	2.0
10	5 50	17 37	0 22	1 12	23 1	2.3	11 10	2.1
0	5 40	17 47	0 21	1 11	23 20	2.2	10 50	2.3
10	5 30	17 57	0 22	1 13	23 38	2.0	10 30	2.4
20	5 19	18 8	0 23	1 17	23 58	1.8	10 8	2.6
30	5 7	18 21	0 25	1 26	.. .	.0	9 43	2.7
35	4 59	18 29	0 27	1 33	.. .	.0	9 28	2.9
40	4 51	18 37	0 29	1 42	0 6	1.8	9 11	3.0
45	4 41	18 47	0 32	1 55	0 28	1.6	8 50	3.1
50	4 29	18 59	0 36	2 16	0 56	1.4	8 23	3.4
55	4 14	19 15	0 42	2 55	1 33	1.1	7 47	3.7
60	3 54	19 35	0 52	:::	2 32	.4	6 49	4.4
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	293	37.8	52	26	41.0	-57	140	24.8	-22	44.6	240	13.2	10	30.0	
2	322	26.2	54	26	29.6	-60	170	28.7	-22	44.6	270	17.7	10	29.8	
4	351	15.1	57	26	17.5	-64	200	32.6	-22	44.7	300	22.3	10	29.7	
6	20	4.5	59	26	4.8	-67	230	36.4	-22	44.8	330	26.8	10	29.5	
8	48	54.3	62	25	51.4	-70	260	40.3	-22	44.9	0	31.3	10	29.4	
10	77	44.7	64	25	37.5	-73	290	44.2	-22	45.0	30	35.9	10	29.3	
12	106	35.5	67	25	23.0	-75	320	48.0	-22	45.1	60	40.4	10	29.1	
14	135	26.9	69	25	7.9	-78	350	51.9	-22	45.2	90	44.9	10	29.0	
16	164	18.8	72	24	52.2	-81	20	55.8	-22	45.3	120	49.5	10	28.9	
18	193	11.1	74	24	36.0	-84	50	59.7	-22	45.3	150	54.0	10	28.7	
20	222	4.0	77	24	19.3	-86	81	3.5	-22	45.4	180	58.6	10	28.6	
22	250	57.5	80	24	2.0	-89	111	7.4	-22	45.5	211	3.1	10	28.5	
Δ							19			0		23			-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	16	20.1	.1	16.1	T _m	4 36	2.4	58.7	16.0

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{\vee}	δ_{\vee}	S_{\mars}	δ_{\mars}
h	°	'	°	'	°	'	°	'	°	'
0	184	5.6	-14	14.0	39	54.0	227	18.2	3	41.3
2	214	5.7	-14	15.6	69	59.0	257	18.3	3	39.7
4	244	5.7	-14	17.3	100	3.9	287	18.3	3	38.1
6	274	5.7	-14	18.9	130	8.8	317	18.4	3	36.5
8	304	5.8	-14	20.5	160	13.8	347	18.4	3	34.9
10	334	5.8	-14	22.1	190	18.7	17	18.4	3	33.3
12	4	5.9	-14	23.7	220	23.6	47	18.5	3	31.7
14	34	5.9	-14	25.3	250	28.5	77	18.5	3	30.1
16	64	5.9	-14	26.9	280	33.5	107	18.5	3	28.5
18	94	6.0	-14	28.5	310	38.4	137	18.5	3	26.8
20	124	6.0	-14	30.1	340	43.3	167	18.6	3	25.2
22	154	6.0	-14	31.7	10	48.3	197	18.6	3	23.6
Δ		0		-8			0			-8

UT	MESEC				JUPITER		SATURN								
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{\jup}	δ_{\jup}	S_{\sat}	δ_{\sat}							
h	°	'	°	'	°	'	°	'							
0	279	51.4	82	23	44.3	-91	141	11.3	-22	45.6	241	7.6	10	28.3	
2	308	45.8	85	23	26.0	-94	171	15.1	-22	45.7	271	12.2	10	28.2	
4	337	40.8	87	23	7.3	-96	201	19.0	-22	45.8	301	16.7	10	28.1	
6	6	36.3	90	22	48.1	-98	231	22.9	-22	45.9	331	21.2	10	27.9	
8	35	32.3	92	22	28.5	-100	261	26.7	-22	45.9	1	25.8	10	27.8	
10	64	28.8	95	22	8.5	-102	291	30.6	-22	46.0	31	30.3	10	27.6	
12	93	25.8	98	21	48.0	-104	321	34.4	-22	46.1	61	34.9	10	27.5	
14	122	23.3	100	21	27.1	-106	351	38.3	-22	46.2	91	39.4	10	27.4	
16	151	21.3	102	21	5.8	-108	21	42.2	-22	46.3	121	44.0	10	27.2	
18	180	19.8	105	20	44.2	-110	51	46.0	-22	46.4	151	48.5	10	27.1	
20	209	18.7	107	20	22.2	-112	81	49.9	-22	46.5	181	53.0	10	27.0	
22	238	18.2	110	19	59.8	-114	111	53.8	-22	46.5	211	57.6	10	26.9	
Δ							19			0		23			-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	7 21	16 5	0 45	2 22	21 29	4.0	14 40	.1
55	7 3	16 24	0 38	2 3	22 3	3.5	14 6	.6
50	6 49	16 38	0 34	1 49	22 26	3.2	13 41	.9
45	6 38	16 49	0 31	1 39	22 44	3.0	13 21	1.1
40	6 29	16 58	0 28	1 32	22 59	2.8	13 5	1.3
35	6 21	17 6	0 26	1 26	23 12	2.7	12 52	1.4
30	6 14	17 13	0 25	1 21	23 22	2.5	12 40	1.5
20	6 1	17 26	0 23	1 15	23 41	2.3	12 20	1.7
10	5 50	17 37	0 22	1 12	23 57	2.1	12 2	1.9
0	5 40	17 47	0 21	1 11	...	.0	11 45	2.1
10	5 30	17 58	0 22	1 13	...	.0	11 28	2.2
20	5 19	18 9	0 23	1 18	...	.0	11 10	2.4
30	5 6	18 22	0 25	1 26	0 21	1.7	10 49	2.6
35	4 58	18 30	0 27	1 33	0 34	1.5	10 37	2.7
40	4 50	18 38	0 29	1 43	0 49	1.4	10 22	2.9
45	4 40	18 49	0 32	1 56	1 8	1.2	10 5	3.1
50	4 27	19 1	0 36	2 17	1 30	1.0	9 44	3.3
55	4 12	19 17	0 42	2 59	1 60	.7	9 16	3.6
60	3 51	19 38	0 52	...	2 42	.1	8 36	4.2

SUNCE				MESEC					
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r		
h	min	s	s	h min	min	'	'		
00	16	22.6	.1	16.1	T_m	5 33	2.1	57.8	15.7
12	16	23.5	$T_{m\odot}$	11 h 43.6 min	Starost	20.8 d	Faza	☉	

PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
	h min	'	°			h min	'	°	
♀	8 51	.2	187	-4.3	♀	14 33	.0	101	-1.7
♂	4 8	.2	258	-.6	♂	7 54	.0	201	.8

2. NOVEMBAR

PETAK

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{\vee}	δ_{\vee}	S_{\mars}	δ_{\mars}
h	°	'	°	'	°	'	°	'	°	'
0	184	6.1	-14	33.3	40	53.2	227	18.6	3	22.0
2	214	6.1	-14	34.9	70	58.1	257	18.6	3	20.3
4	244	6.1	-14	36.5	101	3.0	287	18.6	3	18.7
6	274	6.1	-14	38.0	131	8.0	317	18.7	3	17.1
8	304	6.2	-14	39.6	161	12.9	347	18.7	3	15.4
10	334	6.2	-14	41.2	191	17.8	17	18.7	3	13.8
12	4	6.2	-14	42.8	221	22.8	47	18.7	3	12.1
14	34	6.2	-14	44.4	251	27.7	77	18.7	3	10.5
16	64	6.2	-14	46.0	281	32.6	107	18.7	3	8.8
18	94	6.3	-14	47.6	311	37.5	137	18.7	3	7.2
20	124	6.3	-14	49.1	341	42.5	167	18.7	3	5.5
22	154	6.3	-14	50.7	11	47.4	197	18.7	3	3.9
Δ		0		-8			0			-8

UT	MESEC				JUPITER		SATURN								
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{\jup}	δ_{\jup}	S_{\sat}	δ_{\sat}							
h	°	'	°	'	°	'	°	'							
0	267	18.1	112	19	37.1	-115	141	57.6	-22	46.6	242	2.1	10	26.7	
2	296	18.5	114	19	14.1	-117	172	1.5	-22	46.7	272	6.7	10	26.6	
4	325	19.4	117	18	50.7	-118	202	5.3	-22	46.8	302	11.2	10	26.5	
6	354	20.7	119	18	27.0	-120	232	9.2	-22	46.9	332	15.8	10	26.3	
8	23	22.5	121	18	3.1	-121	262	13.0	-22	47.0	2	20.3	10	26.2	
10	52	24.6	123	17	38.8	-123	292	16.9	-22	47.1	32	24.9	10	26.1	
12	81	27.3	125	17	14.3	-124	322	20.8	-22	47.1	62	29.4	10	25.9	
14	110	30.3	127	16	49.5	-125	352	24.6	-22	47.2	92	34.0	10	25.8	
16	139	33.7	129	16	24.5	-126	22	28.5	-22	47.3	122	38.5	10	25.7	
18	168	37.6	131	15	59.2	-127	52	32.3	-22	47.4	152	43.1	10	25.5	
20	197	41.8	133	15	33.7	-129	82	36.2	-22	47.5	182	47.6	10	25.4	
22	226	46.4	135	15	8.0	-130	112	40.0	-22	47.6	212	52.2	10	25.3	
Δ							19			0		23			-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	7 24	16 3	0 45	2 23	23 6	3.7	14 43	.0
55	7 5	16 22	0 39	2 3	23 27	3.3	14 19	.4
50	6 51	16 36	0 34	1 50	23 43	3.1	14 2	.7
45	6 39	16 47	0 31	1 39	23 56	2.9	13 47	.9
40	6 30	16 57	0 28	1 32	...	.0	13 36	1.0
35	6 21	17 5	0 26	1 26	...	.0	13 26	1.2
30	6 14	17 13	0 25	1 21	...	.0	13 17	1.3
20	6 2	17 25	0 23	1 15	...	.0	13 1	1.5
10	5 51	17 36	0 22	1 12	...	.0	12 48	1.7
0	5 40	17 47	0 21	1 11	0 12	2.0	12 35	1.9
10	5 30	17 58	0 22	1 13	0 27	1.8	12 22	2.1
20	5 18	18 9	0 23	1 18	0 42	1.6	12 8	2.2
30	5 5	18 23	0 25	1 27	1 0	1.4	11 52	2.5
35	4 57	18 31	0 27	1 34	1 11	1.3	11 43	2.6
40	4 48	18 39	0 29	1 43	1 23	1.1	11 32	2.7
45	4 38	18 50	0 32	1 57	1 37	1.0	11 19	2.9
50	4 26	19 3	0 37	2 18	1 54	.7	11 4	3.2
55	4 10	19 19	0 43	3 2	2 16	.5	10 44	3.5
60	3 48	19 40	0 53	...	2 45	.0	10 17	3.9

SUNCE				MESEC					
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r		
h	min	s	s	h min	min	'	'		
00	16	24.4	.0	16.1	T_m	6 23	2.0	56.9	15.5
12	16	24.9	$T_{m\odot}$	11 h 43.6 min	Starost	21.8 d	Faza	☉	

PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
	h min	'	°			h min	'	°	
♀	8 51	.2	186	-4.2	♀	14 30	.0	101	-1.7
♂	4 5	.2	258	-.6	♂	7 51	.0	201	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	°	'	°	'	°	'			
0	184	6.3	-14	52.3	41	52.3	227	18.7	3	2.2	299	21.1	24	.1
2	214	6.3	-14	53.9	71	57.3	257	18.7	3	.6	329	25.2	24	.2
4	244	6.3	-14	55.4	102	2.2	287	18.7	2	58.9	359	29.2	24	.4
6	274	6.3	-14	57.0	132	7.1	317	18.7	2	57.3	29	33.3	24	.5
8	304	6.3	-14	58.6	162	12.0	347	18.7	2	55.6	59	37.3	24	.7
10	334	6.3	-15	.1	192	17.0	17	18.7	2	53.9	89	41.4	24	.8
12	4	6.3	-15	1.7	222	21.9	47	18.6	2	52.3	119	45.4	24	.9
14	34	6.3	-15	3.3	252	26.8	77	18.6	2	50.6	149	49.5	24	1.1
16	64	6.3	-15	4.8	282	31.7	107	18.6	2	48.9	179	53.6	24	1.2
18	94	6.3	-15	6.4	312	36.7	137	18.6	2	47.2	209	57.6	24	1.4
20	124	6.3	-15	7.9	342	41.6	167	18.6	2	45.6	240	1.7	24	1.5
22	154	6.3	-15	9.5	12	46.5	197	18.6	2	43.9	270	5.8	24	1.7
Δ		0		-8			0			-8		20		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 26	16 0	0 46	2 23	...	.0	14 44	.0
55	7 7	16 20	0 39	2 4	...	.0	14 29	.3
50	6 52	16 34	0 34	1 50	...	.0	14 18	.6
45	6 41	16 46	0 31	1 40	...	.0	14 8	.7
40	6 31	16 56	0 28	1 32	0 7	2.7	14 1	.9
35	6 22	17 4	0 26	1 26	0 16	2.5	13 54	1.1
30	6 15	17 12	0 25	1 21	0 23	2.4	13 48	1.2
20	6 2	17 25	0 23	1 15	0 36	2.2	13 38	1.4
10	5 51	17 36	0 22	1 12	0 48	2.0	13 29	1.6
0	5 40	17 47	0 21	1 11	0 59	1.8	13 20	1.8
10	5 29	17 58	0 22	1 13	1 10	1.6	13 11	1.9
20	5 18	18 10	0 23	1 18	1 21	1.4	13 2	2.1
30	5 4	18 23	0 25	1 27	1 34	1.2	12 51	2.3
35	4 56	18 31	0 27	1 34	1 42	1.1	12 45	2.5
40	4 47	18 41	0 29	1 44	1 50	1.0	12 38	2.6
45	4 37	18 51	0 32	1 58	1 60	.8	12 29	2.8
50	4 24	19 4	0 37	2 20	2 12	.6	12 19	3.0
55	4 8	19 21	0 43	3 6	2 27	.3	12 7	3.3
60	3 46	19 43	0 53	:::	2 46	.0	11 50	3.6
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	255	51.4	137	14	42.1	-131	142	43.9	-22	47.7	242	56.7	10	25.1
2	284	56.8	139	14	16.0	-132	172	47.7	-22	47.7	273	1.3	10	25.0
4	314	2.5	140	13	49.7	-132	202	51.6	-22	47.8	303	5.8	10	24.9
6	343	8.5	142	13	23.2	-133	232	55.4	-22	47.9	333	10.4	10	24.8
8	12	14.9	144	12	56.5	-134	262	59.3	-22	48.0	3	14.9	10	24.6
10	41	21.6	145	12	29.7	-135	293	3.1	-22	48.1	33	19.5	10	24.5
12	70	28.6	147	12	2.7	-136	323	7.0	-22	48.2	63	24.0	10	24.4
14	99	35.9	148	11	35.5	-136	353	10.8	-22	48.2	93	28.6	10	24.2
16	128	43.6	149	11	8.3	-137	23	14.7	-22	48.3	123	33.1	10	24.1
18	157	51.4	151	10	40.9	-138	53	18.5	-22	48.4	153	37.7	10	24.0
20	186	59.6	152	10	13.3	-138	83	22.4	-22	48.5	183	42.3	10	23.9
22	216	8.0	153	9	45.7	-139	113	26.2	-22	48.6	213	46.8	10	23.7
Δ							19			0		23		-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	16 25.4	.0	16.1	T _m	7 10	1.8	56.1	15.3	
12	16 25.5			T _{m☉}	11 h 43.6 min		Starost 22.8 d	Faza ☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	8 51	.2	185	-4.2	♃	14 27	.0	101	-1.7
♂	4 2	.2	257	-7	♄	7 47	.0	201	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	°	'	°	'	°	'			
0	184	6.3	-15	11.1	42	51.5	227	18.5	2	42.2	300	9.9	24	1.8
2	214	6.3	-15	12.6	72	56.4	257	18.5	2	40.5	330	14.0	24	2.0
4	244	6.3	-15	14.2	103	1.3	287	18.5	2	38.8	0	18.1	24	2.1
6	274	6.3	-15	15.7	133	6.2	317	18.4	2	37.1	30	22.2	24	2.3
8	304	6.3	-15	17.3	163	11.2	347	18.4	2	35.5	60	26.3	24	2.4
10	334	6.3	-15	18.8	193	16.1	17	18.4	2	33.8	90	30.4	24	2.5
12	4	6.3	-15	20.3	223	21.0	47	18.4	2	32.1	120	34.6	24	2.7
14	34	6.3	-15	21.9	253	26.0	77	18.3	2	30.4	150	38.7	24	2.8
16	64	6.2	-15	23.4	283	30.9	107	18.3	2	28.7	180	42.8	24	3.0
18	94	6.2	-15	25.0	313	35.8	137	18.2	2	27.0	210	47.0	24	3.1
20	124	6.2	-15	26.5	343	40.7	167	18.2	2	25.3	240	51.1	24	3.3
22	154	6.2	-15	28.0	13	45.7	197	18.2	2	23.6	270	55.3	24	3.5
Δ		0		-8			0			-8		21		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 29	15 57	0 46	2 24	0 37	3.5	14 44	.0
55	7 9	16 17	0 39	2 4	0 48	3.2	14 36	.3
50	6 54	16 33	0 34	1 50	0 58	2.9	14 31	.5
45	6 42	16 45	0 31	1 40	1 5	2.7	14 26	.7
40	6 32	16 55	0 28	1 32	1 11	2.6	14 22	.8
35	6 23	17 3	0 26	1 26	1 16	2.4	14 19	1.0
30	6 16	17 11	0 25	1 21	1 21	2.3	14 16	1.1
20	6 3	17 24	0 23	1 15	1 29	2.1	14 11	1.3
10	5 51	17 36	0 22	1 12	1 36	1.9	14 6	1.5
0	5 40	17 47	0 21	1 11	1 42	1.7	14 2	1.7
10	5 29	17 58	0 22	1 13	1 49	1.5	13 58	1.9
20	5 17	18 10	0 23	1 18	1 56	1.3	13 53	2.0
30	5 3	18 24	0 25	1 27	2 4	1.1	13 47	2.3
35	4 55	18 32	0 27	1 34	2 8	1.0	13 44	2.4
40	4 46	18 42	0 29	1 44	2 13	.9	13 41	2.5
45	4 35	18 53	0 33	1 58	2 19	.7	13 37	2.7
50	4 22	19 6	0 37	2 21	2 26	.5	13 31	2.9
55	4 5	19 23	0 43	3 11	2 35	.3	13 25	3.2
60	3 43	19 46	0 54	:::	2 46	.0	13 17	3.5
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	245	16.7	155	9	18.0	-139	143	30.1	-22	48.7	243	51.4	10	23.6
2	274	25.7	156	8	50.1	-140	173	33.9	-22	48.8	273	55.9	10	23.5
4	303	34.8	157	8	22.2	-140	203	37.8	-22	48.8	304	.5	10	23.4
6	332	44.2	158	7	54.2	-140	233	41.6	-22	48.9	334	5.1	10	23.2
8	1	53.8	159	7	26.1	-141	263	45.5	-22	49.0	4	9.6	10	23.1
10	31	3.6	160	6	57.9	-141	293	49.3	-22	49.1	34	14.2	10	23.0
12	60	13.6	161	6	29.7	-141	323	53.1	-22	49.2	64	18.7	10	22.9
14	89	23.8	162	6	1.4	-142	353	57.0	-22	49.2	94	23.3	10	22.7
16	118	34.1	163	5	33.1	-142	24	.8	-22	49.3	124	27.9	10	22.6
18	147	44.6	163	5	4.7	-142	54	4.7	-22	49.4	154	32.4	10	22.5
20	176	55.3	164	4	36.3	-142	84	8.5	-22	49.5	184	37.0	10	22.4
22	206	6.1	165	4	7.9	-142	114	12.3	-22	49.6	214	41.6	10	22.2
Δ							19			0		23		-1

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	16 25.5	.0	16.2	T _m	7 52	1.7	55.5	15.1
12	16 25.2			T _{m☉}	11 h 43.6 min		Starost 23.8 d	Faza ☉
PLANETE								
Pl.	T							

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	6.2	-15	29.6	43	50.6	227	18.1	2	21.9	300	59.4	24	3.6	
2	214	6.1	-15	31.1	73	55.5	257	18.1	2	20.2	331	3.6	24	3.8	
4	244	6.1	-15	32.6	104	5	287	18.0	2	18.4	1	7.8	24	3.9	
6	274	6.1	-15	34.2	134	5.4	317	18.0	2	16.7	31	11.9	24	4.1	
8	304	6.1	-15	35.7	164	10.3	347	17.9	2	15.0	61	16.1	24	4.2	
10	334	6.0	-15	37.2	194	15.2	17	17.9	2	13.3	91	20.3	24	4.4	
12	4	6.0	-15	38.7	224	20.2	47	17.8	2	11.6	121	24.5	24	4.5	
14	34	6.0	-15	40.3	254	25.1	77	17.7	2	9.9	151	28.7	24	4.7	
16	64	5.9	-15	41.8	284	30.0	107	17.7	2	8.1	181	32.9	24	4.8	
18	94	5.9	-15	43.3	314	35.0	137	17.6	2	6.4	211	37.1	24	5.0	
20	124	5.9	-15	44.8	344	39.9	167	17.6	2	4.7	241	41.3	24	5.2	
22	154	5.8	-15	46.3	14	44.8	197	17.5	2	3.0	271	45.5	24	5.3	
Δ		0		-8			0			-9		21			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 31	15 55	0 46	2 24	2 1	3.4	14 43	.0
55	7 11	16 15	0 39	2 4	2 5	3.1	14 43	.3
50	6 56	16 31	0 34	1 50	2 8	2.9	14 43	.5
45	6 43	16 43	0 31	1 40	2 11	2.7	14 43	.7
40	6 33	16 54	0 28	1 32	2 13	2.5	14 43	.8
35	6 24	17 2	0 26	1 26	2 14	2.4	14 43	1.0
30	6 17	17 10	0 25	1 21	2 16	2.2	14 43	1.1
20	6 3	17 24	0 23	1 15	2 19	2.0	14 43	1.3
10	5 51	17 36	0 22	1 12	2 21	1.8	14 42	1.5
0	5 40	17 47	0 21	1 11	2 23	1.7	14 42	1.7
10	5 29	17 59	0 22	1 13	2 25	1.5	14 42	1.8
20	5 17	18 11	0 23	1 18	2 28	1.3	14 42	2.0
30	5 3	18 25	0 25	1 27	2 31	1.1	14 42	2.2
35	4 54	18 33	0 27	1 35	2 32	1.0	14 42	2.4
40	4 45	18 43	0 30	1 45	2 34	.8	14 42	2.5
45	4 34	18 54	0 33	1 59	2 36	.7	14 41	2.7
50	4 20	19 8	0 37	2 23	2 38	.5	14 41	2.9
55	4 3	19 25	0 44	3 16	2 42	.3	14 41	3.1
60	3 40	19 49	0 55	:::	2 45	.0	14 41	3.4
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	235	17.0	165	3	39.4	-142	144	16.2	-22	49.7	244	46.1	10	22.1		
2	264	28.1	166	3	10.9	-142	174	20.0	-22	49.7	274	50.7	10	22.0		
4	293	39.3	166	2	42.4	-142	204	23.9	-22	49.8	304	55.2	10	21.9		
6	322	50.6	167	2	13.9	-142	234	27.7	-22	49.9	334	59.8	10	21.7		
8	352	2.0	167	1	45.4	-142	264	31.5	-22	50.0	5	4.4	10	21.6		
10	21	13.5	168	1	17.0	-142	294	35.4	-22	50.1	35	8.9	10	21.5		
12	50	25.0	168	0	48.5	-142	324	39.2	-22	50.2	65	13.5	10	21.4		
14	79	36.6	168	0	20.0	-142	354	43.0	-22	50.2	95	18.1	10	21.2		
16	108	48.3	169	-0	8.4	-142	24	46.9	-22	50.3	125	22.7	10	21.1		
18	138	.1	169	-0	36.8	-142	54	50.7	-22	50.4	155	27.2	10	21.0		
20	167	11.8	169	-1	5.1	-142	84	54.6	-22	50.5	185	31.8	10	20.9		
22	196	23.7	169	-1	33.4	-141	114	58.4	-22	50.6	215	36.4	10	20.7		
Δ							19			0		23				-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	16 24.8	-.1	16.2	T _m	8 33	1.6	54.9	15.0	
12	16 24.1			T _{m☉} 11 h 43.6 min			Starost 24.8 d	Faza ●	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 51	.2	183	-4.2	♄	14 21	.0	100	-1.7
♂	3 55	.2	257	-.7	♂	7 40	.0	201	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	5.8	-15	47.9	44	49.7	227	17.4	2	1.2	301	49.8	24	5.5	
2	214	5.7	-15	49.4	74	54.7	257	17.4	1	59.5	331	54.0	24	5.6	
4	244	5.7	-15	50.9	104	59.6	287	17.3	1	57.8	1	58.2	24	5.8	
6	274	5.7	-15	52.4	135	4.5	317	17.2	1	56.0	32	2.5	24	6.0	
8	304	5.6	-15	53.9	165	9.5	347	17.2	1	54.3	62	6.7	24	6.1	
10	334	5.6	-15	55.4	195	14.4	17	17.1	1	52.6	92	11.0	24	6.3	
12	4	5.5	-15	56.9	225	19.3	47	17.0	1	50.8	122	15.2	24	6.5	
14	34	5.5	-15	58.4	255	24.2	77	16.9	1	49.1	152	19.5	24	6.6	
16	64	5.4	-15	59.9	285	29.2	107	16.8	1	47.3	182	23.8	24	6.8	
18	94	5.4	-16	1.4	315	34.1	137	16.8	1	45.6	212	28.0	24	7.0	
20	124	5.3	-16	2.9	345	39.0	167	16.7	1	43.8	242	32.3	24	7.1	
22	154	5.2	-16	4.4	15	43.9	197	16.6	1	42.1	272	36.6	24	7.3	
Δ		0		-8			0			-9		21			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 34	15 52	0 46	2 25	3 24	3.4	14 42	.0
55	7 13	16 14	0 39	2 5	3 20	3.1	14 49	.3
50	6 57	16 29	0 34	1 51	3 17	2.9	14 55	.5
45	6 45	16 42	0 31	1 40	3 15	2.7	14 59	.7
40	6 34	16 53	0 28	1 32	3 13	2.5	15 3	.9
35	6 25	17 2	0 26	1 26	3 11	2.4	15 6	1.0
30	6 17	17 10	0 25	1 22	3 10	2.2	15 9	1.1
20	6 4	17 23	0 23	1 15	3 7	2.0	15 14	1.3
10	5 52	17 36	0 22	1 12	3 5	1.8	15 18	1.5
0	5 40	17 47	0 22	1 12	3 3	1.7	15 22	1.7
10	5 29	17 59	0 22	1 14	3 1	1.5	15 26	1.8
20	5 16	18 11	0 23	1 18	2 59	1.3	15 30	2.0
30	5 2	18 26	0 26	1 28	2 57	1.1	15 35	2.2
35	4 53	18 34	0 27	1 35	2 55	1.0	15 38	2.4
40	4 44	18 44	0 30	1 45	2 54	.8	15 41	2.5
45	4 32	18 56	0 33	1 60	2 52	.7	15 45	2.7
50	4 19	19 10	0 37	2 24	2 50	.5	15 50	2.9
55	4 1	19 27	0 44	3 22	2 48	.3	15 55	3.1
60	3 38	19 51	0 55	:::	2 45	.0	16 3	3.5
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	225	35.5	169	-2	1.7	-141	145	2.2	-22	50.6	245	40.9	10	20.6		
2	254	47.4	169	-2	29.9	-141	175	6.1	-22	50.7	275	45.5	10	20.5		
4	283	59.2	169	-2	58.0	-140	205	9.9	-22	50.8	305	50.1	10	20.4		
6	313	11.1	169	-3	26.1	-140	235	13.7	-22	50.9	335	54.6	10	20.3		
8	342	22.9	169	-3	54.1	-140	265	17.5	-22	51.0	5	59.2	10	20.1		
10	11	34.8	169	-4	22.0	-139	295	21.4	-22	51.1	36	3.8	10	20.0		
12	40	46.6	169	-4	49.9	-139	325	25.2	-22	51.1	66	8.4	10	19.9		
14	69	58.3	169	-5	17.6	-138	355	29.0	-22	51.2	96	12.9	10	19.8		
16	99	10.1	168	-5	45.3	-138	25	32.9	-22	51.3	126	17.5	10	19.7		
18	128	21.8	168	-6	12.8	-137	55	36.7	-22	51.4	156	22.1	10	19.5		
20	157	33.4	168	-6	40.3	-137	85	40.5	-22	51.5	186	26.7	10	19.4		
22	186	44.9	167	-7	7.6	-136	115	44.3	-22	51.5	216	31.2	10	19.3		
Δ							19			0		23				-1

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS			
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'
0	184	5.2	-16	5.9	45 48.9	227	16.5	1 40.3	302	40.9	24	7.5
2	214	5.1	-16	7.3	75 53.8	257	16.4	1 38.6	332	45.2	24	7.6
4	244	5.1	-16	8.8	105 58.7	287	16.3	1 36.8	2 49.5	24	7.8	
6	274	5.0	-16	10.3	136 3.7	317	16.3	1 35.0	32 53.8	24	8.0	
8	304	4.9	-16	11.8	166 8.6	347	16.2	1 33.3	62 58.1	24	8.1	
10	334	4.9	-16	13.3	196 13.5	17 16.1	1 31.5	93 2.5	24	8.3		
12	4	4.8	-16	14.8	226 18.4	47 16.0	1 29.8	123 6.8	24	8.5		
14	34	4.7	-16	16.2	256 23.4	77 15.9	1 28.0	153 11.1	24	8.6		
16	64	4.7	-16	17.7	286 28.3	107 15.8	1 26.2	183 15.5	24	8.8		
18	94	4.6	-16	19.2	316 33.2	137 15.7	1 24.5	213 19.8	24	9.0		
20	124	4.5	-16	20.7	346 38.2	167 15.6	1 22.7	243 24.2	24	9.2		
22	154	4.5	-16	22.1	16 43.1	197 15.5	1 20.9	273 28.5	24	9.3		
Δ		0	-7			0	-9	22		1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 37	15 50	0 47	2 25	4 46	3.5	14 42	.0
55	7 15	16 12	0 39	2 5	4 34	3.1	14 56	.3
50	6 59	16 28	0 35	1 51	4 26	2.9	15 7	.6
45	6 46	16 41	0 31	1 40	4 18	2.7	15 16	.8
40	6 35	16 52	0 28	1 32	4 13	2.5	15 23	.9
35	6 26	17 1	0 26	1 26	4 7	2.4	15 30	1.1
30	6 18	17 9	0 25	1 22	4 3	2.3	15 35	1.2
20	6 4	17 23	0 23	1 15	3 55	2.0	15 45	1.4
10	5 52	17 35	0 22	1 12	3 49	1.9	15 54	1.6
0	5 40	17 47	0 22	1 12	3 43	1.7	16 2	1.7
10	5 28	17 59	0 22	1 14	3 37	1.5	16 10	1.9
20	5 16	18 12	0 23	1 19	3 30	1.4	16 19	2.1
30	5 1	18 27	0 26	1 28	3 23	1.1	16 29	2.3
35	4 53	18 35	0 27	1 35	3 19	1.0	16 35	2.4
40	4 43	18 45	0 30	1 46	3 14	.9	16 41	2.5
45	4 31	18 57	0 33	2 1	3 8	.7	16 49	2.7
50	4 17	19 11	0 37	2 26	3 2	.6	16 59	2.9
55	3 59	19 29	0 44	3 30	2 54	.3	17 10	3.2
60	3 35	19 54	0 56	:::	2 44	.0	17 26	3.6
S								

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	215	56.4	167	-7 34.8	-135	145	48.2	-22 51.6	246	35.8	10	19.2
2	245	7.8	167	-8 1.9	-135	175	52.0	-22 51.7	276	40.4	10	19.1
4	274	19.1	166	-8 28.8	-134	205	55.8	-22 51.8	306	45.0	10	18.9
6	303	30.3	166	-8 55.6	-133	235	59.7	-22 51.9	336	49.6	10	18.8
8	332	41.4	165	-9 22.3	-133	266	3.5	-22 51.9	6 54.1	10	18.7	
10	1	52.4	164	-9 48.8	-132	296	7.3	-22 52.0	36 58.7	10	18.6	
12	31	3.3	164	-10 15.2	-131	326	11.1	-22 52.1	67 3.3	10	18.5	
14	60	14.1	163	-10 41.4	-130	356	14.9	-22 52.2	97 7.9	10	18.4	
16	89	24.7	162	-11 7.4	-129	26 18.8	-22 52.2	127 12.5	10	18.2		
18	118	35.1	162	-11 33.3	-128	56 22.6	-22 52.3	157 17.1	10	18.1		
20	147	45.5	161	-11 59.0	-127	86 26.4	-22 52.4	187 21.6	10	18.0		
22	176	55.6	160	-12 24.5	-126	116 30.2	-22 52.5	217 26.2	10	17.9		
Δ						19	0	23		-1		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	'	h min	min	'	'		
00	16 20.9	-.1	16.2	T _m	9 52	1.7	54.2 14.8		
12	16 19.3	T _{m☉}	11 h 43.7 min	Starost	26.8 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♀	h min	'	°	°
♂	8 51	.2	181	-4.2	♃	14 15	.0	100	-1.7
♄	3 49	.2	257	-.7	♄	7 32	.0	201	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS			
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'
0	184	4.4	-16	23.6	46 48.0	227	15.4	1 19.1	303	32.9	24	9.5
2	214	4.3	-16	25.1	76 52.9	257	15.3	1 17.4	333	37.2	24	9.7
4	244	4.2	-16	26.5	106 57.9	287	15.2	1 15.6	3 41.6	24	9.9	
6	274	4.1	-16	28.0	137 2.8	317	15.0	1 13.8	33 46.0	24	10.0	
8	304	4.1	-16	29.5	167 7.7	347	14.9	1 12.0	63 50.4	24	10.2	
10	334	4.0	-16	30.9	197 12.7	17 14.8	1 10.2	93 54.8	24	10.4		
12	4	3.9	-16	32.4	227 17.6	47 14.7	1 8.5	123 59.2	24	10.6		
14	34	3.8	-16	33.8	257 22.5	77 14.6	1 6.7	154 3.6	24	10.8		
16	64	3.7	-16	35.3	287 27.4	107 14.5	1 4.9	184 8.0	24	10.9		
18	94	3.6	-16	36.7	317 32.4	137 14.4	1 3.1	214 12.4	24	11.1		
20	124	3.5	-16	38.2	347 37.3	167 14.2	1 1.3	244 16.8	24	11.3		
22	154	3.5	-16	39.6	17 42.2	197 14.1	0 59.5	274 21.2	24	11.5		
Δ		0	-7			-1	-9	22		1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 39	15 48	0 47	2 26	6 10	3.6	14 42	.1
55	7 17	16 10	0 40	2 5	5 50	3.2	15 4	.5
50	7 1	16 26	0 35	1 51	5 35	2.9	15 21	.7
45	6 47	16 40	0 31	1 41	5 23	2.7	15 35	.9
40	6 37	16 50	0 28	1 33	5 13	2.6	15 46	1.1
35	6 27	16 60	0 27	1 26	5 4	2.4	15 56	1.2
30	6 19	17 8	0 25	1 22	4 57	2.3	16 4	1.3
20	6 5	17 23	0 23	1 15	4 45	2.1	16 19	1.5
10	5 52	17 35	0 22	1 12	4 34	1.9	16 32	1.7
0	5 40	17 47	0 22	1 12	4 23	1.8	16 44	1.8
10	5 28	17 59	0 22	1 14	4 13	1.6	16 56	2.0
20	5 15	18 12	0 23	1 19	4 2	1.4	17 9	2.1
30	5 0	18 28	0 26	1 28	3 50	1.3	17 24	2.3
35	4 52	18 36	0 27	1 36	3 43	1.1	17 32	2.4
40	4 42	18 46	0 30	1 46	3 35	1.0	17 42	2.6
45	4 30	18 58	0 33	2 2	3 26	.9	17 54	2.7
50	4 16	19 13	0 38	2 27	3 15	.7	18 8	2.9
55	3 57	19 32	0 45	3 40	3 2	.4	18 26	3.2
60	3 33	19 57	0 57	:::	2 44	.0	18 51	3.7
S								

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	206	5.6	159	-12 49.7	-125	146	34.1	-22 52.6	247	30.8	10	17.8
2	235	15.5	158	-13 14.8	-124	176	37.9	-22 52.6	277	35.4	10	17.7
4	264	25.1	157	-13 39.7	-123	206	41.7	-22 52.7	307	40.0	10	17.5
6	293	34.6	156	-14 4.4	-122	236	45.5	-22 52.8	337	44.6	10	17.4
8	322	43.9	156	-14 28.9	-121	266	49.3	-22 52.9	7 49.1	10	17.3	
10	351	53.0	155	-14 53.1	-120	296	53.2	-22 53.0	37 53.7	10	17.2	
12	21	1.9	154	-15 17.1	-119	326	57.0	-22 53.0	67 58.3	10	17.1	
14	50	10.7	152	-15 40.9	-118	357	.8	-22 53.1	98 2.9	10	17.0	
16	79	19.1	151	-16 4.4	-116	27 4.6	-22 53.2	128 7.5	10	16.8		
18	108	27.4	150	-16 27.7	-115	57 8.4	-22 53.3	158 12.1	10	16.7		
20	137	35.5	149	-16 50.7	-114	87 12.2	-22 53.3	188 16.7	10	16.6		
22	166	43.3	148	-17 13.4	-112	117 16.0	-22 53.4	218 21.3	10	16.5		
Δ						19	0	23		-1		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	'	h min	min	'	'		
00	16 17.7	-.2	16.2	T _m	10 33	1.8	54.0 14.7		
12	16 15.7	T _{m☉}	11 h 43.7 min	Starost	27.8 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♀	h min	'	°	°
♂	8 51	.2	180	-4.2	♃	14 12	.0	100	-1.7
♄	3 45	.2	257	-.8	♄	7 29	.0	201	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	3.4	-16	41.1	47	47.2	227	14.0	0	57.7	304	25.7	24	11.7
2	214	3.3	-16	42.5	77	52.1	257	13.9	0	55.9	334	30.1	24	11.9
4	244	3.2	-16	43.9	107	57.0	287	13.7	0	54.1	4	34.6	24	12.0
6	274	3.1	-16	45.4	138	1.9	317	13.6	0	52.3	34	39.0	24	12.2
8	304	3.0	-16	46.8	168	6.9	347	13.5	0	50.5	64	43.5	24	12.4
10	334	2.9	-16	48.3	198	11.8	17	13.3	0	48.7	94	47.9	24	12.6
12	4	2.8	-16	49.7	228	16.7	47	13.2	0	46.9	124	52.4	24	12.8
14	34	2.7	-16	51.1	258	21.7	77	13.1	0	45.1	154	56.9	24	13.0
16	64	2.6	-16	52.6	288	26.6	107	12.9	0	43.3	185	1.3	24	13.2
18	94	2.5	-16	54.0	318	31.5	137	12.8	0	41.5	215	5.8	24	13.4
20	124	2.3	-16	55.4	348	36.4	167	12.7	0	39.6	245	10.3	24	13.5
22	154	2.2	-16	56.8	18	41.4	197	12.5	0	37.8	275	14.8	24	13.7
Δ		-1		-7				-1		-9		22		1

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	195	50.9	147	-17	35.9	-111	147	19.9	-22	53.5	248	25.9	10	16.4
2	224	58.3	146	-17	58.1	-110	177	23.7	-22	53.6	278	30.5	10	16.3
4	254	5.5	145	-18	20.0	-108	207	27.5	-22	53.7	308	35.0	10	16.2
6	283	12.4	143	-18	41.6	-107	237	31.3	-22	53.7	338	39.6	10	16.1
8	312	19.0	142	-19	2.9	-105	267	35.1	-22	53.8	8	44.2	10	15.9
10	341	25.4	141	-19	23.9	-103	297	38.9	-22	53.9	38	48.8	10	15.8
12	10	31.6	140	-19	44.5	-102	327	42.7	-22	54.0	68	53.4	10	15.7
14	39	37.5	138	-20	4.9	-100	357	46.6	-22	54.0	98	58.0	10	15.6
16	68	43.1	137	-20	24.9	-98	27	50.4	-22	54.1	129	2.6	10	15.5
18	97	48.5	136	-20	44.6	-97	57	54.2	-22	54.2	159	7.2	10	15.4
20	126	53.6	134	-21	4.0	-95	87	58.0	-22	54.3	189	11.8	10	15.3
22	155	58.5	133	-21	23.0	-93	118	1.8	-22	54.3	219	16.4	10	15.2
Δ							19			0		23		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 42	15 45	0 47	2 26	7 37	3.8	14 43	.2
55	7 19	16 8	0 40	2 6	7 7	3.3	15 15	.7
50	7 2	16 25	0 35	1 51	6 45	3.0	15 39	.9
45	6 49	16 38	0 31	1 41	6 28	2.7	15 57	1.1
40	6 38	16 50	0 29	1 33	6 14	2.6	16 12	1.3
35	6 28	16 59	0 27	1 27	6 3	2.5	16 25	1.4
30	6 20	17 8	0 25	1 22	5 52	2.4	16 36	1.5
20	6 5	17 22	0 23	1 16	5 35	2.2	16 55	1.7
10	5 52	17 35	0 22	1 12	5 20	2.0	17 12	1.8
0	5 40	17 47	0 22	1 12	5 6	1.9	17 27	1.9
10	5 28	17 60	0 22	1 14	4 52	1.7	17 43	2.1
20	5 15	18 13	0 23	1 19	4 37	1.6	18 0	2.2
30	4 60	18 28	0 26	1 29	4 20	1.4	18 20	2.4
35	4 51	18 37	0 28	1 36	4 11	1.3	18 31	2.5
40	4 41	18 48	0 30	1 47	3 60	1.2	18 44	2.6
45	4 29	18 60	0 33	2 2	3 47	1.0	18 60	2.7
50	4 14	19 15	0 38	2 29	3 31	.8	19 19	2.9
55	3 55	19 34	0 45	3 60	3 11	.6	19 44	3.2
60	3 30	19 59	0 57	:::	2 45	.1	20 20	3.8
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	16	13.6	- .2	16.2	T _m	11 17	1.9	53.9	14.7
12	16	11.1	T _{m☉}	11 h 43.8 min	Starost	28.8 d	Faza	●	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	8 51	.2	179	-4.2	♃	14 9	.0	100	-1.7
♂	3 42	.2	257	- .8	♄	7 25	.0	201	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	2.1	-16	58.2	48	46.3	227	12.4	0	36.0	305	19.3	24	13.9
2	214	2.0	-16	59.7	78	51.2	257	12.2	0	34.2	335	23.8	24	14.1
4	244	1.9	-17	1.1	108	56.2	287	12.1	0	32.4	5	28.4	24	14.3
6	274	1.8	-17	2.5	139	1.1	317	11.9	0	30.6	35	32.9	24	14.5
8	304	1.7	-17	3.9	169	6.0	347	11.8	0	28.7	65	37.4	24	14.7
10	334	1.5	-17	5.3	199	10.9	17	11.6	0	26.9	95	41.9	24	14.9
12	4	1.4	-17	6.7	229	15.9	47	11.5	0	25.1	125	46.5	24	15.1
14	34	1.3	-17	8.1	259	20.8	77	11.3	0	23.3	155	51.0	24	15.3
16	64	1.2	-17	9.5	289	25.7	107	11.2	0	21.4	185	55.6	24	15.5
18	94	1.1	-17	10.9	319	30.6	137	11.0	0	19.6	216	.1	24	15.7
20	124	.9	-17	12.3	349	35.6	167	10.9	0	17.8	246	4.7	24	15.9
22	154	.8	-17	13.7	19	40.5	197	10.7	0	15.9	276	9.3	24	16.1
Δ		-1		-7				-1		-9		23		1

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	185	3.1	132	-21	41.6	-91	148	5.6	-22	54.4	249	21.0	10	15.0
2	214	7.4	130	-21	59.9	-90	178	9.4	-22	54.5	279	25.6	10	14.9
4	243	11.5	129	-22	17.8	-88	208	13.2	-22	54.6	309	30.2	10	14.8
6	272	15.3	128	-22	35.3	-86	238	17.0	-22	54.7	339	34.8	10	14.7
8	301	18.8	126	-22	52.5	-84	268	20.8	-22	54.7	9	39.4	10	14.6
10	330	22.1	125	-23	9.2	-82	298	24.6	-22	54.8	39	44.0	10	14.5
12	359	25.1	124	-23	25.6	-80	328	28.4	-22	54.9	69	48.6	10	14.4
14	28	27.8	122	-23	41.5	-78	358	32.2	-22	55.0	99	53.2	10	14.3
16	57	30.2	121	-23	57.0	-76	28	36.1	-22	55.0	129	57.8	10	14.2
18	86	32.4	120	-24	12.1	-73	58	39.9	-22	55.1	160	2.4	10	14.1
20	115	34.4	118	-24	26.8	-71	88	43.7	-22	55.2	190	7.0	10	13.9
22	144	36.0	117	-24	41.1	-69	118	47.5	-22	55.3	220	11.6	10	13.8
Δ							19			0		23		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 44	15 43	0 47	2 27	9 8	3.8	14 47	.4
55	7 21	16 6	0 40	2 6	8 25	3.2	15 31	1.0
50	7 4	16 23	0 35	1 52	7 56	2.9	16 1	1.3
45	6 50	16 37	0 31	1 41	7 34	2.7	16 24	1.4
40	6 39	16 49	0 29	1 33	7 16	2.6	16 43	1.6
35	6 29	16 58	0 27	1 27	7 2	2.5	16 58	1.6
30	6 21	17 7	0 25	1 22	6 49	2.4	17 12	1.7
20	6 6	17 22	0 23	1 16	6 27	2.2	17 35	1.9
10	5 53	17 35	0 22	1 13	6 8	2.1	17 55	2.0
0	5 40	17 47	0 22	1 12	5 51	2.0	18 14	2.1
10	5 28	17 60	0 22	1 14	5 34	1.9	18 33	2.1
20	5 15	18 14	0 23	1 19	5 15	1.8	18 53	2.2
30	4 59	18 29	0 26	1 29	4 54	1.6	19 16	2.4
35	4 50	18 38	0 28	1 36	4 42	1.5	19 30	2.4
40	4 40	18 49	0 30	1 47	4 28	1.4	19 46	2.5
45	4 27	19 1	0 33	2 3	4 11	1.3	20 5	2.6
50	4 12	19 16	0 38	2 31	3 51	1.1	20 29	2.8
55	3 53	19 36	0 45	:::	3 24	.8	21 2	3.1
60	3 28	20 2	0 58	:::	2 48	.3	21 50	3.7
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	s	h min	min	'	'
00	16	8.7	- .2	16.			

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	.7	-17	15.1	49	45.4	227	10.5	0	14.1	306	13.8	24	16.3	
2	214	.5	-17	16.5	79	50.4	257	10.4	0	12.3	336	18.4	24	16.5	
4	244	.4	-17	17.9	109	55.3	287	10.2	0	10.4	6	23.0	24	16.7	
6	274	.3	-17	19.3	140	.2	317	10.1	0	8.6	36	27.6	24	16.9	
8	304	.2	-17	20.7	170	5.1	347	9.9	0	6.8	66	32.2	24	17.1	
10	334	.0	-17	22.1	200	10.1	17	9.7	0	4.9	96	36.8	24	17.3	
12	3	59.9	-17	23.5	230	15.0	47	9.5	0	3.1	126	41.4	24	17.5	
14	33	59.7	-17	24.9	260	19.9	77	9.4	0	1.2	156	46.0	24	17.7	
16	63	59.6	-17	26.2	290	24.9	107	9.2	-0	.6	186	50.7	24	17.9	
18	93	59.5	-17	27.6	320	29.8	137	9.0	-0	2.5	216	55.3	24	18.1	
20	123	59.3	-17	29.0	350	34.7	167	8.8	-0	4.3	246	59.9	24	18.3	
22	153	59.2	-17	30.4	20	39.6	197	8.7	-0	6.2	277	4.6	24	18.5	
Δ		-1		-7				-1		-9		23			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 47	15 40	0 48	2 27	10 39	3.5	14 57	1.0
55	7 23	16 4	0 40	2 6	9 41	2.9	15 55	1.5
50	7 6	16 22	0 35	1 52	9 5	2.7	16 32	1.7
45	6 52	16 36	0 31	1 41	8 39	2.6	16 59	1.8
40	6 40	16 48	0 29	1 33	8 18	2.5	17 20	1.9
35	6 30	16 58	0 27	1 27	8 1	2.4	17 38	1.9
30	6 21	17 6	0 25	1 22	7 46	2.3	17 53	2.0
20	6 6	17 21	0 23	1 16	7 21	2.3	18 19	2.0
10	5 53	17 35	0 22	1 13	6 59	2.2	18 42	2.1
0	5 40	17 48	0 22	1 12	6 39	2.1	19 3	2.1
10	5 28	18 0	0 22	1 14	6 19	2.0	19 24	2.2
20	5 14	18 14	0 23	1 19	5 58	1.9	19 47	2.2
30	4 58	18 30	0 26	1 29	5 33	1.8	20 13	2.3
35	4 49	18 39	0 28	1 37	5 18	1.8	20 29	2.3
40	4 39	18 50	0 30	1 48	5 2	1.7	20 47	2.4
45	4 26	19 3	0 33	2 4	4 42	1.6	21 9	2.4
50	4 11	19 18	0 38	2 33	4 17	1.5	21 37	2.5
55	3 51	19 38	0 46	:::	3 44	1.2	22 15	2.6
60	3 25	20 5	0 59	:::	2 54	.6	23 18	3.0
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	173	37.4	116	-24	54.9	-67	148	51.3	-22	55.3	250	16.2	10	13.7	
2	202	38.6	115	-25	8.2	-65	178	55.1	-22	55.4	280	20.8	10	13.6	
4	231	39.5	113	-25	21.1	-62	208	58.9	-22	55.5	310	25.4	10	13.5	
6	260	40.2	112	-25	33.6	-60	239	2.7	-22	55.6	340	30.0	10	13.4	
8	289	40.6	111	-25	45.5	-58	269	6.5	-22	55.6	10	34.7	10	13.3	
10	318	40.7	110	-25	57.1	-55	299	10.3	-22	55.7	40	39.3	10	13.2	
12	347	40.7	109	-26	8.1	-53	329	14.1	-22	55.8	70	43.9	10	13.1	
14	16	40.4	107	-26	18.6	-50	359	17.9	-22	55.9	100	48.5	10	13.0	
16	45	39.9	106	-26	28.7	-48	29	21.7	-22	55.9	130	53.1	10	12.9	
18	74	39.2	105	-26	38.2	-45	59	25.5	-22	56.0	160	57.7	10	12.8	
20	103	38.2	104	-26	47.3	-43	89	29.3	-22	56.1	191	2.3	10	12.7	
22	132	37.1	103	-26	55.8	-40	119	33.1	-22	56.1	221	6.9	10	12.6	
Δ							19			0		23			-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	16	2.9	- .3	16.2	T _m	12 51	2.1	54.0	14.7
12	15	59.6	T _{m☉}	11 h 44.0 min	Starost	1.0 d	Faza	●	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 51	.2	177	-4.2	♄	14 3	.0	99	-1.7
♂	3 35	.2	256	-.8	♂	7 18	.0	201	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	183	59.0	-17	31.7	50	44.6	227	8.5	-0	8.0	307	9.2	24	18.7	
2	213	58.9	-17	33.1	80	49.5	257	8.3	-0	9.9	337	13.9	24	18.9	
4	243	58.7	-17	34.5	110	54.4	287	8.1	-0	11.7	7	18.5	24	19.2	
6	273	58.6	-17	35.8	140	59.4	317	7.9	-0	13.6	37	23.2	24	19.4	
8	303	58.4	-17	37.2	171	4.3	347	7.8	-0	15.4	67	27.9	24	19.6	
10	333	58.3	-17	38.6	201	9.2	17	7.6	-0	17.3	97	32.6	24	19.8	
12	3	58.1	-17	39.9	231	14.1	47	7.4	-0	19.2	127	37.3	24	20.0	
14	33	58.0	-17	41.3	261	19.1	77	7.2	-0	21.0	157	41.9	24	20.2	
16	63	57.8	-17	42.6	291	24.0	107	7.0	-0	22.9	187	46.6	24	20.4	
18	93	57.6	-17	44.0	321	28.9	137	6.8	-0	24.8	217	51.3	24	20.6	
20	123	57.5	-17	45.3	351	33.9	167	6.6	-0	26.6	247	56.1	24	20.9	
22	153	57.3	-17	46.7	21	38.8	197	6.4	-0	28.5	278	.8	24	21.1	
Δ		-1		-7				-1		-9		23			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 49	15 38	0 48	2 28	12 2	2.4	15 19	2.1
55	7 25	16 2	0 40	2 7	10 51	2.3	16 31	2.2
50	7 7	16 21	0 35	1 52	10 10	2.3	17 12	2.2
45	6 53	16 35	0 31	1 41	9 40	2.3	17 42	2.2
40	6 41	16 47	0 29	1 33	9 17	2.3	18 5	2.2
35	6 31	16 57	0 27	1 27	8 58	2.2	18 24	2.2
30	6 22	17 6	0 25	1 22	8 42	2.2	18 41	2.2
20	6 7	17 21	0 23	1 16	8 15	2.2	19 8	2.2
10	5 53	17 35	0 22	1 13	7 51	2.2	19 32	2.2
0	5 41	17 48	0 22	1 12	7 29	2.2	19 55	2.2
10	5 28	18 1	0 22	1 14	7 8	2.2	20 17	2.2
20	5 14	18 15	0 23	1 20	6 44	2.1	20 41	2.2
30	4 58	18 31	0 26	1 29	6 17	2.1	21 8	2.1
35	4 48	18 40	0 28	1 37	6 1	2.1	21 25	2.1
40	4 38	18 51	0 30	1 48	5 43	2.0	21 44	2.1
45	4 25	19 4	0 34	2 5	5 21	2.0	22 7	2.1
50	4 9	19 20	0 39	2 34	4 52	1.9	22 37	2.1
55	3 50	19 40	0 46	:::	4 13	1.8	23 18	2.0
60	3 23	20 7	0 60	:::	3 9	1.5	...	.0
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	161	35.8	102	-27	3.8	-38	149	36.9	-22	56.2	251	11.5	10	12.5	
2	190	34.2	101	-27	11.4	-35	179	40.7	-22	56.3	281	16.1	10	12.4	
4	219	32.5	101	-27	18.4	-32	209	44.5	-22	56.4	311	20.8	10	12.2	
6	248	30.6	100	-27	24.8	-30	239	48.3	-22	56.4	341	25.4	10	12.1	
8	277	28.6	99	-27	30.8	-27	269	52.0	-22	56.5	11	30.0	10	12.0	
10	306	26.4	98	-27	36.2	-24	299	55.8	-22	56.6	41	34.6	10	11.9	
12	335	24.0	98	-27	41.0	-22	329	59.6	-22	56.7	71	39.2	10	11.8	
14	4	21.5	97	-27	45.4	-19	0	3.4	-22	56.7	101	43.8	10	11.7	
16	33	18.9	96	-27	49.2	-16	30	7.2	-22	56.8	131	48.5	10	11.6	
18	62	16.2	96	-27	52.4	-13	60	11.0	-22	56.9	161	53.1	10	11.5	
20	91	13.3	95	-27	55.1	-11	90	14.8	-22	57.0	191	57.7	10	11.4	
22	120	10.4	95	-27	57.2	-8	120	18.6	-22	57.0	222	2.3	10	11.3	
Δ							19			0		23			-1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	15	56.3	- .3	16.2	T _m	13 42	2.2	54.2	14.8
12	15	52.5	T _{m☉}						

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	57.2	-17	48.0	51	43.7	227	6.2	-0	30.4	308	5.5	24	21.3
2	213	57.0	-17	49.4	81	48.6	257	6.0	-0	32.2	338	10.2	24	21.5
4	243	56.8	-17	50.7	111	53.6	287	5.8	-0	34.1	8	15.0	24	21.7
6	273	56.7	-17	52.1	141	58.5	317	5.6	-0	36.0	38	19.7	24	21.9
8	303	56.5	-17	53.4	172	3.4	347	5.4	-0	37.9	68	24.5	24	22.2
10	333	56.3	-17	54.7	202	8.4	17	5.2	-0	39.7	98	29.2	24	22.4
12	3	56.1	-17	56.1	232	13.3	47	5.0	-0	41.6	128	34.0	24	22.6
14	33	56.0	-17	57.4	262	18.2	77	4.8	-0	43.5	158	38.7	24	22.8
16	63	55.8	-17	58.7	292	23.1	107	4.6	-0	45.4	188	43.5	24	23.1
18	93	55.6	-18	1	322	28.1	137	4.4	-0	47.2	218	48.3	24	23.3
20	123	55.4	-18	1.4	352	33.0	167	4.2	-0	49.1	248	53.1	24	23.5
22	153	55.3	-18	2.7	22	37.9	197	4.0	-0	51.0	278	57.9	24	23.7
Δ		-1		-7				-1		-9		24		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 52	15 36	0 48	2 28	12 60	1.2	16 11	3.4
55	7 27	16 1	0 40	2 7	11 46	1.7	17 24	2.9
50	7 9	16 19	0 35	1 52	11 5	1.8	18 5	2.7
45	6 54	16 34	0 32	1 41	10 35	1.9	18 35	2.6
40	6 42	16 46	0 29	1 33	10 11	2.0	18 58	2.5
35	6 32	16 56	0 27	1 27	9 52	2.0	19 17	2.4
30	6 23	17 5	0 25	1 22	9 36	2.1	19 34	2.4
20	6 7	17 21	0 23	1 16	9 8	2.1	20 1	2.3
10	5 54	17 35	0 22	1 13	8 44	2.2	20 25	2.2
0	5 41	17 48	0 22	1 12	8 22	2.2	20 47	2.2
10	5 28	18 1	0 22	1 14	7 59	2.2	21 9	2.1
20	5 14	18 15	0 24	1 20	7 35	2.3	21 33	2.0
30	4 57	18 32	0 26	1 30	7 8	2.3	21 60	1.9
35	4 48	18 41	0 28	1 38	6 51	2.3	22 16	1.9
40	4 37	18 52	0 30	1 49	6 32	2.4	22 35	1.8
45	4 24	19 5	0 34	2 6	6 9	2.4	22 57	1.7
50	4 8	19 21	0 39	2 36	5 39	2.5	23 26	1.6
55	3 48	19 42	0 46	:::	4 57	2.5	...	.0
60	3 20	20 10	1 1	:::	3 45	2.8	0 30	1.8
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	149	7.3	94	-27	58.8	-5	150	22.4	-22	57.1	252	6.9	10	11.2		
2	178	4.2	94	-27	59.8	-2	180	26.2	-22	57.2	282	11.6	10	11.1		
4	207	1.0	94	-28	.2	1	210	30.0	-22	57.2	312	16.2	10	11.0		
6	235	57.7	93	-28	.1	3	240	33.8	-22	57.3	342	20.8	10	10.9		
8	264	54.4	93	-27	59.5	6	270	37.6	-22	57.4	12	25.4	10	10.8		
10	293	51.1	93	-27	58.2	9	300	41.3	-22	57.5	42	30.0	10	10.7		
12	322	47.7	93	-27	56.4	12	330	45.1	-22	57.5	72	34.7	10	10.6		
14	351	44.3	93	-27	54.1	15	0	48.9	-22	57.6	102	39.3	10	10.5		
16	20	40.9	93	-27	51.1	17	30	52.7	-22	57.7	132	43.9	10	10.4		
18	49	37.4	93	-27	47.6	20	60	56.5	-22	57.7	162	48.5	10	10.3		
20	78	34.0	93	-27	43.6	23	91	.3	-22	57.8	192	53.2	10	10.2		
22	107	30.6	93	-27	39.0	26	121	4.1	-22	57.9	222	57.8	10	10.1		
Δ							19			0		23			-1	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	15 48.8	- .3	16.2	T _m	14 34	2.2	54.4	14.8	
12	15 44.6	T _{m☉}	11 h 44.3 min	Starost	3.0 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	8 52	.2	175	-4.2	♄	13 57	.0	99	-1.7
	3 27	.2	256	- .9	♅	7 10	.0	200	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	55.1	-18	4.0	52	42.8	227	3.7	-0	52.9	309	2.7	24	24.0
2	213	54.9	-18	5.3	82	47.8	257	3.5	-0	54.8	339	7.5	24	24.2
4	243	54.7	-18	6.7	112	52.7	287	3.3	-0	56.7	9	12.3	24	24.4
6	273	54.5	-18	8.0	142	57.6	317	3.1	-0	58.6	39	17.1	24	24.6
8	303	54.3	-18	9.3	173	2.6	347	2.9	-1	.4	69	21.9	24	24.9
10	333	54.1	-18	10.6	203	7.5	17	2.6	-1	2.3	99	26.8	24	25.1
12	3	54.0	-18	11.9	233	12.4	47	2.4	-1	4.2	129	31.6	24	25.3
14	33	53.8	-18	13.2	263	17.3	77	2.2	-1	6.1	159	36.4	24	25.5
16	63	53.6	-18	14.5	293	22.3	107	2.0	-1	8.0	189	41.3	24	25.8
18	93	53.4	-18	15.8	323	27.2	137	1.7	-1	9.9	219	46.1	24	26.0
20	123	53.2	-18	17.1	353	32.1	167	1.5	-1	11.8	249	51.0	24	26.2
22	153	53.0	-18	18.4	23	37.1	197	1.3	-1	13.7	279	55.9	24	26.5
Δ		-1		-7				-1		-9		24		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 54	15 34	0 49	2 29	13 27	.5	17 32	4.0
55	7 29	15 59	0 41	2 7	12 26	1.1	18 32	3.3
50	7 10	16 18	0 35	1 53	11 48	1.4	19 9	3.0
45	6 56	16 33	0 32	1 42	11 21	1.6	19 37	2.8
40	6 43	16 45	0 29	1 34	10 59	1.7	19 58	2.7
35	6 33	16 55	0 27	1 27	10 41	1.8	20 16	2.6
30	6 24	17 5	0 25	1 22	10 25	1.8	20 31	2.5
20	6 8	17 21	0 23	1 16	9 58	2.0	20 57	2.4
10	5 54	17 35	0 22	1 13	9 35	2.1	21 19	2.2
0	5 41	17 48	0 22	1 12	9 14	2.2	21 39	2.1
10	5 28	18 1	0 22	1 15	8 53	2.2	21 60	2.0
20	5 13	18 16	0 24	1 20	8 30	2.3	22 21	1.9
30	4 57	18 33	0 26	1 30	8 3	2.5	22 47	1.7
35	4 47	18 42	0 28	1 38	7 47	2.5	23 1	1.6
40	4 36	18 54	0 30	1 49	7 29	2.6	23 18	1.5
45	4 23	19 7	0 34	2 7	7 6	2.7	23 39	1.4
50	4 7	19 23	0 39	2 38	6 38	2.9	...	.0
55	3 46	19 44	0 47	:::	5 59	3.1	0 6	1.4
60	3 18	20 13	1 2	:::	4 53	3.7	1 13	.8
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	136	27.3	93	-27	33.8	29	151	7.9	-22	58.0	253	2.4	10	10.0		
2	165	24.0	94	-27	28.0	32	181	11.6	-22	58.0	283	7.0	10	9.9		
4	194	20.7	94	-27	21.7	34	211	15.4	-22	58.1	313	11.7	10	9.8		
6	223	17.5	94	-27	14.8	37	241	19.2	-22	58.2	343	16.3	10	9.7		
8	252	14.3	95	-27	7.4	40	271	23.0	-22	58.2	13	20.9	10	9.6		
10	281	11.2	95	-26	59.4	43	301	26.8	-22	58.3	43	25.6	10	9.5		
12	310	8.2	95	-26	50.8	45	331	30.6	-22	58.4	73	30.2	10	9.4		
14	339	5.3	96	-26	41.7	48	1	34.4	-22	58.4	103	34.8	10	9.3		
16	8	2.5	96	-26	32.1	51	31	38.1	-22	58.5	133	39.4	10	9.2		
18	36	59.8	97	-26	21.9	54	61	41.9	-22	58.6	163	44.1	10	9.1		
20	65	57.2	98	-26	11.2	56	91	45.7	-22	58.7	193	48.7	10	9.0		
22	94	54.8	98	-25	59.9	59	121	49.5	-22	58.7	223	53.3	10	8.9		
Δ							19			0		23			0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	s	h min	min	'	'

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 52.8	-18 19.7	53 42.0	227 1.0	-1 15.6	310 .7	24 26.7
2	213 52.6	-18 21.0	83 46.9	257 .8	-1 17.5	340 5.6	24 26.9
4	243 52.4	-18 22.3	113 51.8	287 .6	-1 19.4	10 10.5	24 27.2
6	273 52.2	-18 23.6	143 56.8	317 .3	-1 21.3	40 15.4	24 27.4
8	303 52.0	-18 24.8	174 1.7	347 .1	-1 23.2	70 20.3	24 27.7
10	333 51.8	-18 26.1	204 6.6	16 59.9	-1 25.1	100 25.2	24 27.9
12	3 51.6	-18 27.4	234 11.6	46 59.6	-1 27.0	130 30.1	24 28.1
14	33 51.4	-18 28.7	264 16.5	76 59.4	-1 28.9	160 35.0	24 28.4
16	63 51.1	-18 30.0	294 21.4	106 59.1	-1 30.8	190 40.0	24 28.6
18	93 50.9	-18 31.2	324 26.3	136 58.9	-1 32.7	220 44.9	24 28.9
20	123 50.7	-18 32.5	354 31.3	166 58.6	-1 34.7	250 49.8	24 29.1
22	153 50.5	-18 33.8	24 36.2	196 58.4	-1 36.6	280 54.8	24 29.3
Δ	-1	-6		-1	-10	25	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 57	15 31	0 49	2 30	13 39	.2	19 7	4.1
55	7 31	15 57	0 41	2 8	12 53	.7	19 52	3.5
50	7 12	16 17	0 35	1 53	12 22	1.0	20 22	3.2
45	6 57	16 32	0 32	1 42	11 58	1.3	20 44	3.0
40	6 45	16 44	0 29	1 34	11 39	1.4	21 3	2.8
35	6 34	16 55	0 27	1 27	11 23	1.5	21 18	2.7
30	6 25	17 4	0 25	1 23	11 9	1.6	21 31	2.6
20	6 9	17 20	0 23	1 16	10 46	1.8	21 53	2.4
10	5 54	17 35	0 22	1 13	10 25	2.0	22 12	2.2
0	5 41	17 48	0 22	1 13	10 6	2.1	22 30	2.0
10	5 28	18 2	0 22	1 15	9 47	2.2	22 48	1.9
20	5 13	18 16	0 24	1 20	9 26	2.4	23 7	1.7
30	4 56	18 33	0 26	1 30	9 2	2.5	23 28	1.5
35	4 46	18 43	0 28	1 38	8 48	2.6	23 41	1.4
40	4 35	18 55	0 31	1 50	8 31	2.8	23 55	1.3
45	4 22	19 8	0 34	2 8	8 12	2.9	.. .	.0
50	4 5	19 25	0 39	2 40	7 47	3.1	0 5	1.2
55	3 44	19 46	0 47	.. :	7 13	3.4	0 39	.9
60	3 15	20 15	1 2	.. :	6 22	4.0	1 32	.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	123 52.4	99 -25	48.1	62	151 53.3	-22 58.8	253 58.0	10 8.8
2	152 50.2	100 -25	35.7	64	181 57.0	-22 58.9	284 2.6	10 8.7
4	181 48.1	100 -25	22.8	67	212 .8	-22 58.9	314 7.3	10 8.6
6	210 46.2	101 -25	9.4	70	242 4.6	-22 59.0	344 11.9	10 8.5
8	239 44.4	102 -24	55.5	72	272 8.4	-22 59.1	14 16.5	10 8.5
10	268 42.8	103 -24	41.0	75	302 12.2	-22 59.1	44 21.2	10 8.4
12	297 41.3	103 -24	26.1	77	332 15.9	-22 59.2	74 25.8	10 8.3
14	326 40.0	104 -24	10.6	80	2 19.7	-22 59.3	104 30.4	10 8.2
16	355 38.8	105 -23	54.6	82	32 23.5	-22 59.3	134 35.1	10 8.1
18	24 37.8	106 -23	38.2	85	62 27.3	-22 59.4	164 39.7	10 8.0
20	53 37.0	107 -23	21.2	87	92 31.1	-22 59.5	194 44.4	10 7.9
22	82 36.3	108 -23	3.8	90	122 34.8	-22 59.5	224 49.0	10 7.8
Δ					19	0	23	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	15 31.3	-.4	16.2	T _m	16 18	2.1	55.3 15.1
12	15 26.3	T _{m☉}	11 h 44.6 min	Starost	5.0 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 52	.2	173	-4.2	♄	13 51	.0	98	-1.7
♂	3 19	.2	256	-.9	♂	7 3	.0	200	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 50.3	-18 35.0	54 41.1	226 58.1	-1 38.5	310 59.7	24 29.6
2	213 50.1	-18 36.3	84 46.1	256 57.9	-1 40.4	341 4.7	24 29.8
4	243 49.8	-18 37.6	114 51.0	286 57.6	-1 42.3	11 9.6	24 30.1
6	273 49.6	-18 38.8	144 55.9	316 57.4	-1 44.2	41 14.6	24 30.3
8	303 49.4	-18 40.1	175 .8	346 57.1	-1 46.1	71 19.6	24 30.6
10	333 49.2	-18 41.3	205 5.8	16 56.9	-1 48.1	101 24.6	24 30.8
12	3 49.0	-18 42.6	235 10.7	46 56.6	-1 50.0	131 29.6	24 31.0
14	33 48.7	-18 43.8	265 15.6	76 56.3	-1 51.9	161 34.5	24 31.3
16	63 48.5	-18 45.1	295 20.6	106 56.1	-1 53.8	191 39.5	24 31.5
18	93 48.3	-18 46.3	325 25.5	136 55.8	-1 55.7	221 44.6	24 31.8
20	123 48.0	-18 47.6	355 30.4	166 55.5	-1 57.7	251 49.6	24 32.0
22	153 47.8	-18 48.8	25 35.3	196 55.3	-1 59.6	281 54.6	24 32.3
Δ	-1	-6		-1	-10	25	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 59	15 29	0 49	2 30	13 44	.1	20 45	4.0
55	7 33	15 56	0 41	2 8	13 11	.5	21 16	3.6
50	7 14	16 15	0 36	1 53	12 47	.8	21 38	3.3
45	6 58	16 31	0 32	1 42	12 28	1.0	21 56	3.0
40	6 46	16 43	0 29	1 34	12 13	1.2	22 10	2.8
35	6 35	16 54	0 27	1 28	11 60	1.4	22 22	2.7
30	6 26	17 4	0 25	1 23	11 49	1.5	22 32	2.6
20	6 9	17 20	0 23	1 16	11 29	1.7	22 50	2.3
10	5 55	17 35	0 22	1 13	11 12	1.9	23 5	2.2
0	5 41	17 48	0 22	1 13	10 56	2.0	23 19	2.0
10	5 27	18 2	0 22	1 15	10 40	2.2	23 33	1.8
20	5 13	18 17	0 24	1 20	10 23	2.4	23 48	1.6
30	4 56	18 34	0 26	1 31	10 3	2.6	.. .	.0
35	4 46	18 44	0 28	1 39	9 51	2.7	.. .	.0
40	4 34	18 56	0 31	1 50	9 37	2.8	.. .	.0
45	4 21	19 10	0 34	2 9	9 21	3.0	0 12	1.1
50	4 4	19 26	0 39	2 43	9 2	3.2	0 34	.9
55	3 43	19 48	0 48	.. :	8 36	3.6	1 1	.6
60	3 13	20 18	1 3	.. :	7 59	4.1	1 40	.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	111 35.8	108 -22	45.8	92	152 38.6	-22 59.6	254 53.6	10 7.7
2	140 35.5	109 -22	27.4	94	182 42.4	-22 59.7	284 58.3	10 7.6
4	169 35.3	110 -22	8.6	97	212 46.2	-22 59.7	315 2.9	10 7.5
6	198 35.3	111 -21	49.2	99	242 49.9	-22 59.8	345 7.6	10 7.4
8	227 35.5	112 -21	29.4	101	272 53.7	-22 59.9	15 12.2	10 7.3
10	256 35.9	113 -21	9.1	104	302 57.5	-22 60.0	45 16.9	10 7.2
12	285 36.4	113 -20	48.4	106	333 1.3	-23 .0	75 21.5	10 7.1
14	314 37.1	114 -20	27.3	108	3 5.0	-23 .1	105 26.1	10 7.1
16	343 38.0	115 -20	5.7	110	33 8.8	-23 .2	135 30.8	10 7.0
18	12 39.0	116 -19	43.7	112	63 12.6	-23 .2	165 35.4	10 6.9
20	41 40.2	117 -19	21.3	114	93 16.4	-23 .3	195 40.1	10 6.8
22	70 41.6	118 -18	58.4	116	123 20.1	-23 .4	225 44.7	10 6.7
Δ					19	0	23	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	15 21.3	-.5	16.2	T _m	17 8	2.0	55.9 15.2
12	15 15.9	T _{m☉}	11 h 44.7 min	Starost	6.0 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 52	.2	172	-4.2	♄	13 48	.0	98	-1.7
♂	3 15	.2	256	-1.0	♂	6 59	.0	200	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	183	47.6	-18	50.1	55	40.3	226	55.0 - 2 1.5	311	59.6	24	32.5		
2	213	47.3	-18	51.3	85	45.2	256	54.7 - 2 3.4	342	4.7	24	32.8		
4	243	47.1	-18	52.5	115	50.1	286	54.5 - 2 5.4	12	9.7	24	33.0		
6	273	46.9	-18	53.8	145	55.1	316	54.2 - 2 7.3	42	14.7	24	33.3		
8	303	46.6	-18	55.0	176	.0	346	53.9 - 2 9.2	72	19.8	24	33.6		
10	333	46.4	-18	56.2	206	4.9	16	53.6 - 2 11.2	102	24.8	24	33.8		
12	3	46.2	-18	57.4	236	9.8	46	53.4 - 2 13.1	132	29.9	24	34.1		
14	33	45.9	-18	58.7	266	14.8	76	53.1 - 2 15.0	162	35.0	24	34.3		
16	63	45.7	-18	59.9	296	19.7	106	52.8 - 2 17.0	192	40.1	24	34.6		
18	93	45.4	-19	1.1	326	24.6	136	52.5 - 2 18.9	222	45.2	24	34.8		
20	123	45.2	-19	2.3	356	29.5	166	52.2 - 2 20.8	252	50.2	24	35.1		
22	153	44.9	-19	3.5	26	34.5	196	52.0 - 2 22.8	282	55.3	24	35.3		
Δ		-1		-6				-1		-10		25		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 2	15 27	0 50	2 31	13 46	.0	22 22	4.0
55	7 35	15 54	0 41	2 9	13 23	.4	22 42	3.6
50	7 15	16 14	0 36	1 53	13 7	.7	22 57	3.3
45	6 60	16 30	0 32	1 42	12 53	.9	23 9	3.1
40	6 47	16 43	0 29	1 34	12 42	1.1	23 18	2.9
35	6 36	16 54	0 27	1 28	12 32	1.2	23 27	2.7
30	6 26	17 3	0 25	1 23	12 24	1.4	23 34	2.6
20	6 10	17 20	0 23	1 16	12 9	1.6	23 46	2.3
10	5 55	17 35	0 22	1 13	11 56	1.8	23 57	2.1
0	5 41	17 48	0 22	1 13	11 44	2.0	.. .	.0
10	5 27	18 2	0 22	1 15	11 32	2.1	.. .	.0
20	5 12	18 18	0 24	1 20	11 19	2.3	.. .	.0
30	4 55	18 35	0 26	1 31	11 4	2.6	0 6	1.4
35	4 45	18 45	0 28	1 39	10 55	2.7	0 15	1.3
40	4 33	18 57	0 31	1 51	10 45	2.9	0 27	1.1
45	4 20	19 11	0 34	2 9	10 34	3.1	0 40	1.0
50	4 3	19 28	0 40	2 45	10 19	3.3	0 56	.7
55	3 41	19 50	0 48	:::	10 1	3.6	1 16	.5
60	3 11	20 21	1 4	:::	9 36	4.0	1 43	.1

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	99	43.1	118	-18	35.1	118	153	23.9 -23 .4	255	49.4	10	6.6
2	128	44.7	119	-18	11.5	120	183	27.7 -23 .5	285	54.0	10	6.5
4	157	46.5	120	-17	47.4	122	213	31.4 -23 .6	315	58.7	10	6.4
6	186	48.5	120	-17	22.9	124	243	35.2 -23 .6	346	3.3	10	6.3
8	215	50.6	121	-16	58.1	126	273	39.0 -23 .7	16	8.0	10	6.2
10	244	52.8	122	-16	32.9	128	303	42.7 -23 .7	46	12.6	10	6.2
12	273	55.2	122	-16	7.3	130	333	46.5 -23 .8	76	17.3	10	6.1
14	302	57.6	123	-15	41.3	132	3	50.3 -23 .9	106	21.9	10	6.0
16	332	.2	124	-15	15.0	133	33	54.1 -23 .9	136	26.6	10	5.9
18	1	3.0	124	-14	48.4	135	63	57.8 -23 1.0	166	31.3	10	5.8
20	30	5.8	125	-14	21.3	137	94	1.6 -23 1.1	196	35.9	10	5.7
22	59	8.7	125	-13	54.0	138	124	5.4 -23 1.1	226	40.6	10	5.6
Δ							19	0		23		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	15	10.5	- .5	16.2	T _m	17 56	2.0	56.6	15.4
12	15	4.7	T _m ☉	11 h 44.9 min	Starost	7.0 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	°	h	min	'	°	°
♀	8 52	.2	171	-4.2	♃	13 45	.0	98	-1.7
♂	3 11	.2	256	-1.0	♄	6 56	.0	200	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	183	44.7	-19	4.7	56	39.4	226	51.7 - 2 24.7	313	.4	24	35.6		
2	213	44.4	-19	5.9	86	44.3	256	51.4 - 2 26.6	343	5.6	24	35.9		
4	243	44.2	-19	7.2	116	49.3	286	51.1 - 2 28.6	13	10.7	24	36.1		
6	273	43.9	-19	8.4	146	54.2	316	50.8 - 2 30.5	43	15.8	24	36.4		
8	303	43.7	-19	9.6	176	59.1	346	50.5 - 2 32.5	73	20.9	24	36.7		
10	333	43.4	-19	10.8	207	4.0	16	50.2 - 2 34.4	103	26.1	24	36.9		
12	3	43.1	-19	11.9	237	9.0	46	49.9 - 2 36.3	133	31.2	24	37.2		
14	33	42.9	-19	13.1	267	13.9	76	49.6 - 2 38.3	163	36.4	24	37.4		
16	63	42.6	-19	14.3	297	18.8	106	49.3 - 2 40.2	193	41.5	24	37.7		
18	93	42.4	-19	15.5	327	23.8	136	49.0 - 2 42.2	223	46.7	24	38.0		
20	123	42.1	-19	16.7	357	28.7	166	48.7 - 2 44.1	253	51.8	24	38.2		
22	153	41.8	-19	17.9	27	33.6	196	48.4 - 2 46.1	283	57.0	24	38.5		
Δ		-1		-6				-1		-10		26		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 4	15 25	0 50	2 31	13 46	.0	23 58	4.0
55	7 37	15 53	0 41	2 9	13 33	.4	.. .	.0
50	7 17	16 13	0 36	1 54	13 23	.6	.. .	.0
45	7 1	16 29	0 32	1 43	13 15	.8	.. .	.0
40	6 48	16 42	0 29	1 34	13 8	1.0	.. .	.0
35	6 37	16 53	0 27	1 28	13 2	1.2	.. .	.0
30	6 27	17 3	0 25	1 23	12 56	1.3	.. .	.0
20	6 10	17 20	0 23	1 17	12 47	1.5	.. .	.0
10	5 56	17 35	0 22	1 13	12 39	1.8	.. .	.0
0	5 42	17 49	0 22	1 13	12 31	1.9	0 7	1.9
10	5 27	18 3	0 22	1 15	12 24	2.1	0 17	1.8
20	5 12	18 18	0 24	1 21	12 15	2.4	0 27	1.6
30	4 55	18 36	0 26	1 31	12 6	2.6	0 39	1.3
35	4 44	18 46	0 28	1 39	12 1	2.7	0 46	1.2
40	4 33	18 58	0 31	1 52	11 54	2.9	0 54	1.0
45	4 19	19 12	0 34	2 10	11 47	3.1	1 3	.9
50	4 1	19 30	0 40	2 47	11 38	3.3	1 14	.6
55	3 39	19 52	0 48	:::	11 27	3.6	1 27	.4
60	3 9	20 23	1 5	:::	11 13	4.0	1 45	.0

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	88	11.7	125	-13	26.3	140	154	9.1 -23 1.2	256	45.2	10	5.5
2	117	14.8	126	-12	58.4	141	184	12.9 -23 1.3	286	49.9	10	5.4
4	146	18.0	126	-12	30.1	143	214	16.7 -23 1.3	316	54.5	10	5.4
6	175	21.2	127	-12	1.4	145	244	20.4 -23 1.4	346	59.2	10	5.3
8	204	24.5	127	-11	32.5	146	274	24.2 -23 1.5	17	3.9	10	5.2
10	233	27.9	127	-11	3.3	147	304	27.9 -23 1.5	47	8.5	10	5.1
12	262	31.3	127	-10	33.9	149	334	31.7 -23 1.6	77	13.2	10	5.0
14	291	34.8	127	-10	4.1	150	4	35.5 -23 1.7	107	17.8	10	4.9
16	320	38.3	128	-9	34.1	151	34	39.2 -23 1.7	137	22.5	10	4.8
18	349	41.8	128	-9	3.8	153	64	43.0 -23 1.8	167	27.2	10	4.8
20	18	45.3	128	-8	33.3	154	94	46.8 -23 1.8	197	31.8	10	4.7
22	47	48.8	128	-8	2.5	155	124	50.5 -23 1.9	227	36.5	10	4.6
Δ							19	0		23		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	14	58.9	- .5	16.2	T _m	18 43	1.9	57.4	15.6
12	14	52.7	T _m ☉	11 h 45.1 min	Starost	8.0 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	°	h	min	'	°	°
♀	8 53	.2	170	-4.2	♃	13 42	.0	97	-1.7
♂	3 7	.2	256	-1.0	♄	6 52	.0	200	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	°	'	°	'
0	183 41.6	-19 19.1	57 38.5	226 48.1	- 2 48.0	314 2.2	24 38.8
2	213 41.3	-19 20.3	87 43.5	256 47.8	- 2 50.0	344 7.4	24 39.0
4	243 41.0	-19 21.4	117 48.4	286 47.5	- 2 51.9	14 12.6	24 39.3
6	273 40.8	-19 22.6	147 53.3	316 47.2	- 2 53.9	44 17.8	24 39.6
8	303 40.5	-19 23.8	177 58.3	346 46.9	- 2 55.8	74 23.0	24 39.8
10	333 40.2	-19 24.9	208 3.2	16 46.6	- 2 57.8	104 28.2	24 40.1
12	3 39.9	-19 26.1	238 8.1	46 46.3	- 2 59.7	134 33.4	24 40.4
14	33 39.7	-19 27.3	268 13.0	76 45.9	- 3 1.7	164 38.7	24 40.7
16	63 39.4	-19 28.4	298 18.0	106 45.6	- 3 3.6	194 43.9	24 40.9
18	93 39.1	-19 29.6	328 22.9	136 45.3	- 3 5.6	224 49.1	24 41.2
20	123 38.8	-19 30.8	358 27.8	166 45.0	- 3 7.5	254 54.4	24 41.5
22	153 38.5	-19 31.9	28 32.8	196 44.7	- 3 9.5	284 59.6	24 41.8
Δ	-1	-6		-2	-10	26	1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	76 52.3	127 - 7	31.5	156	154 54.3	-23 2.0	257 41.2	10 4.5
2	105 55.8	127 - 7	.3	157	184 58.1	-23 2.0	287 45.8	10 4.4
4	134 59.3	127 - 6	28.8	158	215 1.8	-23 2.1	317 50.5	10 4.3
6	164 2.7	127 - 5	57.2	159	245 5.6	-23 2.2	347 55.2	10 4.3
8	193 6.1	127 - 5	25.3	160	275 9.3	-23 2.2	17 59.8	10 4.2
10	222 9.4	126 - 4	53.3	161	305 13.1	-23 2.3	48 4.5	10 4.1
12	251 12.7	126 - 4	21.1	162	335 16.9	-23 2.3	78 9.2	10 4.0
14	280 15.9	126 - 3	48.7	163	5 20.6	-23 2.4	108 13.8	10 3.9
16	309 19.0	125 - 3	16.2	163	35 24.4	-23 2.5	138 18.5	10 3.8
18	338 22.0	124 - 2	43.5	164	65 28.1	-23 2.5	168 23.2	10 3.8
20	7 24.9	124 - 2	10.6	165	95 31.9	-23 2.6	198 27.8	10 3.7
22	36 27.7	123 - 1	37.7	165	125 35.7	-23 2.7	228 32.5	10 3.6
Δ					19	0	23	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 7	15 23	0 50	2 32	13 46	.0	. . .	.0
55	7 39	15 51	0 42	2 9	13 42	.3	0 9	3.7
50	7 18	16 12	0 36	1 54	13 38	.6	0 17	3.4
45	7 2	16 28	0 32	1 43	13 35	.8	0 23	3.1
40	6 49	16 41	0 29	1 34	13 32	1.0	0 28	2.9
35	6 38	16 52	0 27	1 28	13 30	1.2	0 32	2.8
30	6 28	17 2	0 25	1 23	13 28	1.3	0 36	2.6
20	6 11	17 20	0 23	1 17	13 24	1.6	0 43	2.4
10	5 56	17 35	0 22	1 13	13 21	1.8	0 48	2.2
0	5 42	17 49	0 22	1 13	13 18	2.0	0 54	2.0
10	5 27	18 3	0 22	1 15	13 15	2.2	0 59	1.8
20	5 12	18 19	0 24	1 21	13 12	2.4	1 5	1.5
30	4 54	18 37	0 26	1 31	13 9	2.7	1 11	1.3
35	4 44	18 47	0 28	1 40	13 7	2.8	1 15	1.2
40	4 32	18 59	0 31	1 52	13 4	3.0	1 19	1.0
45	4 18	19 14	0 35	2 11	13 2	3.2	1 23	.8
50	4 0	19 31	0 40	2 50	12 58	3.4	1 29	.6
55	3 38	19 54	0 49	:::	12 54	3.7	1 36	.3
60	3 6	20 26	1 6	:::	12 49	4.1	1 45	.0
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	14 46.5	- .6	16.2	T _m	19 29	2.0	58.3	15.9	
12	14 39.8			T _{m☉}	11 h 45.3 min	Starost	9.0 d	Faza ☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	8 53	.2	169	-4.2	♄	13 39	.0	97	-1.7
	3 3	.2	256	-1.0	♅	6 48	.0	200	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	°	'	°	'
0	183 38.3	-19 33.1	58 37.7	226 44.4	- 3 11.4	315 4.9	24 42.0
2	213 38.0	-19 34.2	88 42.6	256 44.0	- 3 13.4	345 10.2	24 42.3
4	243 37.7	-19 35.4	118 47.5	286 43.7	- 3 15.4	15 15.4	24 42.6
6	273 37.4	-19 36.5	148 52.5	316 43.4	- 3 17.3	45 20.7	24 42.9
8	303 37.1	-19 37.7	178 57.4	346 43.0	- 3 19.3	75 26.0	24 43.1
10	333 36.8	-19 38.8	209 2.3	16 42.7	- 3 21.2	105 31.3	24 43.4
12	3 36.5	-19 39.9	239 7.3	46 42.4	- 3 23.2	135 36.6	24 43.7
14	33 36.2	-19 41.1	269 12.2	76 42.1	- 3 25.2	165 41.9	24 44.0
16	63 35.9	-19 42.2	299 17.1	106 41.7	- 3 27.1	195 47.2	24 44.3
18	93 35.6	-19 43.3	329 22.0	136 41.4	- 3 29.1	225 52.5	24 44.5
20	123 35.3	-19 44.5	359 27.0	166 41.0	- 3 31.1	255 57.9	24 44.8
22	153 35.0	-19 45.6	29 31.9	196 40.7	- 3 33.0	286 3.2	24 45.1
Δ	-1	-6		-2	-10	27	1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	65 30.3	123 - 1	4.6	166	155 39.4	-23 2.7	258 37.2	10 3.5
2	94 32.8	122 - 0	31.4	166	185 43.2	-23 2.8	288 41.8	10 3.4
4	123 35.2	121 0	1.9	167	215 46.9	-23 2.8	318 46.5	10 3.4
6	152 37.4	120 0	35.2	167	245 50.7	-23 2.9	348 51.2	10 3.3
8	181 39.4	119 1	8.7	168	275 54.4	-23 3.0	18 55.9	10 3.2
10	210 41.2	118 1	42.2	168	305 58.2	-23 3.0	49 .5	10 3.1
12	239 42.9	117 2	15.7	168	336 1.9	-23 3.1	79 5.2	10 3.0
14	268 44.3	116 2	49.3	168	6 5.7	-23 3.1	109 9.9	10 3.0
16	297 45.5	115 3	22.9	168	36 9.5	-23 3.2	139 14.6	10 2.9
18	326 46.5	114 3	56.5	168	66 13.2	-23 3.3	169 19.2	10 2.8
20	355 47.2	112 4	30.2	168	96 17.0	-23 3.3	199 23.9	10 2.7
22	24 47.7	111 5	3.8	168	126 20.7	-23 3.4	229 28.6	10 2.6
Δ					19	0	23	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 9	15 21	0 51	2 33	13 47	.0	1 36	4.2
55	7 41	15 50	0 42	2 10	13 50	.4	1 37	3.8
50	7 20	16 11	0 36	1 54	13 52	.7	1 37	3.5
45	7 4	16 27	0 32	1 43	13 54	.9	1 38	3.2
40	6 50	16 40	0 29	1 35	13 56	1.1	1 38	3.0
35	6 39	16 52	0 27	1 28	13 58	1.2	1 39	2.9
30	6 29	17 2	0 26	1 23	13 59	1.4	1 39	2.7
20	6 12	17 19	0 23	1 17	14 2	1.6	1 40	2.5
10	5 56	17 35	0 22	1 14	14 4	1.9	1 40	2.2
0	5 42	17 49	0 22	1 13	14 6	2.1	1 41	2.0
10	5 27	18 4	0 22	1 15	14 8	2.3	1 41	1.8
20	5 12	18 19	0 24	1 21	14 10	2.5	1 41	1.6
30	4 54	18 38	0 26	1 32	14 13	2.8	1 42	1.3
35	4 43	18 48	0 28	1 40	14 14	2.9	1 42	1.2
40	4 31	19 1	0 31	1 53	14 16	3.1	1 43	1.0
45	4 17	19 15	0 35	2 12	14 18	3.3	1 43	.8
50	3 59	19 33	0 40	2 52	14 21	3.6	1 44	.6
55	3 36	19 56	0 49	:::	14 24	3.9	1 44	.3
60	3 4	20 29	1 7	:::	14 27	4.3	1 45	.0
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	14 33.2	- .6	16.2	T _m	20 17	2.1	59.2	16.1	
12	14 26.2			T _{m☉}	11 h 45.6 min	Starost	10.0 d	Faza ☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	8 53	.2	168	-4.1	♄	13 36	.0	97	-1.7
	2 59	.2	256	-1.0	♅	6 44	.0	200	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	183	34.7	-19	46.7	59	36.8	226	40.4 - 3 35.0
2	213	34.4	-19	47.8	89	41.7	256	40.0 - 3 37.0
4	243	34.1	-19	48.9	119	46.7	286	39.7 - 3 38.9
6	273	33.8	-19	50.1	149	51.6	316	39.3 - 3 40.9
8	303	33.5	-19	51.2	179	56.5	346	39.0 - 3 42.9
10	333	33.2	-19	52.3	210	1.5	16	38.6 - 3 44.8
12	3	32.9	-19	53.4	240	6.4	46	38.3 - 3 46.8
14	33	32.6	-19	54.5	270	11.3	76	37.9 - 3 48.8
16	63	32.3	-19	55.6	300	16.2	106	37.6 - 3 50.7
18	93	32.0	-19	56.7	330	21.2	136	37.2 - 3 52.7
20	123	31.7	-19	57.8	0	26.1	166	36.9 - 3 54.7
22	153	31.4	-19	58.9	30	31.0	196	36.5 - 3 56.6
Δ		-2		-6				-2 -10 27 1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 12	15 19	0 51	2 33	13 47	.1	3 16	4.4
55	7 43	15 48	0 42	2 10	13 59	.5	3 8	4.0
50	7 22	16 10	0 36	1 54	14 8	.8	3 1	3.7
45	7 5	16 26	0 32	1 43	14 16	1.0	2 56	3.4
40	6 51	16 40	0 29	1 35	14 22	1.2	2 52	3.2
35	6 40	16 51	0 27	1 28	14 28	1.4	2 48	3.0
30	6 30	17 2	0 26	1 23	14 33	1.6	2 44	2.9
20	6 12	17 19	0 23	1 17	14 41	1.8	2 39	2.6
10	5 57	17 35	0 22	1 14	14 49	2.0	2 34	2.4
0	5 42	17 49	0 22	1 13	14 56	2.2	2 29	2.2
10	5 28	18 4	0 22	1 16	15 3	2.5	2 25	1.9
20	5 12	18 20	0 24	1 21	15 11	2.7	2 20	1.7
30	4 53	18 38	0 26	1 32	15 20	2.9	2 14	1.5
35	4 43	18 49	0 28	1 41	15 25	3.1	2 11	1.3
40	4 30	19 2	0 31	1 53	15 31	3.3	2 7	1.1
45	4 16	19 16	0 35	2 13	15 38	3.5	2 3	.9
50	3 58	19 35	0 40	2 55	15 46	3.8	1 58	.7
55	3 35	19 58	0 50	:::	15 57	4.1	1 53	.4
60	3 2	20 31	1 9	:::	16 11	4.6	1 45	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	53	47.9	110	5	37.4	168	156	24.5 -23 3.4
2	82	47.8	108	6	10.9	167	186	28.2 -23 3.5
4	111	47.5	107	6	44.4	167	216	32.0 -23 3.6
6	140	46.8	105	7	17.8	167	246	35.7 -23 3.6
8	169	45.8	104	7	51.1	166	276	39.5 -23 3.7
10	198	44.6	102	8	24.4	166	306	43.2 -23 3.7
12	227	42.9	100	8	57.5	165	336	47.0 -23 3.8
14	256	41.0	98	9	30.5	164	6	50.7 -23 3.9
16	285	38.7	97	10	3.3	163	36	54.5 -23 3.9
18	314	36.0	95	10	36.0	162	66	58.2 -23 4.0
20	343	32.9	93	11	8.5	161	97	2.0 -23 4.0
22	12	29.5	91	11	40.8	160	127	5.7 -23 4.1
Δ							19	0 23 0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	14	19.2	- .6	16.2	T _m 21 8	2.3	60.0 16.4		
12	14	11.7	T _{m☉} 11 h 45.8 min	Starost 11.0 d	Faza ☉				
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	8 53	.2	167	-4.1	♃	13 33	.0	97	-1.7
♂	2 55	.2	257	-1.1	♄	6 41	.0	200	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	183	31.0	-20	.0	60	36.0	226	36.2 - 3 58.6
2	213	30.7	-20	1.1	90	40.9	256	35.8 - 4 .6
4	243	30.4	-20	2.2	120	45.8	286	35.4 - 4 2.6
6	273	30.1	-20	3.2	150	50.7	316	35.1 - 4 4.5
8	303	29.8	-20	4.3	180	55.7	346	34.7 - 4 6.5
10	333	29.4	-20	5.4	211	.6	16	34.3 - 4 8.5
12	3	29.1	-20	6.5	241	5.5	46	34.0 - 4 10.5
14	33	28.8	-20	7.6	271	10.5	76	33.6 - 4 12.4
16	63	28.5	-20	8.6	301	15.4	106	33.2 - 4 14.4
18	93	28.1	-20	9.7	331	20.3	136	32.9 - 4 16.4
20	123	27.8	-20	10.8	1	25.2	166	32.5 - 4 18.4
22	153	27.5	-20	11.8	31	30.2	196	32.1 - 4 20.4
Δ		-2		-5				-2 -10 27 1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 14	15 17	0 51	2 34	13 49	.2	5 3	4.8
55	7 45	15 47	0 42	2 11	14 11	.7	4 43	4.2
50	7 23	16 9	0 36	1 55	14 27	1.0	4 29	3.8
45	7 6	16 25	0 32	1 43	14 41	1.3	4 18	3.6
40	6 53	16 39	0 29	1 35	14 52	1.5	4 8	3.3
35	6 41	16 51	0 27	1 28	15 1	1.7	4 0	3.2
30	6 30	17 1	0 26	1 23	15 10	1.8	3 53	3.0
20	6 13	17 19	0 23	1 17	15 25	2.0	3 41	2.8
10	5 57	17 35	0 22	1 14	15 37	2.3	3 31	2.5
0	5 42	17 50	0 22	1 13	15 50	2.4	3 21	2.3
10	5 28	18 5	0 23	1 16	16 2	2.6	3 11	2.1
20	5 12	18 21	0 24	1 21	16 15	2.8	3 1	1.9
30	4 53	18 39	0 27	1 32	16 31	3.1	2 49	1.7
35	4 42	18 50	0 29	1 41	16 40	3.2	2 42	1.5
40	4 30	19 3	0 31	1 54	16 50	3.4	2 35	1.3
45	4 15	19 18	0 35	2 14	17 2	3.6	2 26	1.1
50	3 57	19 36	0 41	2 58	17 17	3.9	2 15	.9
55	3 33	20 0	0 50	:::	17 36	4.3	2 2	.6
60	3 0	20 34	1 10	:::	18 1	4.9	1 46	.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	41	25.7	89	12	12.8	159	157	9.5 -23 4.2
2	70	21.4	87	12	44.7	158	187	13.2 -23 4.2
4	99	16.8	85	13	16.3	157	217	17.0 -23 4.3
6	128	11.7	83	13	47.6	155	247	20.7 -23 4.3
8	157	6.2	80	14	18.7	154	277	24.5 -23 4.4
10	186	.3	78	14	49.5	152	307	28.2 -23 4.4
12	214	54.0	76	15	19.9	151	337	32.0 -23 4.5
14	243	47.1	74	15	50.0	149	7	35.7 -23 4.6
16	272	39.9	71	16	19.7	147	37	39.5 -23 4.6
18	301	32.1	69	16	49.1	145	67	43.2 -23 4.7
20	330	24.0	67	17	18.1	143	97	47.0 -23 4.7
22	359	15.3	64	17	46.6	141	127	50.7 -23 4.8
Δ							19	0 23 0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	14	4.3	- .7	16.2	T _m 22 3	2.5	60.7 16.5		
12	13	56.5	T _{m☉} 11 h 46.1 min	Starost 12.0 d	Faza ☉				
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	8 54	.2	166	-4.1	♃	13 30	.0	97	-1.7
♂	2 51	.2	257	-1.1	♄	6 37	.0	200	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	183	27.1	-20	12.9	61	35.1	226	31.7	-4	22.3	318	18.7	24	52.4
2	213	26.8	-20	13.9	91	40.0	256	31.3	-4	24.3	348	24.2	24	52.7
4	243	26.5	-20	15.0	121	45.0	286	31.0	-4	26.3	18	29.7	24	53.0
6	273	26.1	-20	16.1	151	49.9	316	30.6	-4	28.3	48	35.2	24	53.3
8	303	25.8	-20	17.1	181	54.8	346	30.2	-4	30.3	78	40.7	24	53.6
10	333	25.4	-20	18.2	211	59.7	16	29.8	-4	32.2	108	46.3	24	53.9
12	3	25.1	-20	19.2	242	4.7	46	29.4	-4	34.2	138	51.8	24	54.2
14	33	24.8	-20	20.2	272	9.6	76	29.0	-4	36.2	168	57.3	24	54.5
16	63	24.4	-20	21.3	302	14.5	106	28.6	-4	38.2	199	2.9	24	54.8
18	93	24.1	-20	22.3	332	19.5	136	28.3	-4	40.2	229	8.4	24	55.1
20	123	23.7	-20	23.4	2	24.4	166	27.9	-4	42.2	259	14.0	24	55.4
22	153	23.4	-20	24.4	32	29.3	196	27.5	-4	44.1	289	19.6	24	55.7
Δ		-2		-5				-2		-10		28		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 16	15 16	0 51	2 34	13 53	.4	6 57	5.0
55	7 46	15 46	0 42	2 11	14 27	1.1	6 24	4.3
50	7 25	16 8	0 36	1 55	14 52	1.5	6 1	3.9
45	7 8	16 25	0 32	1 44	15 12	1.7	5 43	3.6
40	6 54	16 39	0 30	1 35	15 28	1.9	5 29	3.4
35	6 42	16 51	0 27	1 29	15 41	2.0	5 16	3.3
30	6 31	17 1	0 26	1 24	15 53	2.1	5 6	3.1
20	6 13	17 19	0 23	1 17	16 14	2.3	4 47	2.9
10	5 58	17 35	0 22	1 14	16 31	2.5	4 32	2.7
0	5 43	17 50	0 22	1 13	16 48	2.6	4 17	2.5
10	5 28	18 5	0 23	1 16	17 5	2.8	4 2	2.4
20	5 12	18 21	0 24	1 21	17 24	3.0	3 47	2.2
30	4 53	18 40	0 27	1 32	17 45	3.1	3 29	2.0
35	4 42	18 51	0 29	1 41	17 57	3.3	3 19	1.8
40	4 29	19 4	0 31	1 54	18 12	3.4	3 7	1.7
45	4 14	19 19	0 35	2 15	18 29	3.6	2 53	1.5
50	3 56	19 38	0 41	3 1	18 50	3.8	2 37	1.2
55	3 32	20 2	0 50	:::	19 19	4.2	2 16	.8
60	2 58	20 36	1 11	:::	19 60	5.0	1 48	.2
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	28	6.2	62	18	14.8	138	157	54.4	-23	4.8	261	25.8	10	.8
2	56	56.6	60	18	42.5	136	187	58.2	-23	4.9	291	30.5	10	.7
4	85	46.5	57	19	9.7	134	218	1.9	-23	5.0	321	35.2	10	.6
6	114	36.0	55	19	36.4	131	248	5.7	-23	5.0	351	39.9	10	.6
8	143	24.9	53	20	2.6	128	278	9.4	-23	5.1	21	44.6	10	.5
10	172	13.4	50	20	28.3	126	308	13.2	-23	5.1	51	49.3	10	.4
12	201	1.5	48	20	53.4	123	338	16.9	-23	5.2	81	54.0	10	.4
14	229	49.0	46	21	18.0	120	8	20.7	-23	5.2	111	58.7	10	.3
16	258	36.1	43	21	42.0	117	38	24.4	-23	5.3	142	3.4	10	.2
18	287	22.8	41	22	5.4	114	68	28.1	-23	5.3	172	8.1	10	.1
20	316	9.0	39	22	58.1	111	98	31.9	-23	5.4	202	12.8	10	.1
22	344	54.7	37	22	50.3	107	128	35.6	-23	5.5	232	17.5	10	.0
Δ							19			0		23		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	13 48.7	-.7	16.2	T _m	23 3	2.7	61.2	16.7	
12	13 40.5			T _{m☉}	11 h 46.3 min		Starost 13.0 d	Faza ☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	8 54	.2	165	-4.1	♄	13 27	.0	96	-1.7
	2 46	.2	257	-1.1	♅	6 33	.0	200	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	183	23.0	-20	25.4	62	34.2	226	27.1	-4	46.1	319	25.1	24	56.0
2	213	22.7	-20	26.5	92	39.2	256	26.7	-4	48.1	349	30.7	24	56.3
4	243	22.3	-20	27.5	122	44.1	286	26.3	-4	50.1	19	36.3	24	56.6
6	273	22.0	-20	28.5	152	49.0	316	25.9	-4	52.1	49	41.9	24	56.9
8	303	21.6	-20	29.5	182	54.0	346	25.5	-4	54.1	79	47.5	24	57.2
10	333	21.3	-20	30.5	212	58.9	16	25.1	-4	56.1	109	53.1	24	57.5
12	3	20.9	-20	31.6	243	3.8	46	24.7	-4	58.0	139	58.7	24	57.8
14	33	20.6	-20	32.6	273	8.7	76	24.2	-5	.0	170	4.4	24	58.1
16	63	20.2	-20	33.6	303	13.7	106	23.8	-5	2.0	200	10.0	24	58.4
18	93	19.8	-20	34.6	333	18.6	136	23.4	-5	4.0	230	15.6	24	58.7
20	123	19.5	-20	35.6	3	23.5	166	23.0	-5	6.0	260	21.3	24	59.0
22	153	19.1	-20	36.6	33	28.4	196	22.6	-5	8.0	290	26.9	24	59.4
Δ		-2		-5				-2		-10		28		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 19	15 14	0 52	2 35	14 3	1.1	8 56	4.7
55	7 48	15 44	0 42	2 11	14 53	1.8	8 7	3.9
50	7 26	16 7	0 37	1 55	15 27	2.1	7 34	3.6
45	7 9	16 24	0 33	1 44	15 52	2.2	7 10	3.4
40	6 55	16 38	0 30	1 35	16 13	2.3	6 51	3.3
35	6 43	16 50	0 27	1 29	16 30	2.4	6 35	3.2
30	6 32	17 1	0 26	1 24	16 44	2.5	6 21	3.1
20	6 14	17 19	0 24	1 17	17 9	2.6	5 57	3.0
10	5 58	17 35	0 22	1 14	17 31	2.7	5 37	2.8
0	5 43	17 50	0 22	1 14	17 52	2.8	5 18	2.7
10	5 28	18 5	0 23	1 16	18 12	2.8	4 59	2.6
20	5 11	18 22	0 24	1 22	18 34	2.9	4 39	2.5
30	4 53	18 41	0 27	1 33	18 0	3.0	4 16	2.3
35	4 41	18 52	0 29	1 42	19 16	3.1	4 2	2.2
40	4 29	19 5	0 31	1 55	19 33	3.1	3 47	2.1
45	4 13	19 20	0 35	2 16	19 55	3.2	3 28	1.9
50	3 55	19 39	0 41	3 4	20 22	3.3	3 5	1.7
55	3 30	20 4	0 51	:::	20 60	3.6	2 36	1.4
60	2 56	20 39	1 12	:::	22 0	4.2	1 53	.6
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	13	40.0	34	23	11.8	104	158	39.4	-23	5.5	262	22.2	9	59.9
2	42	24.9	32	23	32.6	101	188	43.1	-23	5.6	292	26.9	9	59.9
4	71	9.4	30	23	52.7	97	218	46.8	-23	5.6	322	31.6	9	59.8
6	99	53.5	28	24	12.1	93	248	50.6	-23	5.7	352	36.3	9	59.7
8	128	37.2	27	24	30.8	90	278	54.3	-23	5.7	22	41.0	9	59.7
10	157	20.5	25	24	48.7	86	308	58.1	-23	5.8	52	45.7	9	59.6
12	186	3.4	23	25	5.9	82	339	1.8	-23	5.8	82	50.4	9	59.5
14	214	46.0	21	25	22.4	78	9	5.5	-23	5.9	112	55.1	9	59.5
16	243	28.3	20	25	38.1	74	39	9.3	-23	5.9	142	59.8	9	59.4
18	272	10.3	19	25	52.9	70	69	13.0	-23	6.0	173	4.5	9	59.3
20	300	52.0	17	26	7.0	66	99	16.8	-23	6.1	203	9.2	9	59.3
22	329	33.5	16	26	20.3	62	129	20.5	-23	6.1	233	14.0	9	59.2
Δ							19			0		24		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	13 32.3	-.7	16.2	T _m	.. .	1.0	61.4	16.7
12	13 23.7			T _{m☉}	11 h 46.6 min		Starost 14.0 d	Faza ☉
PLANETE								
Pl.	T _m	π	360-α	Vel.				

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 18.7	-20 37.6	63 33.4	226 22.2	- 5 10.0	320 32.6	24 59.7
2	213 18.4	-20 38.6	93 38.3	256 21.8	- 5 12.0	350 38.2	24 60.0
4	243 18.0	-20 39.6	123 43.2	286 21.3	- 5 13.9	20 43.9	25 .3
6	273 17.6	-20 40.6	153 48.2	316 20.9	- 5 15.9	50 49.6	25 .6
8	303 17.3	-20 41.6	183 53.1	346 20.5	- 5 17.9	80 55.3	25 .9
10	333 16.9	-20 42.5	213 58.0	16 20.1	- 5 19.9	111 1.0	25 1.2
12	3 16.5	-20 43.5	244 2.9	46 19.6	- 5 21.9	141 6.7	25 1.5
14	33 16.1	-20 44.5	274 7.9	76 19.2	- 5 23.9	171 12.4	25 1.8
16	63 15.8	-20 45.5	304 12.8	106 18.8	- 5 25.9	201 18.1	25 2.2
18	93 15.4	-20 46.5	334 17.7	136 18.4	- 5 27.9	231 23.8	25 2.5
20	123 15.0	-20 47.4	4 22.7	166 17.9	- 5 29.9	261 29.5	25 2.8
22	153 14.6	-20 48.4	34 27.6	196 17.5	- 5 31.9	291 35.2	25 3.1
Δ	-2	-5		-2	-10	28	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 21	15 12	0 52	2 36	14 29	2.7	10 48	3.1
55	7 50	15 43	0 43	2 12	15 36	2.8	9 41	3.0
50	7 28	16 6	0 37	1 55	16 17	2.8	9 1	3.0
45	7 10	16 23	0 33	1 44	16 46	2.8	8 32	2.9
40	6 56	16 38	0 30	1 35	17 9	2.8	8 10	2.9
35	6 44	16 50	0 27	1 29	17 28	2.8	7 51	2.9
30	6 33	17 1	0 26	1 24	17 44	2.8	7 35	2.9
20	6 15	17 19	0 24	1 17	18 12	2.8	7 8	2.8
10	5 58	17 35	0 22	1 14	18 36	2.8	6 45	2.8
0	5 43	17 51	0 22	1 14	18 58	2.7	6 23	2.8
10	5 28	18 6	0 23	1 16	19 20	2.7	6 1	2.7
20	5 11	18 23	0 24	1 22	19 45	2.7	5 38	2.7
30	4 52	18 42	0 27	1 33	20 13	2.7	5 11	2.7
35	4 41	18 53	0 29	1 42	20 29	2.7	4 55	2.6
40	4 28	19 6	0 32	1 55	20 49	2.6	4 37	2.6
45	4 13	19 22	0 35	2 17	21 12	2.6	4 15	2.5
50	3 54	19 41	0 41	3 7	21 43	2.5	3 47	2.4
55	3 29	20 6	0 51	:::	22 25	2.4	3 8	2.2
60	2 54	20 41	1 13	:::	23 40	2.1	2 7	1.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	358 14.7	15 26	32.7	58	159 24.2	-23 6.2	263 18.7	9 59.1
2	26 55.7	14 26	44.3	54	189 28.0	-23 6.2	293 23.4	9 59.1
4	55 36.5	13 26	55.1	50	219 31.7	-23 6.3	323 28.1	9 59.0
6	84 17.1	12 27	5.0	45	249 35.4	-23 6.3	353 32.8	9 58.9
8	112 57.6	12 27	14.1	41	279 39.2	-23 6.4	23 37.5	9 58.9
10	141 38.0	11 27	22.3	37	309 42.9	-23 6.4	53 42.2	9 58.8
12	170 18.3	11 27	29.7	33	339 46.6	-23 6.5	83 46.9	9 58.8
14	198 58.5	11 27	36.2	28	9 50.4	-23 6.5	113 51.7	9 58.7
16	227 38.7	11 27	41.8	24	39 54.1	-23 6.6	143 56.4	9 58.6
18	256 18.9	11 27	46.6	19	69 57.8	-23 6.6	174 1.1	9 58.6
20	284 59.1	11 27	50.5	15	100 1.6	-23 6.7	204 5.8	9 58.5
22	313 39.4	12 27	53.5	11	130 5.3	-23 6.7	234 10.5	9 58.4
Δ					19	0	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	13 15.1	-.7	16.2	T _m	0 7	2.8	61.2 16.7
12	13 6.1	T _{m☉}	11 h 46.9 min	Starost	15.0 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 55	.2	163	-4.1	♄	13 21	.0	96	-1.7
♂	2 37	.2	257	-1.2	♂	6 26	.0	200	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 14.2	-20 49.4	64 32.5	226 17.1	- 5 33.9	321 41.0	25 3.4
2	213 13.9	-20 50.3	94 37.4	256 16.6	- 5 35.8	351 46.7	25 3.7
4	243 13.5	-20 51.3	124 42.4	286 16.2	- 5 37.8	21 52.5	25 4.1
6	273 13.1	-20 52.3	154 47.3	316 15.7	- 5 39.8	51 58.2	25 4.4
8	303 12.7	-20 53.2	184 52.2	346 15.3	- 5 41.8	82 4.0	25 4.7
10	333 12.3	-20 54.2	214 57.2	16 14.9	- 5 43.8	112 9.8	25 5.0
12	3 11.9	-20 55.1	245 2.1	46 14.4	- 5 45.8	142 15.5	25 5.3
14	33 11.5	-20 56.1	275 7.0	76 14.0	- 5 47.8	172 21.3	25 5.7
16	63 11.2	-20 57.0	305 11.9	106 13.5	- 5 49.8	202 27.1	25 6.0
18	93 10.8	-20 58.0	335 16.9	136 13.1	- 5 51.8	232 32.9	25 6.3
20	123 10.4	-20 58.9	5 21.8	166 12.6	- 5 53.8	262 38.7	25 6.6
22	153 10.0	-20 59.8	35 26.7	196 12.1	- 5 55.8	292 44.5	25 6.9
Δ	-2	-5		-2	-10	29	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 23	15 11	0 52	2 36	15 33	4.2	12 3	1.3
55	7 52	15 42	0 43	2 12	16 43	3.6	10 54	1.9
50	7 29	16 5	0 37	1 56	17 23	3.3	10 12	2.2
45	7 11	16 23	0 33	1 44	17 53	3.2	9 43	2.3
40	6 57	16 37	0 30	1 35	18 16	3.0	9 20	2.4
35	6 45	16 50	0 27	1 29	18 35	3.0	9 1	2.4
30	6 34	17 0	0 26	1 24	18 51	2.9	8 44	2.5
20	6 15	17 19	0 24	1 17	19 18	2.8	8 16	2.6
10	5 59	17 35	0 22	1 14	19 42	2.7	7 52	2.6
0	5 44	17 51	0 22	1 14	20 4	2.6	7 30	2.7
10	5 28	18 6	0 23	1 16	20 26	2.5	7 7	2.7
20	5 11	18 23	0 24	1 22	20 50	2.4	6 43	2.8
30	4 52	18 43	0 27	1 33	21 17	2.3	6 15	2.9
35	4 41	18 54	0 29	1 42	21 33	2.2	5 58	2.9
40	4 28	19 7	0 32	1 56	21 52	2.1	5 39	3.0
45	4 12	19 23	0 36	2 18	22 15	2.0	5 15	3.0
50	3 53	19 42	0 42	3 11	22 44	1.8	4 45	3.1
55	3 28	20 8	0 52	:::	23 24	1.5	4 2	3.2
60	2 52	20 44	1 15	:::	24 47	.0	2 47	3.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	342 19.7	12 27	55.6	6	160 9.0	-23 6.8	264 15.2	9 58.4
2	11 .2	13 27	56.9	2	190 12.8	-23 6.8	294 20.0	9 58.3
4	39 40.8	14 27	57.3	-2	220 16.5	-23 6.9	324 24.7	9 58.3
6	68 21.6	15 27	56.9	-6	250 20.2	-23 6.9	354 29.4	9 58.2
8	97 2.5	16 27	55.6	-11	280 24.0	-23 7.0	24 34.1	9 58.1
10	125 43.7	17 27	53.5	-15	310 27.7	-23 7.0	54 38.8	9 58.1
12	154 25.1	18 27	50.5	-19	340 31.4	-23 7.1	84 43.6	9 58.0
14	183 6.8	20 27	46.7	-23	10 35.2	-23 7.1	114 48.3	9 57.9
16	211 48.8	21 27	42.1	-27	40 38.9	-23 7.2	144 53.0	9 57.9
18	240 31.0	23 27	36.7	-31	70 42.6	-23 7.2	174 57.7	9 57.8
20	269 13.7	25 27	30.5	-35	100 46.4	-23 7.3	205 2.5	9 57.8
22	297 56.7	27 27	23.4	-39	130 50.1	-23 7.3	235 7.2	9 57.7
Δ					19	0	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	12 57.2	-.8	16.2	T _m	1 14	2.7	60.7 16.5
12	12 47.8	T _{m☉}	11 h 47.2 min	Starost	16.0 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 55	.2	162	-4.1	♄	13 18	.0	96	-1.7
♂	2 33	.2	257	-1.2	♂	6 22	.0	200	.7

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS					
	S _☉		δ _☉		S _☿		S _♀			S _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	183	9.6	-21	.8	65	31.7	226	11.7	-5	57.8	322	50.3	25	7.3	
2	213	9.2	-21	1.7	95	36.6	256	11.2	-5	59.8	352	56.1	25	7.6	
4	243	8.8	-21	2.6	125	41.5	286	10.8	-6	1.8	23	2.0	25	7.9	
6	273	8.4	-21	3.6	155	46.4	316	10.3	-6	3.8	53	7.8	25	8.2	
8	303	8.0	-21	4.5	185	51.4	346	9.9	-6	5.8	83	13.6	25	8.5	
10	333	7.6	-21	5.4	215	56.3	16	9.4	-6	7.8	113	19.5	25	8.9	
12	3	7.2	-21	6.3	246	1.2	46	8.9	-6	9.7	143	25.3	25	9.2	
14	33	6.8	-21	7.2	276	6.2	76	8.5	-6	11.7	173	31.2	25	9.5	
16	63	6.4	-21	8.1	306	11.1	106	8.0	-6	13.7	203	37.1	25	9.8	
18	93	5.9	-21	9.1	336	16.0	136	7.5	-6	15.7	233	42.9	25	10.2	
20	123	5.5	-21	10.0	6	20.9	166	7.0	-6	17.7	263	48.8	25	10.5	
22	153	5.1	-21	10.9	36	25.9	196	6.6	-6	19.7	293	54.7	25	10.8	
Δ		-2		-5				-2		-10		29			2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 26	15 9	0 53	2 37	17 13	4.5	12 35	.5
55	7 54	15 41	0 43	2 12	18 8	3.8	11 40	1.1
50	7 31	16 4	0 37	1 56	18 43	3.5	11 4	1.5
45	7 13	16 22	0 33	1 44	19 8	3.2	10 38	1.7
40	6 58	16 37	0 30	1 36	19 29	3.1	10 17	1.8
35	6 46	16 49	0 28	1 29	19 46	2.9	9 59	2.0
30	6 35	17 0	0 26	1 24	20 0	2.8	9 44	2.1
20	6 16	17 19	0 24	1 17	20 25	2.7	9 18	2.2
10	5 59	17 36	0 22	1 14	20 46	2.5	8 55	2.4
0	5 44	17 51	0 22	1 14	21 6	2.3	8 34	2.5
10	5 28	18 7	0 23	1 16	21 26	2.2	8 13	2.6
20	5 11	18 24	0 24	1 22	21 47	2.0	7 50	2.7
30	4 52	18 43	0 27	1 33	22 11	1.9	7 24	2.9
35	4 40	18 55	0 29	1 43	22 26	1.7	7 8	3.0
40	4 27	19 8	0 32	1 56	22 42	1.6	6 50	3.1
45	4 11	19 24	0 36	2 19	23 2	1.4	6 27	3.2
50	3 52	19 44	0 42	3 15	23 26	1.2	5 59	3.5
55	3 27	20 9	0 52	:::	23 58	.9	5 20	3.8
60	2 51	20 46	1 16	:::	0 30	.7	4 15	4.6
S								

UT	MESEC				JUPITER			SATURN							
	S _♃		Δ		δ _♃		S _♃								
h	°	'	°	'	°	'	°	'	°	'					
0	326	40.0	29	27	15.6	-43	160	53.8	-23	7.4	265	11.9	9	57.7	
2	355	23.8	31	27	7.1	-47	190	57.6	-23	7.4	295	16.6	9	57.6	
4	24	8.0	33	26	57.8	-50	221	1.3	-23	7.5	325	21.4	9	57.5	
6	52	52.6	35	26	47.7	-54	251	5.0	-23	7.5	355	26.1	9	57.5	
8	81	37.7	38	26	36.9	-57	281	8.7	-23	7.6	25	30.8	9	57.4	
10	110	23.3	40	26	25.5	-61	311	12.5	-23	7.6	55	35.6	9	57.4	
12	139	9.3	43	26	13.3	-64	341	16.2	-23	7.7	85	40.3	9	57.3	
14	167	55.8	45	26	.4	-68	11	19.9	-23	7.7	115	45.0	9	57.2	
16	196	42.9	48	25	46.9	-71	41	23.6	-23	7.8	145	49.8	9	57.2	
18	225	30.4	50	25	32.7	-74	71	27.4	-23	7.8	175	54.5	9	57.1	
20	254	18.5	53	25	17.9	-77	101	31.1	-23	7.9	205	59.2	9	57.1	
22	283	7.1	56	25	2.5	-80	131	34.8	-23	7.9	236	4.0	9	57.0	
Δ							19			0		24			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	12 38.5	- .8	16.2	T _m	2 19	2.5	60.0	16.3	
12	12 28.7	T _{m☉}	11 h 47.5 min	Starost	17.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°
♀	8 55	.2	161	-4.1	♃	13 15	.0	95	-1.7
♂	2 28	.2	257	-1.2	♄	6 18	.0	200	.7

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS					
	S _☉		δ _☉		S _☿		S _♀			S _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	183	4.7	-21	11.8	66	30.8	226	6.1	-6	21.7	324	.6	25	11.2	
2	213	4.3	-21	12.7	96	35.7	256	5.6	-6	23.7	354	6.5	25	11.5	
4	243	3.9	-21	13.6	126	40.6	286	5.1	-6	25.7	24	12.4	25	11.8	
6	273	3.5	-21	14.5	156	45.6	316	4.7	-6	27.7	54	18.3	25	12.1	
8	303	3.0	-21	15.4	186	50.5	346	4.2	-6	29.7	84	24.3	25	12.5	
10	333	2.6	-21	16.2	216	55.4	16	3.7	-6	31.7	114	30.2	25	12.8	
12	3	2.2	-21	17.1	247	.4	46	3.2	-6	33.7	144	36.1	25	13.1	
14	33	1.8	-21	18.0	277	5.3	76	2.7	-6	35.7	174	42.1	25	13.4	
16	63	1.4	-21	18.9	307	10.2	106	2.2	-6	37.7	204	48.0	25	13.8	
18	93	.9	-21	19.8	337	15.1	136	1.7	-6	39.7	234	53.9	25	14.1	
20	123	.5	-21	20.6	7	20.1	166	1.2	-6	41.7	264	59.9	25	14.4	
22	153	.1	-21	21.5	37	25.0	196	.7	-6	43.7	295	5.9	25	14.8	
Δ		-2		-4				-2		-10		30			2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 28	15 7	0 53	2 38	19 1	4.3	12 47	.2
55	7 55	15 40	0 43	2 13	19 40	3.7	12 8	.7
50	7 32	16 3	0 37	1 56	20 6	3.4	11 40	1.0
45	7 14	16 22	0 33	1 44	20 26	3.1	11 18	1.3
40	6 59	16 36	0 30	1 36	20 43	3.0	11 1	1.4
35	6 46	16 49	0 28	1 29	20 56	2.8	10 46	1.6
30	6 35	17 0	0 26	1 24	21 8	2.7	10 33	1.7
20	6 16	17 19	0 24	1 18	21 29	2.5	10 11	1.9
10	5 60	17 36	0 22	1 14	21 46	2.3	9 52	2.1
0	5 44	17 52	0 22	1 14	22 2	2.1	9 34	2.2
10	5 28	18 7	0 23	1 16	22 19	1.9	9 15	2.4
20	5 11	18 24	0 24	1 22	22 36	1.8	8 56	2.6
30	4 52	18 44	0 27	1 34	22 56	1.5	8 33	2.8
35	4 40	18 56	0 29	1 43	23 7	1.4	8 20	2.9
40	4 27	19 9	0 32	1 57	23 21	1.3	8 4	3.0
45	4 11	19 25	0 36	2 20	23 36	1.1	7 45	3.2
50	3 51	19 45	0 42	3 20	23 55	.9	7 22	3.5
55	3 25	20 11	0 52	:::	..	.0	6 51	3.8
60	2 49	20 48	1 17	:::	0 48	.3	6 4	4.5
S								

UT	MESEC				JUPITER			SATURN							
	S _♃		Δ		δ _♃		S _♃								
h	°	'	°	'	°	'	°	'	°	'					
0	311	56.3	59	24	46.4	-83	161	38.6	-23	8.0	266	8.7	9	57.0	
2	340	46.0	61	24	29.8	-86	191	42.3	-23	8.0	296	13.4	9	56.9	
4	9	36.2	64	24	12.6	-89	221	46.0	-23	8.1	326	18.2	9	56.9	
6	38	27.1	67	23	54.9	-91	251	49.7	-23	8.1	356	22.9	9	56.8	
8	67	18.4	70	23	36.6	-94	281	53.5	-23	8.2	26	27.6	9	56.7	
10	96	10.4	72	23	17.8	-96	311	57.2	-23	8.2	56	32.4	9	56.7	
12	125	2.8	75	22	58.5	-99	342	.9	-23	8.3	86	37.1	9	56.6	
14	153	55.9	78	22	38.7	-101	12	4.6	-23	8.3	116	41.9	9	56.6	
16	182	49.5	81	22	18.5	-104	42	8.4	-23	8.4	146	46.6	9	56.5	
18	211	43.7	84	21	57.8	-106	72	12.1	-23	8.4	176	51.3	9	56.5	
20	240	38.4	86	21	36.6	-108	102	15.8	-23	8.5	206	56.1	9	56.4	
22	269	33.7	89	21	15.0	-110	132	19.5	-23	8.5	237	.8	9	56.4	
Δ							19			0		24			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	12 19.0	- .8	16.2	T _m	3 20	2.3	59.1	16.1	
12	12 8.9	T _{m☉}	11 h 47.8 min	Starost	18.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 59.7	-21 22.4	67 29.9	226 .2	- 6 45.7	325 11.8	25 15.1
2	212 59.2	-21 23.2	97 34.9	255 59.8	- 6 47.7	355 17.8	25 15.4
4	242 58.8	-21 24.1	127 39.8	285 59.3	- 6 49.7	25 23.8	25 15.8
6	272 58.4	-21 25.0	157 44.7	315 58.7	- 6 51.6	55 29.8	25 16.1
8	302 57.9	-21 25.8	187 49.6	345 58.2	- 6 53.6	85 35.8	25 16.4
10	332 57.5	-21 26.7	217 54.6	15 57.7	- 6 55.6	115 41.8	25 16.8
12	2 57.1	-21 27.5	247 59.5	45 57.2	- 6 57.6	145 47.8	25 17.1
14	32 56.6	-21 28.4	278 4.4	75 56.7	- 6 59.6	175 53.8	25 17.4
16	62 56.2	-21 29.2	308 9.4	105 56.2	- 7 1.6	205 59.9	25 17.8
18	92 55.8	-21 30.1	338 14.3	135 55.7	- 7 3.6	236 5.9	25 18.1
20	122 55.3	-21 30.9	8 19.2	165 55.2	- 7 5.6	266 11.9	25 18.4
22	152 54.9	-21 31.7	38 24.1	195 54.7	- 7 7.6	296 18.0	25 18.8
Δ	-2	-4		-3	-10	30	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 30	15 6	0 53	2 38	20 44	3.9	12 52	.1
55	7 57	15 39	0 43	2 13	21 9	3.5	12 25	.5
50	7 33	16 3	0 37	1 57	21 27	3.2	12 4	.8
45	7 15	16 21	0 33	1 45	21 42	3.0	11 48	1.0
40	7 0	16 36	0 30	1 36	21 54	2.8	11 35	1.2
35	6 47	16 49	0 28	1 29	22 4	2.6	11 24	1.3
30	6 36	16 60	0 26	1 24	22 13	2.5	11 14	1.4
20	6 17	17 19	0 24	1 18	22 28	2.3	10 57	1.6
10	6 0	17 36	0 23	1 14	22 41	2.1	10 41	1.8
0	5 45	17 52	0 22	1 14	22 53	1.9	10 27	2.0
10	5 29	18 8	0 23	1 16	23 5	1.7	10 13	2.2
20	5 11	18 25	0 24	1 22	23 18	1.5	9 57	2.4
30	4 52	18 45	0 27	1 34	23 33	1.3	9 40	2.6
35	4 40	18 57	0 29	1 43	23 41	1.2	9 29	2.7
40	4 26	19 11	0 32	1 57	23 51	1.0	9 17	2.9
45	4 10	19 27	0 36	2 21	...	.0	9 3	3.1
50	3 50	19 47	0 42	3 25	...	.0	8 45	3.3
55	3 24	20 13	0 53	:::	0 20	.6	8 23	3.6
60	2 47	20 51	1 19	:::	0 54	.1	7 51	4.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	298 29.5	92	20 53.0	-112	162 23.2	-23 8.5	267 5.6	9 56.3
2	327 25.9	95	20 30.7	-114	192 27.0	-23 8.6	297 10.3	9 56.3
4	356 22.8	97	20 7.9	-116	222 30.7	-23 8.6	327 15.1	9 56.2
6	25 20.2	100	19 44.8	-117	252 34.4	-23 8.7	357 19.8	9 56.2
8	54 18.2	102	19 21.3	-119	282 38.1	-23 8.7	27 24.5	9 56.1
10	83 16.7	105	18 57.5	-121	312 41.9	-23 8.8	57 29.3	9 56.1
12	112 15.7	107	18 33.3	-122	342 45.6	-23 8.8	87 34.0	9 56.0
14	141 15.2	110	18 8.9	-124	12 49.3	-23 8.9	117 38.8	9 56.0
16	170 15.2	112	17 44.2	-125	42 53.0	-23 8.9	147 43.5	9 55.9
18	199 15.6	115	17 19.1	-126	72 56.7	-23 9.0	177 48.3	9 55.9
20	228 16.6	117	16 53.9	-128	103 .5	-23 9.0	207 53.0	9 55.8
22	257 18.0	119	16 28.3	-129	133 4.2	-23 9.0	237 57.8	9 55.8
Δ					19	0	24	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	11 58.8	-.9	16.2	T _m	4 15	2.0	58.1 15.8		
12	11 48.4	T _{m☉}	11 h 48.2 min	Starost	19.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♁	8 56 .2	158	-4.1	η	13 9 .0	95	-1.7		
♂	2 19 .2	258	-1.2	η	6 11 .0	200	.7		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 54.4	-21 32.6	68 29.1	225 54.2	- 7 9.6	326 24.0	25 19.1
2	212 54.0	-21 33.4	98 34.0	255 53.6	- 7 11.6	356 30.1	25 19.4
4	242 53.6	-21 34.2	128 38.9	285 53.1	- 7 13.6	26 36.1	25 19.8
6	272 53.1	-21 35.1	158 43.9	315 52.6	- 7 15.6	56 42.2	25 20.1
8	302 52.7	-21 35.9	188 48.8	345 52.1	- 7 17.6	86 48.3	25 20.4
10	332 52.2	-21 36.7	218 53.7	15 51.5	- 7 19.6	116 54.4	25 20.8
12	2 51.8	-21 37.5	248 58.6	45 51.0	- 7 21.6	147 .5	25 21.1
14	32 51.3	-21 38.3	279 3.6	75 50.5	- 7 23.6	177 6.6	25 21.4
16	62 50.9	-21 39.2	309 8.5	105 50.0	- 7 25.5	207 12.7	25 21.8
18	92 50.4	-21 40.0	339 13.4	135 49.4	- 7 27.5	237 18.8	25 22.1
20	122 50.0	-21 40.8	9 18.4	165 48.9	- 7 29.5	267 24.9	25 22.5
22	152 49.5	-21 41.6	39 23.3	195 48.4	- 7 31.5	297 31.0	25 22.8
Δ	-2	-4		-3	-10	30	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 32	15 5	0 54	2 39	22 18	3.7	12 54	.0
55	7 59	15 38	0 44	2 13	22 33	3.3	12 36	.4
50	7 35	16 2	0 37	1 57	22 44	3.0	12 23	.6
45	7 16	16 21	0 33	1 45	22 53	2.8	12 12	.8
40	7 1	16 36	0 30	1 36	23 1	2.6	12 3	1.0
35	6 48	16 49	0 28	1 29	23 7	2.5	11 55	1.1
30	6 37	16 60	0 26	1 24	23 13	2.4	11 48	1.2
20	6 18	17 19	0 24	1 18	23 23	2.1	11 36	1.5
10	6 1	17 36	0 23	1 15	23 31	1.9	11 25	1.7
0	5 45	17 52	0 22	1 14	23 39	1.8	11 15	1.8
10	5 29	18 8	0 23	1 17	23 47	1.6	11 5	2.0
20	5 11	18 26	0 24	1 23	23 55	1.4	10 54	2.2
30	4 51	18 46	0 27	1 34	...	.0	10 42	2.4
35	4 40	18 58	0 29	1 44	...	.0	10 35	2.6
40	4 26	19 12	0 32	1 58	...	.0	10 26	2.7
45	4 10	19 28	0 36	2 22	0 3	.9	10 17	2.9
50	3 50	19 48	0 42	3 31	0 16	.7	10 5	3.1
55	3 23	20 15	0 53	:::	0 33	.4	9 50	3.4
60	2 46	20 53	1 20	:::	0 56	.0	9 30	3.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	286 19.9	122	16 2.5	-130	163 7.9	-23 9.1	268 2.5	9 55.7
2	315 22.3	124	15 36.5	-131	193 11.6	-23 9.1	298 7.3	9 55.7
4	344 25.0	126	15 10.2	-132	223 15.3	-23 9.2	328 12.0	9 55.6
6	13 28.2	128	14 43.8	-133	253 19.1	-23 9.2	358 16.8	9 55.6
8	42 31.9	130	14 17.1	-134	283 22.8	-23 9.3	28 21.5	9 55.5
10	71 35.9	132	13 50.3	-135	313 26.5	-23 9.3	58 26.3	9 55.5
12	100 40.3	134	13 23.3	-136	343 30.2	-23 9.4	88 31.1	9 55.4
14	129 45.1	136	12 56.1	-137	13 33.9	-23 9.4	118 35.8	9 55.4
16	158 50.3	138	12 28.8	-137	43 37.6	-23 9.4	148 40.6	9 55.3
18	187 55.9	140	12 1.3	-138	73 41.4	-23 9.5	178 45.3	9 55.3
20	217 1.8	141	11 33.7	-139	103 45.1	-23 9.5	208 50.1	9 55.2
22	246 8.1	143	11 5.9	-139	133 48.8	-23 9.6	238 54.8	9 55.2
Δ					19	0	24	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	11 37.9	-.9	16.2	T _m	5 4	1.9	57.1 15.6		
12	11 27.1	T _{m☉}	11 h 48.5 min	Starost	20.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♁	8 57 .2	157	-4.1	η	13 6 .0	95	-1.7		
♂	2 14 .2	258	-1.3	η	6 7 .0	200	.7		

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	49.0	-21	42.4	69	28.2	225	47.8	-7	33.5	327	37.1	25	23.1
2	212	48.6	-21	43.2	99	33.1	255	47.3	-7	35.5	357	43.3	25	23.5
4	242	48.1	-21	44.0	129	38.1	285	46.7	-7	37.5	27	49.4	25	23.8
6	272	47.7	-21	44.8	159	43.0	315	46.2	-7	39.5	57	55.6	25	24.1
8	302	47.2	-21	45.5	189	47.9	345	45.6	-7	41.5	88	1.7	25	24.5
10	332	46.7	-21	46.3	219	52.9	15	45.1	-7	43.5	118	7.9	25	24.8
12	2	46.3	-21	47.1	249	57.8	45	44.6	-7	45.5	148	14.0	25	25.2
14	32	45.8	-21	47.9	280	2.7	75	44.0	-7	47.4	178	20.2	25	25.5
16	62	45.4	-21	48.7	310	7.6	105	43.4	-7	49.4	208	26.4	25	25.8
18	92	44.9	-21	49.4	340	12.6	135	42.9	-7	51.4	238	32.6	25	26.2
20	122	44.4	-21	50.2	10	17.5	165	42.3	-7	53.4	268	38.8	25	26.5
22	152	43.9	-21	51.0	40	22.4	195	41.8	-7	55.4	298	45.0	25	26.9
Δ		-2		-4				-3		-10		31		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 34	15 3	0 54	2 39	23 45	3.5	12 54	.0
55	8 0	15 37	0 44	2 14	23 52	3.2	12 45	.3
50	7 36	16 1	0 37	1 57	23 57	2.9	12 37	.5
45	7 17	16 20	0 33	1 45	...	.0	12 31	.7
40	7 2	16 35	0 30	1 36	...	.0	12 26	.9
35	6 49	16 48	0 28	1 30	...	.0	12 22	1.0
30	6 38	16 60	0 26	1 24	...	.0	12 18	1.1
20	6 18	17 19	0 24	1 18	...	.0	12 11	1.4
10	6 1	17 36	0 23	1 15	...	.0	12 5	1.5
0	5 45	17 53	0 22	1 14	...	.0	11 59	1.7
10	5 29	18 9	0 23	1 17	...	.0	11 54	1.9
20	5 12	18 26	0 24	1 23	...	.0	11 48	2.1
30	4 51	18 47	0 27	1 34	0 5	1.2	11 41	2.3
35	4 39	18 59	0 29	1 44	0 10	1.1	11 36	2.4
40	4 26	19 13	0 32	1 58	0 16	.9	11 32	2.6
45	4 9	19 29	0 36	2 23	0 23	.7	11 26	2.8
50	3 49	19 50	0 43	3 39	0 32	.6	11 20	3.0
55	3 22	20 16	0 54	:::	0 43	.3	11 11	3.2
60	2 44	20 55	1 22	:::	0 57	.0	11 1	3.6

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	275	14.6	145	10	38.0	-140	163	52.5	-23	9.6	268	59.6	9	55.2		
2	304	21.6	146	10	10.1	-140	193	56.2	-23	9.7	299	4.4	9	55.1		
4	333	28.8	148	9	42.0	-141	223	59.9	-23	9.7	329	9.1	9	55.1		
6	2	36.3	149	9	13.8	-141	254	3.7	-23	9.7	359	13.9	9	55.0		
8	31	44.1	150	8	45.6	-142	284	7.4	-23	9.8	29	18.6	9	55.0		
10	60	52.2	152	8	17.2	-142	314	11.1	-23	9.8	59	23.4	9	54.9		
12	90	.6	153	7	48.8	-142	344	14.8	-23	9.9	89	28.2	9	54.9		
14	119	9.2	154	7	20.4	-143	14	18.5	-23	9.9	119	32.9	9	54.8		
16	148	18.0	155	6	51.9	-143	44	22.2	-23	10.0	149	37.7	9	54.8		
18	177	27.1	157	6	23.3	-143	74	25.9	-23	10.0	179	42.5	9	54.8		
20	206	36.4	158	5	54.7	-143	104	29.7	-23	10.0	209	47.2	9	54.7		
22	235	46.0	159	5	26.1	-143	134	33.4	-23	10.1	239	52.0	9	54.7		
Δ							19			0		24		0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	11 16.4	- .9	16.2	T _m	5 49	1.8	56.3	15.3
12	11 5.2			T _{m☉}	11 h 48.9 min		Starost 21.0 d	Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 57	.2	156	-4.1	♄	13 3	.0	94	-1.7
♂	2 9	.2	258	-1.3	♂	6 3	.0	200	.7

2. DECEMBAR

NEDELJA

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	43.5	-21	51.8	70	27.3	225	41.2	-7	57.4	328	51.2	25	27.2
2	212	43.0	-21	52.5	100	32.3	255	40.7	-7	59.4	358	57.4	25	27.5
4	242	42.5	-21	53.3	130	37.2	285	40.1	-8	1.4	29	3.6	25	27.9
6	272	42.1	-21	54.0	160	42.1	315	39.5	-8	3.3	59	9.8	25	28.2
8	302	41.6	-21	54.8	190	47.1	345	39.0	-8	5.3	89	16.0	25	28.6
10	332	41.1	-21	55.5	220	52.0	15	38.4	-8	7.3	119	22.3	25	28.9
12	2	40.6	-21	56.3	250	56.9	45	37.8	-8	9.3	149	28.5	25	29.2
14	32	40.2	-21	57.0	281	1.8	75	37.3	-8	11.3	179	34.8	25	29.6
16	62	39.7	-21	57.8	311	6.8	105	36.7	-8	13.3	209	41.0	25	29.9
18	92	39.2	-21	58.5	341	11.7	135	36.1	-8	15.3	239	47.3	25	30.3
20	122	38.7	-21	59.3	11	16.6	165	35.5	-8	17.2	269	53.5	25	30.6
22	152	38.2	-22	.0	41	21.6	195	35.0	-8	19.2	299	59.8	25	30.9
Δ		-2		-4				-3		-10		31		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 36	15 2	0 54	2 40	...	.0	12 54	.0
55	8 2	15 36	0 44	2 14	...	.0	12 52	.3
50	7 37	16 1	0 37	1 57	...	.0	12 50	.5
45	7 19	16 20	0 33	1 45	0 1	2.7	12 48	.7
40	7 3	16 35	0 30	1 36	0 4	2.5	12 47	.8
35	6 50	16 48	0 28	1 30	0 7	2.4	12 46	1.0
30	6 39	16 60	0 26	1 25	0 10	2.3	12 45	1.1
20	6 19	17 19	0 24	1 18	0 14	2.1	12 44	1.3
10	6 2	17 37	0 23	1 15	0 18	1.9	12 42	1.5
0	5 46	17 53	0 22	1 14	0 21	1.7	12 41	1.7
10	5 29	18 9	0 23	1 17	0 25	1.5	12 39	1.8
20	5 12	18 27	0 24	1 23	0 29	1.3	12 38	2.0
30	4 51	18 48	0 27	1 35	0 33	1.1	12 36	2.3
35	4 39	18 60	0 29	1 44	0 35	1.0	12 35	2.4
40	4 25	19 14	0 32	1 59	0 38	.8	12 34	2.5
45	4 9	19 30	0 36	2 24	0 41	.7	12 33	2.7
50	3 48	19 51	0 43	:::	0 45	.5	12 31	2.9
55	3 21	20 18	0 54	:::	0 50	.3	12 29	3.1
60	2 43	20 57	1 23	:::	0 56	.0	12 26	3.5

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	264	55.7	160	4	57.4	-143	164	37.1	-23	10.1	269	56.8	9	54.6		
2	294	5.6	160	4	28.8	-143	194	40.8	-23	10.2	300	1.5	9	54.6		
4	323	15.7	161	4	.1	-143	224	44.5	-23	10.2	330	6.3	9	54.6		
6	352	26.0	162	3	31.4	-143	254	48.2	-23	10.2	0	11.1	9	54.5		
8	21	36.4	163	3	2.7	-143	284	51.9	-23	10.3	30	15.8	9	54.5		
10	50	47.0	164	2	34.0	-143	314	55.7	-23	10.3	60	20.6	9	54.4		
12	79	57.7	164	2	5.4	-143	344	59.4	-23	10.4	90	25.4	9	54.4		
14	109	8.5	165	1	36.7	-143	15	3.1	-23	10.4	120	30.2	9	54.3		
16	138	19.5	165	1	8.1	-143	45	6.8	-23	10.4	150	34.9	9	54.3		
18	167	30.5	166	0	39.5	-143	75	10.5	-23	10.5	180	39.7	9	54.3		
20	196	41.7	166	0	10.9	-143	105	14.2	-23	10.5	210	44.5	9	54.2		
22	225	53.0	167	-0	17.6	-142	135	17.9	-23	10.6	240	49.3	9	54.2		
Δ							19			0		24		0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	10 54.1	-1.0	16.2	T _m	6 31	1.7	55.5	15.1
12	10 42.6			T _{m☉}	11 h 49.3			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 37.7 -22 .7		71 26.5	225 34.4 - 8 21.2	330 6.1 25 31.3		
2	212 37.3 -22 1.4		101 31.4	255 33.8 - 8 23.2	0 12.4 25 31.6		
4	242 36.8 -22 2.2		131 36.3	285 33.2 - 8 25.2	30 18.7 25 32.0		
6	272 36.3 -22 2.9		161 41.3	315 32.6 - 8 27.2	60 25.0 25 32.3		
8	302 35.8 -22 3.6		191 46.2	345 32.0 - 8 29.1	90 31.3 25 32.7		
10	332 35.3 -22 4.3		221 51.1	15 31.4 - 8 31.1	120 37.6 25 33.0		
12	2 34.8 -22 5.0		251 56.1	45 30.9 - 8 33.1	150 43.9 25 33.3		
14	32 34.3 -22 5.7		282 1.0	75 30.3 - 8 35.1	180 50.2 25 33.7		
16	62 33.8 -22 6.5		312 5.9	105 29.7 - 8 37.1	210 56.5 25 34.0		
18	92 33.3 -22 7.2		342 10.8	135 29.1 - 8 39.0	241 2.9 25 34.4		
20	122 32.9 -22 7.9		12 15.8	165 28.5 - 8 41.0	271 9.2 25 34.7		
22	152 32.4 -22 8.6		42 20.7	195 27.9 - 8 43.0	301 15.6 25 35.1		
Δ	-2	-4		-3 -10	32	2	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 38	15 1	0 55	2 40	1 10	3.4	12 53	.0
55	8 3	15 36	0 44	2 14	1 9	3.1	12 58	.3
50	7 39	16 0	0 38	1 57	1 7	2.9	13 2	.5
45	7 20	16 19	0 33	1 45	1 6	2.7	13 5	.7
40	7 4	16 35	0 30	1 36	1 6	2.5	13 7	.9
35	6 51	16 48	0 28	1 30	1 5	2.4	13 10	1.0
30	6 39	16 60	0 26	1 25	1 4	2.2	13 12	1.1
20	6 20	17 20	0 24	1 18	1 3	2.0	13 15	1.3
10	6 2	17 37	0 23	1 15	1 3	1.8	13 18	1.5
0	5 46	17 53	0 22	1 14	1 2	1.7	13 21	1.7
10	5 30	18 10	0 23	1 17	1 1	1.5	13 24	1.8
20	5 12	18 28	0 24	1 23	1 0	1.3	13 27	2.0
30	4 51	18 48	0 27	1 35	0 60	1.1	13 30	2.2
35	4 39	19 1	0 29	1 44	0 59	1.0	13 32	2.4
40	4 25	19 15	0 32	1 59	0 59	.8	13 34	2.5
45	4 8	19 31	0 36	2 24	0 58	.7	13 37	2.7
50	3 48	19 52	0 43	:::	0 57	.5	13 40	2.9
55	3 21	20 20	0 54	:::	0 57	.3	13 44	3.1
60	2 41	20 59	1 25	:::	0 56	.0	13 49	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	255 4.3 167 - 0 46.0 -142				165 21.6 -23 10.6	270 54.0 9 54.2		
2	284 15.7 167 - 1 14.4 -142				195 25.3 -23 10.6	300 58.8 9 54.1		
4	313 27.2 168 - 1 42.8 -141				225 29.0 -23 10.7	331 3.6 9 54.1		
6	342 38.7 168 - 2 11.0 -141				255 32.8 -23 10.7	1 8.4 9 54.0		
8	11 50.2 168 - 2 39.3 -141				285 36.5 -23 10.7	31 13.1 9 54.0		
10	41 1.8 168 - 3 7.4 -140				315 40.2 -23 10.8	61 17.9 9 54.0		
12	70 13.4 168 - 3 35.4 -140				345 43.9 -23 10.8	91 22.7 9 53.9		
14	99 25.0 168 - 4 3.4 -139				15 47.6 -23 10.9	121 27.5 9 53.9		
16	128 36.6 168 - 4 31.3 -139				45 51.3 -23 10.9	151 32.3 9 53.9		
18	157 48.2 168 - 4 59.1 -138				75 55.0 -23 10.9	181 37.1 9 53.8		
20	186 59.8 168 - 5 26.7 -138				105 58.7 -23 11.0	211 41.8 9 53.8		
22	216 11.4 168 - 5 54.3 -137				136 2.4 -23 11.0	241 46.6 9 53.7		
Δ					19	0	24	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	10 31.2	-1.0	16.3	T _m	7 11	1.7	54.9 15.0		
12	10 19.4			T _{m☉} 11 h 49.7 min		Starost 23.0 d	Faza ☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	8 58	.2	154	-4.1	♄	12 57	.0	94	-1.7
	1 59	.2	259	-1.3	♅	5 55	.0	199	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 31.9 -22 9.3		72 25.6	225 27.3 - 8 45.0	331 21.9 25 35.4		
2	212 31.4 -22 9.9		102 30.6	255 26.7 - 8 46.9	1 28.3 25 35.7		
4	242 30.9 -22 10.6		132 35.5	285 26.1 - 8 48.9	31 34.6 25 36.1		
6	272 30.4 -22 11.3		162 40.4	315 25.4 - 8 50.9	61 41.0 25 36.4		
8	302 29.9 -22 12.0		192 45.3	345 24.8 - 8 52.9	91 47.4 25 36.8		
10	332 29.4 -22 12.7		222 50.3	15 24.2 - 8 54.8	121 53.8 25 37.1		
12	2 28.9 -22 13.4		252 55.2	45 23.6 - 8 56.8	152 .1 25 37.4		
14	32 28.4 -22 14.0		283 .1	75 23.0 - 8 58.8	182 6.5 25 37.8		
16	62 27.8 -22 14.7		313 5.1	105 22.4 - 9 .8	212 12.9 25 38.1		
18	92 27.3 -22 15.4		343 10.0	135 21.8 - 9 2.7	242 19.3 25 38.5		
20	122 26.8 -22 16.0		13 14.9	165 21.1 - 9 4.7	272 25.8 25 38.8		
22	152 26.3 -22 16.7		43 19.8	195 20.5 - 9 6.7	302 32.2 25 39.2		
Δ	-3	-3		-3 -10	32	2	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 40	14 60	0 55	2 41	2 32	3.5	12 53	.0
55	8 5	15 35	0 44	2 15	2 23	3.1	13 5	.3
50	7 40	15 60	0 38	1 58	2 16	2.9	13 14	.6
45	7 21	16 19	0 33	1 45	2 10	2.7	13 22	.8
40	7 5	16 35	0 30	1 37	2 6	2.5	13 28	.9
35	6 52	16 48	0 28	1 30	2 2	2.4	13 33	1.1
30	6 40	16 60	0 26	1 25	1 58	2.2	13 38	1.2
20	6 20	17 20	0 24	1 18	1 52	2.0	13 47	1.4
10	6 3	17 37	0 23	1 15	1 47	1.8	13 54	1.5
0	5 46	17 54	0 22	1 14	1 42	1.7	14 1	1.7
10	5 30	18 10	0 23	1 17	1 37	1.5	14 8	1.9
20	5 12	18 28	0 24	1 23	1 32	1.3	14 15	2.1
30	4 51	18 49	0 27	1 35	1 26	1.1	14 24	2.3
35	4 39	19 1	0 29	1 45	1 22	1.0	14 29	2.4
40	4 25	19 16	0 32	1 60	1 19	.9	14 34	2.5
45	4 8	19 32	0 37	2 25	1 14	.7	14 41	2.7
50	3 47	19 54	0 43	:::	1 9	.5	14 49	2.9
55	3 20	20 21	0 55	:::	1 3	.3	14 59	3.1
60	2 40	21 1	1 26	:::	0 55	.0	15 12	3.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	245 22.9 167 - 6 21.7 -137				166 6.1 -23 11.0	271 51.4 9 53.7		
2	274 34.4 167 - 6 49.1 -136				196 9.8 -23 11.1	301 56.2 9 53.7		
4	303 45.8 167 - 7 16.3 -135				226 13.5 -23 11.1	332 1.0 9 53.6		
6	332 57.2 167 - 7 43.3 -135				256 17.3 -23 11.2	2 5.8 9 53.6		
8	2 8.5 166 - 8 10.3 -134				286 21.0 -23 11.2	32 10.6 9 53.6		
10	31 19.7 166 - 8 37.1 -133				316 24.7 -23 11.2	62 15.3 9 53.5		
12	60 30.8 165 - 9 3.7 -133				346 28.4 -23 11.3	92 20.1 9 53.5		
14	89 41.9 165 - 9 30.2 -132				16 32.1 -23 11.3	122 24.9 9 53.5		
16	118 52.8 164 - 9 56.6 -131				46 35.8 -23 11.3	152 29.7 9 53.4		
18	148 3.7 164 -10 22.8 -130				76 39.5 -23 11.4	182 34.5 9 53.4		
20	177 14.4 163 -10 48.8 -129				106 43.2 -23 11.4	212 39.3 9 53.4		
22	206 25.0 162 -11 14.6 -128				136 46.9 -23 11.4	242 44.1 9 53.3		
Δ					19	0	24	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	10 7.6	-1.0	16.3	T _m	7 51	1.7	54.4 14.8		
12	9 55.5			T _{m☉} 11 h 50.1 min		Starost 24.0 d	Faza ☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	8 58	.2	153	-4.1	♄	12 54	.0	94	-1.7
	1 54	.2	259	-1.4	♅	5 52	.0	199	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 25.8 -22 17.4		73 24.8	225 19.9 - 9 8.6	332 38.6 25 39.5		
2	212 25.3 -22 18.0		103 29.7	255 19.3 - 9 10.6	2 45.0 25 39.8		
4	242 24.8 -22 18.7		133 34.6	285 18.6 - 9 12.6	32 51.5 25 40.2		
6	272 24.3 -22 19.3		163 39.6	315 18.0 - 9 14.6	62 57.9 25 40.5		
8	302 23.8 -22 20.0		193 44.5	345 17.4 - 9 16.5	93 4.3 25 40.9		
10	332 23.3 -22 20.6		223 49.4	15 16.8 - 9 18.5	123 10.8 25 41.2		
12	2 22.7 -22 21.3		253 54.3	45 16.1 - 9 20.5	153 17.3 25 41.6		
14	32 22.2 -22 21.9		283 59.3	75 15.5 - 9 22.4	183 23.7 25 41.9		
16	62 21.7 -22 22.5		314 4.2	105 14.8 - 9 24.4	213 30.2 25 42.2		
18	92 21.2 -22 23.2		344 9.1	135 14.2 - 9 26.3	243 36.7 25 42.6		
20	122 20.7 -22 23.8		14 14.0	165 13.6 - 9 28.3	273 43.1 25 42.9		
22	152 20.1 -22 24.4		44 19.0	195 12.9 - 9 30.3	303 49.6 25 43.3		
Δ	-3 -3			-3 -10	32 2		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 42	14 59	0 55	2 42	3 56	3.6	12 53	.0
55	8 6	15 34	0 44	2 15	3 38	3.2	13 13	.4
50	7 41	15 59	0 38	1 58	3 25	2.9	13 28	.7
45	7 22	16 19	0 33	1 46	3 14	2.7	13 40	.9
40	7 6	16 35	0 30	1 37	3 6	2.5	13 50	1.0
35	6 53	16 48	0 28	1 30	2 58	2.4	13 59	1.2
30	6 41	16 60	0 26	1 25	2 52	2.3	14 6	1.3
20	6 21	17 20	0 24	1 18	2 41	2.1	14 19	1.5
10	6 3	17 38	0 23	1 15	2 31	1.9	14 31	1.6
0	5 47	17 54	0 22	1 15	2 22	1.7	14 42	1.8
10	5 30	18 11	0 23	1 17	2 13	1.6	14 53	1.9
20	5 12	18 29	0 24	1 23	2 4	1.4	15 5	2.1
30	4 51	18 50	0 27	1 35	1 53	1.2	15 18	2.3
35	4 39	19 2	0 29	1 45	1 47	1.1	15 26	2.4
40	4 25	19 17	0 32	1 60	1 40	1.0	15 35	2.6
45	4 8	19 34	0 37	2 26	1 32	.8	15 45	2.7
50	3 47	19 55	0 43	:::	1 22	.6	15 58	2.9
55	3 19	20 23	0 55	:::	1 10	.4	16 14	3.2
60	2 39	21 3	1 28	:::	0 55	.0	16 36	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	235 35.4 162 -11 40.3 -127				166 50.6 -23 11.5	272 48.9 9 53.3		
2	264 45.7 161 -12 5.8 -126				196 54.3 -23 11.5	302 53.7 9 53.3		
4	293 55.9 160 -12 31.0 -125				226 58.0 -23 11.6	332 58.5 9 53.2		
6	323 5.9 159 -12 56.1 -124				257 1.7 -23 11.6	3 3.3 9 53.2		
8	352 15.8 158 -13 21.0 -123				287 5.4 -23 11.6	33 8.1 9 53.2		
10	21 25.4 158 -13 45.7 -122				317 9.1 -23 11.7	63 12.9 9 53.2		
12	50 34.9 157 -14 10.2 -121				347 12.8 -23 11.7	93 17.6 9 53.1		
14	79 44.3 156 -14 34.4 -120				17 16.5 -23 11.7	123 22.4 9 53.1		
16	108 53.4 155 -14 58.4 -119				47 20.2 -23 11.8	153 27.2 9 53.1		
18	138 2.3 154 -15 22.2 -118				77 23.9 -23 11.8	183 32.0 9 53.0		
20	167 11.1 153 -15 45.7 -116				107 27.6 -23 11.8	213 36.8 9 53.0		
22	196 19.6 152 -16 9.0 -115				137 31.3 -23 11.9	243 41.6 9 53.0		
Δ					19 0	24 0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	9 43.4	-1.0	16.3	T _m	8 32	1.7	54.2 14.8		
12	9 31.0	T _{m☉}	11 h 50.5 min	Starost	25.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	8 59	.2	152	-4.1	♃	12 51	.0	93	-1.7
♂	1 49	.2	259	-1.4	♄	5 48	.0	199	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 19.6 -22 25.0		74 23.9	225 12.3 - 9 32.2	333 56.1 25 43.6		
2	212 19.1 -22 25.7		104 28.8	255 11.6 - 9 34.2	4 2.6 25 43.9		
4	242 18.6 -22 26.3		134 33.8	285 11.0 - 9 36.2	34 9.1 25 44.3		
6	272 18.1 -22 26.9		164 38.7	315 10.3 - 9 38.1	64 15.6 25 44.6		
8	302 17.5 -22 27.5		194 43.6	345 9.7 - 9 40.1	94 22.1 25 45.0		
10	332 17.0 -22 28.1		224 48.5	15 9.0 - 9 42.0	124 28.7 25 45.3		
12	2 16.5 -22 28.7		254 53.5	45 8.4 - 9 44.0	154 35.2 25 45.6		
14	32 16.0 -22 29.3		284 58.4	75 7.7 - 9 45.9	184 41.7 25 46.0		
16	62 15.4 -22 29.9		315 3.3	105 7.0 - 9 47.9	214 48.3 25 46.3		
18	92 14.9 -22 30.5		345 8.3	135 6.4 - 9 49.9	244 54.8 25 46.7		
20	122 14.4 -22 31.1		15 13.2	165 5.7 - 9 51.8	275 1.3 25 47.0		
22	152 13.8 -22 31.7		45 18.1	195 5.0 - 9 53.8	305 7.9 25 47.3		
Δ	-3 -3			-3 -10	33 2		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 44	14 58	0 56	2 42	5 21	3.7	12 54	.1
55	8 8	15 34	0 44	2 15	4 54	3.2	13 23	.6
50	7 42	15 59	0 38	1 58	4 35	2.9	13 44	.9
45	7 23	16 19	0 33	1 46	4 19	2.7	14 1	1.1
40	7 7	16 35	0 30	1 37	4 6	2.6	14 15	1.2
35	6 54	16 48	0 28	1 30	3 56	2.4	14 27	1.3
30	6 42	16 60	0 26	1 25	3 46	2.3	14 37	1.4
20	6 22	17 20	0 24	1 18	3 31	2.1	14 55	1.6
10	6 4	17 38	0 23	1 15	3 17	2.0	15 10	1.8
0	5 47	17 55	0 22	1 15	3 4	1.8	15 25	1.9
10	5 30	18 11	0 23	1 17	2 51	1.7	15 40	2.0
20	5 12	18 30	0 24	1 23	2 37	1.5	15 55	2.2
30	4 51	18 51	0 27	1 35	2 22	1.4	16 13	2.4
35	4 39	19 3	0 29	1 45	2 13	1.2	16 24	2.5
40	4 25	19 17	0 32	2 0	2 3	1.1	16 36	2.6
45	4 8	19 35	0 37	2 27	1 51	1.0	16 51	2.7
50	3 46	19 56	0 43	:::	1 37	.8	17 8	2.9
55	3 18	20 24	0 55	:::	1 19	.5	17 31	3.2
60	2 38	21 5	1 29	:::	0 56	.1	18 3	3.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	225 27.9 150 -16 32.1 -114				167 35.0 -23 11.9	273 46.4 9 53.0		
2	254 36.0 149 -16 54.9 -113				197 38.7 -23 11.9	303 51.3 9 52.9		
4	283 43.8 148 -17 17.4 -111				227 42.5 -23 12.0	333 56.1 9 52.9		
6	312 51.4 147 -17 39.6 -110				257 46.2 -23 12.0	4 .9 9 52.9		
8	341 58.8 146 -18 1.6 -108				287 49.9 -23 12.0	34 5.7 9 52.8		
10	11 6.0 145 -18 23.3 -107				317 53.6 -23 12.1	64 10.5 9 52.8		
12	40 12.9 143 -18 44.7 -105				347 57.3 -23 12.1	94 15.3 9 52.8		
14	69 19.5 142 -19 5.8 -104				18 1.0 -23 12.1	124 20.1 9 52.8		
16	98 25.9 141 -19 26.6 -102				48 4.7 -23 12.1	154 24.9 9 52.7		
18	127 32.1 139 -19 47.1 -101				78 8.4 -23 12.2	184 29.7 9 52.7		
20	156 37.9 138 -20 7.2 -99				108 12.1 -23 12.2	214 34.5 9 52.7		
22	185 43.5 137 -20 27.0 -98				138 15.8 -23 12.2	244 39.3 9 52.7		
Δ					19 0	24 0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	9 18.7	-1.1	16.3	T _m	9 14	1.9	54.0 14.7		
12	9 6.0	T _{m☉}	11 h 50.9 min	Starost	26.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	8 59	.2	151	-4.1	♃	12 48	.0	93	-1.7
♂	1 44	.2	260	-1.4	♄	5 44	.0	199	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	13.3	-22	32.3	75	23.0	225	4.4	-9	55.7	335	14.5	25	47.7
2	212	12.8	-22	32.9	105	28.0	255	3.7	-9	57.7	5	21.0	25	48.0
4	242	12.2	-22	33.4	135	32.9	285	3.0	-9	59.6	35	27.6	25	48.4
6	272	11.7	-22	34.0	165	37.8	315	2.4	-10	1.6	65	34.2	25	48.7
8	302	11.2	-22	34.6	195	42.8	345	1.7	-10	3.5	95	40.7	25	49.0
10	332	10.6	-22	35.2	225	47.7	15	1.0	-10	5.5	125	47.3	25	49.4
12	2	10.1	-22	35.7	255	52.6	45	.3	-10	7.4	155	53.9	25	49.7
14	32	9.5	-22	36.3	285	57.5	74	59.6	-10	9.4	186	.5	25	50.1
16	62	9.0	-22	36.9	316	2.5	104	59.0	-10	11.3	216	7.1	25	50.4
18	92	8.5	-22	37.4	346	7.4	134	58.3	-10	13.2	246	13.7	25	50.7
20	122	7.9	-22	38.0	16	12.3	164	57.6	-10	15.2	276	20.3	25	51.1
22	152	7.4	-22	38.5	46	17.3	194	56.9	-10	17.1	306	26.9	25	51.4
Δ		-3		-3				-3		-10		33		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 45	14 57	0 56	2 43	6 51	3.8	12 57	.3
55	8 9	15 33	0 45	2 16	6 12	3.2	13 37	.9
50	7 44	15 59	0 38	1 58	5 45	2.9	14 5	1.2
45	7 24	16 19	0 33	1 46	5 25	2.7	14 27	1.3
40	7 8	16 35	0 30	1 37	5 8	2.6	14 44	1.5
35	6 54	16 48	0 28	1 30	4 54	2.5	14 59	1.6
30	6 42	17 0	0 26	1 25	4 42	2.4	15 12	1.7
20	6 22	17 20	0 24	1 18	4 22	2.2	15 34	1.8
10	6 4	17 38	0 23	1 15	4 4	2.1	15 53	1.9
0	5 48	17 55	0 22	1 15	3 48	2.0	16 11	2.0
10	5 31	18 12	0 23	1 17	3 32	1.8	16 28	2.1
20	5 13	18 30	0 24	1 23	3 14	1.7	16 48	2.2
30	4 51	18 51	0 27	1 35	2 55	1.6	17 10	2.4
35	4 39	19 4	0 29	1 45	2 43	1.5	17 23	2.5
40	4 25	19 18	0 32	1 2	2 30	1.3	17 38	2.6
45	4 7	19 36	0 37	2 28	2 15	1.2	17 56	2.7
50	3 46	19 57	0 44	:::	1 56	1.0	18 19	2.9
55	3 18	20 26	0 56	:::	1 31	.7	18 49	3.1
60	2 37	21 7	1 31	:::	0 58	.2	19 33	3.7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	214	48.9	135	-20	46.5	-96	168	19.5	-23	12.3	274	44.1	9	52.6		
2	243	54.0	134	-21	5.7	-94	198	23.2	-23	12.3	304	48.9	9	52.6		
4	272	58.7	133	-21	24.5	-92	228	26.9	-23	12.3	334	53.7	9	52.6		
6	302	3.3	131	-21	43.0	-90	258	30.6	-23	12.4	4	58.6	9	52.6		
8	331	7.5	130	-22	1.1	-89	288	34.3	-23	12.4	35	3.4	9	52.5		
10	0	11.5	128	-22	18.8	-87	318	38.0	-23	12.4	65	8.2	9	52.5		
12	29	15.2	127	-22	36.1	-85	348	41.7	-23	12.5	95	13.0	9	52.5		
14	58	18.6	126	-22	53.1	-83	18	45.4	-23	12.5	125	17.8	9	52.5		
16	87	21.7	124	-23	9.7	-81	48	49.0	-23	12.5	155	22.6	9	52.4		
18	116	24.5	123	-23	25.9	-79	78	52.7	-23	12.5	185	27.4	9	52.4		
20	145	27.1	121	-23	41.6	-77	108	56.4	-23	12.6	215	32.3	9	52.4		
22	174	29.4	120	-23	57.0	-75	139	.1	-23	12.6	245	37.1	9	52.4		
Δ							18			0		24		0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	8 53.4	-1.1	16.3	T _m	9 59	2.0	54.0	14.7
12	8 40.4	T _{m☉}	11 h 51.3 min	Starost	27.0 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♀	8 60	.1	150	-4.1	♃	12 45	.0	93	-1.7
♂	1 39	.2	260	-1.4	♄	5 40	.0	199	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	6.8	-22	39.1	76	22.2	224	56.2	-10	19.1	336	33.6	25	51.7
2	212	6.3	-22	39.6	106	27.1	254	55.5	-10	21.0	6	40.2	25	52.1
4	242	5.7	-22	40.2	136	32.0	284	54.8	-10	23.0	36	46.8	25	52.4
6	272	5.2	-22	40.7	166	37.0	314	54.1	-10	24.9	66	53.5	25	52.7
8	302	4.7	-22	41.2	196	41.9	344	53.4	-10	26.8	97	.1	25	53.1
10	332	4.1	-22	41.8	226	46.8	14	52.7	-10	28.8	127	6.8	25	53.4
12	2	3.6	-22	42.3	256	51.8	44	52.0	-10	30.7	157	13.4	25	53.7
14	32	3.0	-22	42.8	286	56.7	74	51.3	-10	32.6	187	20.1	25	54.1
16	62	2.5	-22	43.4	317	1.6	104	50.6	-10	34.6	217	26.7	25	54.4
18	92	1.9	-22	43.9	347	6.5	134	49.9	-10	36.5	247	33.4	25	54.8
20	122	1.4	-22	44.4	17	11.5	164	49.2	-10	38.4	277	40.1	25	55.1
22	152	.8	-22	44.9	47	16.4	194	48.5	-10	40.4	307	46.8	25	55.4
Δ		-3		-3				-4		-10		33		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 47	14 56	0 56	2 43	8 22	3.6	13 5	.8
55	8 11	15 33	0 45	2 16	7 29	3.0	13 58	1.3
50	7 45	15 59	0 38	1 58	6 55	2.8	14 33	1.6
45	7 25	16 18	0 34	1 46	6 30	2.6	14 59	1.7
40	7 9	16 35	0 30	1 37	6 10	2.5	15 20	1.8
35	6 55	16 48	0 28	1 30	5 54	2.4	15 37	1.9
30	6 43	17 0	0 26	1 25	5 40	2.4	15 52	1.9
20	6 23	17 21	0 24	1 18	5 15	2.3	16 17	2.0
10	6 5	17 39	0 23	1 15	4 55	2.2	16 39	2.1
0	5 48	17 55	0 22	1 15	4 35	2.1	16 59	2.1
10	5 31	18 13	0 23	1 17	4 16	2.0	17 20	2.2
20	5 13	18 31	0 24	1 23	3 55	1.9	17 42	2.3
30	4 51	18 52	0 27	1 36	3 32	1.8	18 7	2.3
35	4 39	19 5	0 29	1 46	3 18	1.7	18 22	2.4
40	4 24	19 19	0 33	2 1	3 2	1.6	18 40	2.4
45	4 7	19 37	0 37	2 28	2 43	1.5	19 1	2.5
50	3 46	19 58	0 44	:::	2 20	1.4	19 27	2.6
55	3 17	20 27	0 56	:::	1 49	1.1	20 4	2.8
60	2 36	21 9	1 33	:::	1 4	.5	21 2	3.3

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	203	31.4	119	-24	11.9	-73	169	3.8	-23	12.6	275	41.9	9	52.4		
2	232	33.1	117	-24	26.4	-70	199	7.5	-23	12.7	305	46.7	9	52.3		
4	261	34.6	116	-24	40.5	-68	229	11.2	-23	12.7	335	51.5	9	52.3		
6	290	35.8	115	-24	54.1	-66	259	14.9	-23	12.7	5	56.4	9	52.3		
8	319	36.7	113	-25	7.3	-64	289	18.6	-23	12.8	36	1.2	9	52.3		
10	348	37.3	112	-25	20.1	-61	319	22.3	-23	12.8	66	6.0	9	52.3		
12	17	37.7	111	-25	32.4	-59	349	26.0	-23	12.8	96	10.8	9	52.2		
14	46	37.8	109	-25	44.2	-57	19	29.7	-23	12.8	126	15.7	9	52.2		
16	75	37.7	108	-25	55.5	-54	49	33.4	-23	12.9	156	20.5	9	52.2		
18	104	37.3	107	-26	6.4	-52	79	37.1	-23	12.9	186	25.3	9	52.2		
20	133	36.7	106	-26	16.7	-49	109	40.8	-23	12.9	216	30.1	9	52.2		
22	162	35.9	105	-26	26.6	-47	139	44.5	-23	13.0	246	35.0	9	52.1		
Δ							18			0		24		0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	°	'	°	'
0	182	.2	-22 45.4	224 47.8	-10 42.3	337 53.4	25 55.8
2	211 59.7	-22 45.9	107 26.2	254 47.0	-10 44.2	8 .1	25 56.1
4	241 59.1	-22 46.5	137 31.2	284 46.3	-10 46.2	38 6.8	25 56.4
6	271 58.6	-22 47.0	167 36.1	314 45.6	-10 48.1	68 13.5	25 56.7
8	301 58.0	-22 47.5	197 41.0	344 44.9	-10 50.0	98 20.2	25 57.1
10	331 57.5	-22 48.0	227 46.0	14 44.2	-10 51.9	128 26.9	25 57.4
12	1 56.9	-22 48.4	257 50.9	44 43.4	-10 53.9	158 33.6	25 57.7
14	31 56.4	-22 48.9	287 55.8	74 42.7	-10 55.8	188 40.4	25 58.1
16	61 55.8	-22 49.4	318 .7	104 42.0	-10 57.7	218 47.1	25 58.4
18	91 55.2	-22 49.9	348 5.7	134 41.2	-10 59.6	248 53.8	25 58.7
20	121 54.7	-22 50.4	18 10.6	164 40.5	-11 1.5	279 .5	25 59.1
22	151 54.1	-22 50.9	48 15.5	194 39.8	-11 3.5	309 7.3	25 59.4
Δ	-3	-2		-4	-10	34	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 49	14 55	0 56	2 43	9 48	2.8	13 23	1.8
55	8 12	15 32	0 45	2 16	8 41	2.5	14 31	2.0
50	7 46	15 58	0 38	1 59	8 2	2.4	15 11	2.1
45	7 26	16 18	0 34	1 46	7 33	2.4	15 40	2.1
40	7 10	16 35	0 30	1 37	7 11	2.3	16 2	2.1
35	6 56	16 48	0 28	1 30	6 52	2.3	16 21	2.1
30	6 44	17 0	0 26	1 25	6 36	2.3	16 37	2.2
20	6 23	17 21	0 24	1 18	6 10	2.2	17 5	2.2
10	6 5	17 39	0 23	1 15	5 47	2.2	17 28	2.2
0	5 48	17 56	0 22	1 15	5 25	2.2	17 50	2.2
10	5 31	18 13	0 23	1 17	5 4	2.1	18 12	2.2
20	5 13	18 31	0 24	1 24	4 41	2.1	18 36	2.2
30	4 52	18 53	0 27	1 36	4 15	2.0	19 3	2.2
35	4 39	19 6	0 29	1 46	3 59	2.0	19 19	2.2
40	4 24	19 20	0 33	2 1	3 41	2.0	19 38	2.2
45	4 7	19 38	0 37	2 29	3 20	1.9	20 1	2.2
50	3 45	19 59	0 44	:::	2 52	1.8	20 30	2.2
55	3 17	20 28	0 56	:::	2 15	1.7	21 11	2.2
60	2 35	21 11	1 34	:::	1 16	1.2	22 21	2.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	191 34.8	103 -26 36.0	-44	169 48.2	-23 13.0	276 39.8	9 52.1	
2	220 33.5	102 -26 44.8	-42	199 51.9	-23 13.0	306 44.6	9 52.1	
4	249 32.0	101 -26 53.2	-39	229 55.6	-23 13.0	336 49.4	9 52.1	
6	278 30.2	100 -27 1.1	-37	259 59.3	-23 13.1	6 54.3	9 52.1	
8	307 28.3	99 -27 8.4	-34	290 3.0	-23 13.1	36 59.1	9 52.1	
10	336 26.2	98 -27 15.2	-31	320 6.7	-23 13.1	67 3.9	9 52.0	
12	5 23.9	98 -27 21.4	-29	350 10.4	-23 13.1	97 8.8	9 52.0	
14	34 21.4	97 -27 27.2	-26	20 14.1	-23 13.2	127 13.6	9 52.0	
16	63 18.7	96 -27 32.4	-23	50 17.8	-23 13.2	157 18.4	9 52.0	
18	92 15.9	95 -27 37.0	-21	80 21.4	-23 13.2	187 23.3	9 52.0	
20	121 13.0	95 -27 41.1	-18	110 25.1	-23 13.2	217 28.1	9 52.0	
22	150 9.9	94 -27 44.7	-15	140 28.8	-23 13.3	247 32.9	9 51.9	
Δ				18	0	24	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	8 1.2	-1.1	16.3	T _m	11 38	2.2	54.2 14.8		
12	7 47.8	T _{m☉}	11 h 52.2 min	Starost	29.0 d	Faza ●			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♀	h min	'	°	
♂	9 1	.1	147	-4.1	♃	12 39	.0	92	-1.7
♂	1 28	.2	261	-1.4	♄	5 32	.0	199	.7

10. DECEMBAR

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	°	'	°	'
0	181 53.5	-22 51.3	78 20.5	224 39.0	-11 5.4	339 14.0	25 59.7
2	211 53.0	-22 51.8	108 25.4	254 38.3	-11 7.3	9 20.8	26 .0
4	241 52.4	-22 52.3	138 30.3	284 37.6	-11 9.2	39 27.5	26 .4
6	271 51.9	-22 52.8	168 35.2	314 36.8	-11 11.1	69 34.3	26 .7
8	301 51.3	-22 53.2	198 40.2	344 36.1	-11 13.0	99 41.0	26 1.0
10	331 50.7	-22 53.7	228 45.1	14 35.3	-11 15.0	129 47.8	26 1.4
12	1 50.2	-22 54.1	258 50.0	44 34.6	-11 16.9	159 54.6	26 1.7
14	31 49.6	-22 54.6	288 55.0	74 33.8	-11 18.8	190 1.4	26 2.0
16	61 49.0	-22 55.0	318 59.9	104 33.1	-11 20.7	220 8.1	26 2.3
18	91 48.4	-22 55.5	349 4.8	134 32.3	-11 22.6	250 14.9	26 2.7
20	121 47.9	-22 55.9	19 9.7	164 31.6	-11 24.5	280 21.7	26 3.0
22	151 47.3	-22 56.4	49 14.7	194 30.8	-11 26.4	310 28.5	26 3.3
Δ	-3	-2		-4	-10	34	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 50	14 55	0 56	2 44	10 55	1.5	14 6	3.1
55	8 13	15 32	0 45	2 16	9 42	1.9	15 19	2.7
50	7 47	15 58	0 38	1 59	8 60	2.0	16 1	2.6
45	7 27	16 18	0 34	1 46	8 30	2.0	16 30	2.5
40	7 11	16 35	0 30	1 37	8 7	2.1	16 54	2.4
35	6 57	16 48	0 28	1 30	7 48	2.1	17 13	2.4
30	6 45	17 1	0 26	1 25	7 31	2.1	17 29	2.4
20	6 24	17 21	0 24	1 18	7 3	2.2	17 57	2.3
10	6 6	17 39	0 23	1 15	6 39	2.2	18 21	2.2
0	5 49	17 56	0 22	1 15	6 17	2.2	18 43	2.2
10	5 32	18 14	0 23	1 17	5 55	2.2	19 5	2.1
20	5 13	18 32	0 24	1 24	5 31	2.2	19 29	2.1
30	4 52	18 54	0 27	1 36	5 4	2.3	19 56	2.0
35	4 39	19 6	0 30	1 46	4 47	2.3	20 12	2.0
40	4 25	19 21	0 33	2 2	4 28	2.3	20 31	1.9
45	4 7	19 39	0 37	2 30	4 5	2.3	20 54	1.8
50	3 45	20 0	0 44	:::	3 36	2.3	21 23	1.7
55	3 16	20 30	0 57	:::	2 55	2.4	22 4	1.5
60	2 34	21 12	1 36	:::	1 45	2.5	23 12	1.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	179 6.7	93 -27 47.7	-12	170 32.5	-23 13.3	277 37.8	9 51.9	
2	208 3.3	93 -27 50.1	-9	200 36.2	-23 13.3	307 42.6	9 51.9	
4	236 59.9	92 -27 52.0	-7	230 39.9	-23 13.3	337 47.4	9 51.9	
6	265 56.3	92 -27 53.3	-4	260 43.6	-23 13.4	7 52.3	9 51.9	
8	294 52.7	92 -27 54.1	-1	290 47.3	-23 13.4	37 57.1	9 51.9	
10	323 49.0	91 -27 54.3	2	320 51.0	-23 13.4	68 2.0	9 51.9	
12	352 45.3	91 -27 53.9	5	350 54.7	-23 13.4	98 6.8	9 51.8	
14	21 41.5	91 -27 52.9	8	20 58.4	-23 13.5	128 11.6	9 51.8	
16	50 37.6	91 -27 51.4	10	51 2.1	-23 13.5	158 16.5	9 51.8	
18	79 33.8	91 -27 49.3	13	81 5.8	-23 13.5	188 21.3	9 51.8	
20	108 29.9	91 -27 46.6	16	111 9.5	-23 13.5	218 26.2	9 51.8	
22	137 26.0	91 -27 43.4	19	141 13.1	-23 13.6	248 31.0	9 51.8	
Δ				18	0	24	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	7 34.4	-1.1	16.3	T _m	12 30	2.2	54.5 14.8		
12	7 20.7	T _{m☉}	11 h 52.7 min	Starost	.3 d	Faza ●			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♀	h min	'	°	
♂	9 2	.1	146	-4.1	♃	12 36	.0	92	-1.7
♂	1 23	.2	261	-1.5	♄	5 29	.0	199	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	'	'	'							
0	181	46.7	-22	56.8	79	19.6	224	30.0	-11	28.3	340	35.3	26	3.6
2	211	46.2	-22	57.2	109	24.5	254	29.3	-11	30.2	10	42.1	26	3.9
4	241	45.6	-22	57.7	139	29.5	284	28.5	-11	32.1	40	48.9	26	4.3
6	271	45.0	-22	58.1	169	34.4	314	27.7	-11	34.0	70	55.7	26	4.6
8	301	44.4	-22	58.5	199	39.3	344	27.0	-11	35.9	101	2.5	26	4.9
10	331	43.9	-22	58.9	229	44.2	14	26.2	-11	37.8	131	9.3	26	5.2
12	1	43.3	-22	59.4	259	49.2	44	25.4	-11	39.7	161	16.2	26	5.5
14	31	42.7	-22	59.8	289	54.1	74	24.7	-11	41.6	191	23.0	26	5.9
16	61	42.1	-23	.2	319	59.0	104	23.9	-11	43.5	221	29.8	26	6.2
18	91	41.6	-23	.6	350	4.0	134	23.1	-11	45.4	251	36.7	26	6.5
20	121	41.0	-23	1.0	20	8.9	164	22.3	-11	47.3	281	43.5	26	6.8
22	151	40.4	-23	1.4	50	13.8	194	21.5	-11	49.1	311	50.3	26	7.1
Δ		-3		-2				-4		-9		34		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 52	14 54	0 57	2 44	11 31	.6	15 20	3.9
55	8 14	15 32	0 45	2 17	10 26	1.3	16 24	3.2
50	7 48	15 58	0 38	1 59	9 47	1.5	17 2	2.9
45	7 28	16 18	0 34	1 46	9 19	1.7	17 30	2.8
40	7 11	16 35	0 30	1 37	8 57	1.8	17 52	2.7
35	6 57	16 49	0 28	1 30	8 38	1.8	18 10	2.6
30	6 45	17 1	0 26	1 25	8 22	1.9	18 26	2.5
20	6 25	17 22	0 24	1 18	7 55	2.0	18 52	2.4
10	6 6	17 40	0 23	1 15	7 32	2.1	19 15	2.3
0	5 49	17 57	0 22	1 15	7 10	2.2	19 36	2.1
10	5 32	18 14	0 23	1 17	6 49	2.3	19 57	2.0
20	5 14	18 33	0 24	1 24	6 25	2.3	20 19	1.9
30	4 52	18 54	0 27	1 36	5 58	2.4	20 45	1.8
35	4 39	19 7	0 30	1 46	5 42	2.5	20 60	1.7
40	4 25	19 22	0 33	2 2	5 23	2.6	21 17	1.6
45	4 7	19 40	0 37	2 30	5 1	2.7	21 38	1.5
50	3 45	20 2	0 44	:::	4 32	2.8	22 5	1.3
55	3 16	20 31	0 57	:::	3 52	3.0	22 41	1.0
60	2 33	21 14	1 37	:::	2 44	3.6	23 36	.4

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	'	'	'	'						
0	166	22.1	91	-27	39.6	22	171	16.8	-23	13.6	278	35.9	9	51.8
2	195	18.3	91	-27	35.2	25	201	20.5	-23	13.6	308	40.7	9	51.8
4	224	14.4	91	-27	30.2	28	231	24.2	-23	13.6	338	45.6	9	51.8
6	253	10.6	91	-27	24.7	30	261	27.9	-23	13.7	8	50.4	9	51.7
8	282	6.9	92	-27	18.6	33	291	31.6	-23	13.7	38	55.2	9	51.7
10	311	3.2	92	-27	11.9	36	321	35.3	-23	13.7	69	.1	9	51.7
12	339	59.6	92	-27	4.7	39	351	39.0	-23	13.7	99	4.9	9	51.7
14	8	56.1	93	-26	56.9	42	21	42.7	-23	13.7	129	9.8	9	51.7
16	37	52.6	93	-26	48.5	45	51	46.4	-23	13.8	159	14.6	9	51.7
18	66	49.3	94	-26	39.6	47	81	50.1	-23	13.8	189	19.5	9	51.7
20	95	46.1	94	-26	30.2	50	111	53.7	-23	13.8	219	24.3	9	51.7
22	124	43.0	95	-26	20.2	53	141	57.4	-23	13.8	249	29.2	9	51.7
Δ							18			0		24		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	7 7.1	-1.2	16.3	T _m	13 23	2.2	54.8	14.9
12	6 53.3	T _{m☉}	11 h 53.1 min	Starost	1.3 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	9 2	.1	145	-4.0	♄	12 33	.0	92	-1.7
♂	1 17	.2	261	-1.5	♂	5 25	.0	199	.7

12. DECEMBAR

SREDA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	'	'	'							
0	181	39.8	-23	1.8	80	18.7	224	20.8	-11	51.0	341	57.2	26	7.5
2	211	39.2	-23	2.2	110	23.7	254	20.0	-11	52.9	12	4.0	26	7.8
4	241	38.7	-23	2.6	140	28.6	284	19.2	-11	54.8	42	10.9	26	8.1
6	271	38.1	-23	3.0	170	33.5	314	18.4	-11	56.7	72	17.8	26	8.4
8	301	37.5	-23	3.4	200	38.5	344	17.6	-11	58.6	102	24.6	26	8.7
10	331	36.9	-23	3.8	230	43.4	14	16.8	-12	.5	132	31.5	26	9.0
12	1	36.3	-23	4.1	260	48.3	44	16.0	-12	2.3	162	38.4	26	9.3
14	31	35.7	-23	4.5	290	53.2	74	15.2	-12	4.2	192	45.2	26	9.7
16	61	35.2	-23	4.9	320	58.2	104	14.4	-12	6.1	222	52.1	26	10.0
18	91	34.6	-23	5.3	351	3.1	134	13.6	-12	8.0	252	59.0	26	10.3
20	121	34.0	-23	5.6	21	8.0	164	12.8	-12	9.8	283	5.9	26	10.6
22	151	33.4	-23	6.0	51	12.9	194	12.0	-12	11.7	313	12.8	26	10.9
Δ		-3		-2				-4		-9		34		2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 53	14 54	0 57	2 45	11 46	.3	16 53	4.0
55	8 15	15 32	0 45	2 17	10 57	.8	17 41	3.5
50	7 49	15 58	0 38	1 59	10 24	1.1	18 13	3.1
45	7 29	16 18	0 34	1 46	9 59	1.3	18 37	2.9
40	7 12	16 35	0 30	1 37	9 39	1.5	18 56	2.8
35	6 58	16 49	0 28	1 30	9 22	1.6	19 12	2.6
30	6 46	17 1	0 26	1 25	9 8	1.7	19 25	2.5
20	6 25	17 22	0 24	1 19	8 44	1.9	19 49	2.4
10	6 7	17 40	0 23	1 15	8 22	2.0	20 9	2.2
0	5 50	17 57	0 22	1 15	8 3	2.1	20 27	2.1
10	5 33	18 15	0 23	1 17	7 43	2.2	20 46	1.9
20	5 14	18 33	0 25	1 24	7 21	2.4	21 5	1.8
30	4 52	18 55	0 27	1 36	6 57	2.5	21 28	1.6
35	4 39	19 8	0 30	1 46	6 42	2.6	21 41	1.5
40	4 25	19 23	0 33	2 2	6 25	2.7	21 56	1.4
45	4 7	19 40	0 37	2 31	6 4	2.9	22 14	1.2
50	3 45	20 3	0 44	:::	5 39	3.1	22 36	1.0
55	3 16	20 32	0 57	:::	5 4	3.4	23 5	.7
60	2 33	21 15	1 39	:::	4 9	4.0	23 47	.2

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	'	'	'	'						
0	153	40.0	96	-26	9.6	56	172	1.1	-23	13.9	279	34.1	9	51.7
2	182	37.1	96	-25	58.5	58	202	4.8	-23	13.9	309	38.9	9	51.7
4	211	34.4	97	-25	46.8	61	232	8.5	-23	13.9	339	43.8	9	51.7
6	240	31.9	98	-25	34.7	64	262	12.2	-23	13.9	9	48.6	9	51.7
8	269	29.5	99	-25	21.9	66	292	15.9	-23	13.9	39	53.5	9	51.6
10	298	27.2	100	-25	8.7	69	322	19.6	-23	14.0	69	58.3	9	51.6
12	327	25.2	101	-24	54.9	71	352	23.3	-23	14.0	100	3.2	9	51.6
14	356	23.3	101	-24	40.7	74	22	27.0	-23	14.0	130	8.0	9	51.6
16	25	21.6	102	-24	25.9	76	52	30.6	-23	14.0	160	12.9	9	51.6
18	54	20.0	103	-24	10.6	79	82	34.3	-23	14.0	190	17.8	9	51.6
20	83	18.7	104	-23	54.8	81	112	38.0	-23	14.1	220	22.6	9	51.6
22	112	17.5	105	-23	38.5	84	142	41.7	-23	14.1	250	27.5	9	51.6
Δ							18			0		24		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	6 39.5	-1.2	16.3	T _m	14 15	2.1	55.2	15.0
12	6 25.4	T _{m☉}	11 h 53.6 min	Starost	2.3 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
0	181	32.8	-23	6.4	81	17.9	224	11.2	-12	13.6	343	19.7	26	11.2
2	211	32.2	-23	6.7	111	22.8	254	10.4	-12	15.5	13	26.6	26	11.5
4	241	31.6	-23	7.1	141	27.7	284	9.6	-12	17.3	43	33.5	26	11.8
6	271	31.1	-23	7.4	171	32.7	314	8.8	-12	19.2	73	40.4	26	12.1
8	301	30.5	-23	7.8	201	37.6	344	7.9	-12	21.1	103	47.3	26	12.4
10	331	29.9	-23	8.1	231	42.5	14	7.1	-12	22.9	133	54.2	26	12.7
12	1	29.3	-23	8.5	261	47.4	44	6.3	-12	24.8	164	1.1	26	13.0
14	31	28.7	-23	8.8	291	52.4	74	5.5	-12	26.7	194	8.1	26	13.3
16	61	28.1	-23	9.1	321	57.3	104	4.7	-12	28.5	224	15.0	26	13.7
18	91	27.5	-23	9.5	352	2.2	134	3.8	-12	30.4	254	21.9	26	14.0
20	121	26.9	-23	9.8	22	7.2	164	3.0	-12	32.2	284	28.8	26	14.3
22	151	26.3	-23	10.1	52	12.1	194	2.2	-12	34.1	314	35.8	26	14.6
Δ		-3		-2				-4		-9		35		2

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 54	14 54	0 57	2 45	11 53	.1	18 30	4.0
55	8 16	15 31	0 45	2 17	11 17	.6	19 4	3.5
50	7 50	15 58	0 38	1 59	10 51	.9	19 29	3.2
45	7 29	16 19	0 34	1 47	10 31	1.1	19 47	3.0
40	7 13	16 35	0 30	1 37	10 15	1.3	20 2	2.8
35	6 59	16 49	0 28	1 31	10 1	1.4	20 15	2.7
30	6 47	17 1	0 26	1 25	9 49	1.5	20 26	2.5
20	6 26	17 22	0 24	1 19	9 28	1.7	20 45	2.3
10	6 8	17 41	0 23	1 15	9 10	1.9	21 2	2.1
0	5 50	17 58	0 22	1 15	8 53	2.0	21 17	2.0
10	5 33	18 15	0 23	1 18	8 36	2.2	21 32	1.8
20	5 14	18 34	0 25	1 24	8 18	2.3	21 48	1.6
30	4 52	18 56	0 27	1 36	7 57	2.5	22 6	1.4
35	4 40	19 9	0 30	1 47	7 45	2.7	22 17	1.3
40	4 25	19 23	0 33	2 2	7 30	2.8	22 29	1.2
45	4 7	19 41	0 37	2 31	7 13	3.0	22 43	1.0
50	3 45	20 3	0 44	:::	6 52	3.2	23 0	.8
55	3 16	20 33	0 57	:::	6 25	3.5	23 22	.5
60	2 32	21 17	1 40	:::	5 45	4.0	23 51	.1

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄
0	141	16.6	106	-23	21.8	86	172	45.4	-23	14.1	280	32.4	9	51.6	
2	170	15.8	107	-22	4.5	89	202	49.1	-23	14.1	310	37.2	9	51.6	
4	199	15.3	108	-22	46.8	91	232	52.8	-23	14.1	340	42.1	9	51.6	
6	228	14.9	109	-22	28.6	93	262	56.5	-23	14.2	10	46.9	9	51.6	
8	257	14.8	110	-22	9.9	96	293	.1	-23	14.2	40	51.8	9	51.6	
10	286	14.8	111	-21	50.8	98	323	3.8	-23	14.2	70	56.7	9	51.6	
12	315	15.1	112	-21	31.3	100	353	7.5	-23	14.2	101	1.5	9	51.6	
14	344	15.6	113	-21	11.3	102	23	11.2	-23	14.2	131	6.4	9	51.6	
16	13	16.3	114	-20	50.8	104	53	14.9	-23	14.3	161	11.3	9	51.6	
18	42	17.2	115	-20	30.0	106	83	18.6	-23	14.3	191	16.1	9	51.6	
20	71	18.2	116	-20	8.7	108	113	22.3	-23	14.3	221	21.0	9	51.6	
22	100	19.5	117	-19	47.0	110	143	26.0	-23	14.3	251	25.9	9	51.6	
Δ								18		0		24		0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	6 11.5	-1.2	16.3	T _m	15 5	2.0	55.6	15.2
12	5 57.3	T _{m☉} 11 h 54.0 min		Starost 3.3 d Faza ●				

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♀	9 4	.1	143	-4.0	♃	12 27	.0	91	-1.7
♂	1 6	.2	262	-1.5	♄	5 17	.0	199	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
0	181	25.7	-23	10.4	82	17.0	224	1.3	-12	35.9	344	42.7	26	14.9
2	211	25.1	-23	10.8	112	21.9	254	.5	-12	37.8	14	49.7	26	15.2
4	241	24.5	-23	11.1	142	26.9	283	59.7	-12	39.6	44	56.6	26	15.5
6	271	24.0	-23	11.4	172	31.8	313	58.8	-12	41.5	75	3.6	26	15.8
8	301	23.4	-23	11.7	202	36.7	343	58.0	-12	43.3	105	10.5	26	16.1
10	331	22.8	-23	12.0	232	41.7	13	57.2	-12	45.2	135	17.5	26	16.4
12	1	22.2	-23	12.3	262	46.6	43	56.3	-12	47.0	165	24.4	26	16.7
14	31	21.6	-23	12.6	292	51.5	73	55.5	-12	48.9	195	31.4	26	16.9
16	61	21.0	-23	12.9	322	56.4	103	54.6	-12	50.7	225	38.3	26	17.2
18	91	20.4	-23	13.2	353	1.4	133	53.8	-12	52.6	255	45.3	26	17.5
20	121	19.8	-23	13.5	23	6.3	163	52.9	-12	54.4	285	52.3	26	17.8
22	151	19.2	-23	13.8	53	11.2	193	52.1	-12	56.2	315	59.3	26	18.1
Δ		-3		-2				-4		-9		35		1

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 56	14 53	0 57	2 45	11 55	.0	20 6	3.9
55	8 17	15 31	0 45	2 17	11 30	.4	20 29	3.5
50	7 51	15 58	0 38	1 59	11 12	.7	20 46	3.2
45	7 30	16 19	0 34	1 47	10 57	.9	20 59	3.0
40	7 14	16 35	0 31	1 37	10 45	1.1	21 10	2.8
35	6 60	16 49	0 28	1 31	10 34	1.2	21 19	2.7
30	6 47	17 2	0 26	1 25	10 25	1.4	21 27	2.5
20	6 26	17 23	0 24	1 19	10 9	1.6	21 41	2.3
10	6 8	17 41	0 23	1 15	9 55	1.8	21 53	2.1
0	5 51	17 58	0 23	1 15	9 42	1.9	22 4	1.9
10	5 33	18 16	0 23	1 18	9 29	2.1	22 15	1.7
20	5 15	18 35	0 25	1 24	9 14	2.3	22 27	1.5
30	4 53	18 56	0 27	1 36	8 58	2.5	22 40	1.3
35	4 40	19 9	0 30	1 47	8 49	2.7	22 48	1.2
40	4 25	19 24	0 33	2 3	8 38	2.8	22 57	1.0
45	4 7	19 42	0 37	2 32	8 25	3.0	23 7	.9
50	3 45	20 4	0 44	:::	8 9	3.2	23 19	.7
55	3 15	20 34	0 58	:::	7 49	3.5	23 34	.4
60	2 32	21 18	1 41	:::	7 21	4.0	23 53	.0

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄
0	129	21.0	118	-19	24.9	112	173	29.6	-23	14.3	281	30.8	9	51.6	
2	158	22.7	119	-19	2.4	114	203	33.3	-23	14.3	311	35.6	9	51.6	
4	187	24.6	120	-18	39.5	116	233	37.0	-23	14.4	341	40.5	9	51.6	
6	216	26.7	121	-18	16.2	118	263	40.7	-23	14.4	11	45.4	9	51.6	
8	245	29.0	122	-17	52.5	120	293	44.4	-23	14.4	41	50.2	9	51.6	
10	274	31.4	123	-17	28.5	122	323	48.1	-23	14.4	71	55.1	9	51.6	
12	303	34.1	124	-17	4.1	124	353	51.8	-23	14.4	101	60.0	9	51.6	
14	332	36.9	125	-16	39.4	125	23	55.5	-23	14.4	132	4.9	9	51.6	
16	1	39.9	126	-16	14.3	127	53	59.1	-23	14.5	162	9.8	9	51.6	
18	30	43.0	127	-15	48.9	129	84	2.8	-23	14.5	192	14.6	9	51.6	
20	59	46.4	127	-15	23.1	130	114	6.5	-23	14.5	222	19.5	9	51.6	
22	88	49.9	128	-14	57.0	132	144	10.2	-23	14.5	252	24.4	9	51.6	
Δ								18		0		24		0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	5 43.1	-1.2	16.3	T _m	15 53	1.9	56.2	15.3
12	5 28.8	T _{m☉} 11 h 54.5 min		Starost 4.3 d Faza ●				

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	181	18.6	-23	14.1	83	16.2	223	51.2	-12	58.1	346	6.2	26	18.4
2	211	18.0	-23	14.3	113	21.1	253	50.4	-12	59.9	16	13.2	26	18.7
4	241	17.4	-23	14.6	143	26.0	283	49.5	-13	1.7	46	20.2	26	19.0
6	271	16.8	-23	14.9	173	30.9	313	48.6	-13	3.6	76	27.2	26	19.3
8	301	16.2	-23	15.2	203	35.9	343	47.8	-13	5.4	106	34.2	26	19.6
10	331	15.6	-23	15.4	233	40.8	373	46.9	-13	7.2	136	41.2	26	19.9
12	1	15.0	-23	15.7	263	45.7	403	46.0	-13	9.0	166	48.2	26	20.1
14	31	14.4	-23	16.0	293	50.7	433	45.2	-13	10.9	196	55.2	26	20.4
16	61	13.8	-23	16.2	323	55.6	463	44.3	-13	12.7	227	2.2	26	20.7
18	91	13.2	-23	16.5	354	.5	493	43.4	-13	14.5	257	9.2	26	21.0
20	121	12.6	-23	16.7	24	5.4	523	42.5	-13	16.3	287	16.2	26	21.3
22	151	12.0	-23	17.0	54	10.4	553	41.7	-13	18.2	317	23.2	26	21.6
Δ		-3		-1				-4		-9		35		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 57	14 53	0 57	2 45	11 56	.0	21 40	3.9
55	8 18	15 31	0 45	2 17	11 41	.4	21 53	3.5
50	7 52	15 58	0 38	1 59	11 29	.6	22 3	3.2
45	7 31	16 19	0 34	1 47	11 19	.8	22 11	3.0
40	7 14	16 36	0 31	1 38	11 11	1.0	22 17	2.8
35	7 0	16 50	0 28	1 31	11 4	1.1	22 23	2.7
30	6 48	17 2	0 26	1 25	10 58	1.3	22 28	2.5
20	6 27	17 23	0 24	1 19	10 47	1.5	22 36	2.3
10	6 9	17 41	0 23	1 15	10 37	1.7	22 44	2.1
0	5 51	17 59	0 23	1 15	10 28	1.9	22 50	1.9
10	5 34	18 16	0 23	1 18	10 19	2.1	22 57	1.7
20	5 15	18 35	0 25	1 24	10 10	2.3	23 4	1.5
30	4 53	18 57	0 27	1 36	9 59	2.5	23 12	1.3
35	4 40	19 10	0 30	1 47	9 52	2.7	23 16	1.1
40	4 25	19 25	0 33	2 3	9 45	2.8	23 22	1.0
45	4 7	19 43	0 37	2 32	9 37	3.0	23 27	.8
50	3 45	20 5	0 44	:::	9 26	3.2	23 34	.6
55	3 15	20 35	0 58	:::	9 13	3.5	23 43	.3
60	2 31	21 19	1 43	:::	8 56	3.9	23 54	.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	117	53.5	129	-14	30.6	134	174	13.9	-23	14.5	282	29.3	9	51.6		
2	146	57.3	130	-14	3.9	135	204	17.6	-23	14.5	312	34.1	9	51.6		
4	176	1.2	130	-13	36.9	136	234	21.3	-23	14.6	342	39.0	9	51.6		
6	205	5.2	131	-13	9.6	138	264	24.9	-23	14.6	12	43.9	9	51.6		
8	234	9.4	131	-12	42.0	139	294	28.6	-23	14.6	42	48.8	9	51.6		
10	263	13.7	132	-12	14.2	141	324	32.3	-23	14.6	72	53.7	9	51.6		
12	292	18.1	133	-11	46.0	142	354	36.0	-23	14.6	102	58.6	9	51.6		
14	321	22.6	133	-11	17.6	143	384	39.7	-23	14.6	133	3.4	9	51.6		
16	350	27.2	133	-10	49.0	144	414	43.4	-23	14.6	163	8.3	9	51.6		
18	19	31.9	134	-10	20.1	146	444	47.1	-23	14.7	193	13.2	9	51.6		
20	48	36.7	134	-9	51.0	147	474	50.7	-23	14.7	223	18.1	9	51.6		
22	77	41.5	134	-9	21.6	148	504	54.4	-23	14.7	253	23.0	9	51.7		
Δ								18		0		24		0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	5 14.5	-1.2	16.3	T _m	16 39	1.9	56.7	15.5	
12	5 .0			T _{m☉}	11 h 55.0 min	Starost	5.3 d	Faza ●	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♀	h min	'	°	
♂	9 5	.1	141	-4.0	♃	12 22	.0	91	-1.7
♄	0 55	.2	263	-1.5	♄	5 9	.0	199	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	181	11.4	-23	17.2	84	15.3	223	40.8	-13	20.0	347	30.2	26	21.9
2	211	10.8	-23	17.5	114	20.2	253	39.9	-13	21.8	17	37.2	26	22.1
4	241	10.1	-23	17.7	144	25.1	283	39.0	-13	23.6	47	44.3	26	22.4
6	271	9.5	-23	17.9	174	30.1	313	38.1	-13	25.4	77	51.3	26	22.7
8	301	8.9	-23	18.2	204	35.0	343	37.2	-13	27.2	107	58.3	26	23.0
10	331	8.3	-23	18.4	234	39.9	373	36.3	-13	29.0	138	5.3	26	23.3
12	1	7.7	-23	18.6	264	44.9	403	35.4	-13	30.8	168	12.4	26	23.5
14	31	7.1	-23	18.9	294	49.8	433	34.6	-13	32.6	198	19.4	26	23.8
16	61	6.5	-23	19.1	324	54.7	463	33.7	-13	34.4	228	26.4	26	24.1
18	91	5.9	-23	19.3	354	59.6	493	32.8	-13	36.2	258	33.5	26	24.4
20	121	5.3	-23	19.5	25	4.6	523	31.9	-13	38.0	288	40.5	26	24.6
22	151	4.7	-23	19.7	55	9.5	553	31.0	-13	39.8	318	47.5	26	24.9
Δ		-3		-1				-4		-9		35		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 58	14 53	0 57	2 46	11 57	.0	23 14	4.0
55	8 19	15 32	0 45	2 17	11 49	.3	23 18	3.6
50	7 52	15 58	0 38	1 59	11 44	.6	23 21	3.3
45	7 32	16 19	0 34	1 47	11 39	.8	23 23	3.1
40	7 15	16 36	0 31	1 38	11 35	1.0	23 25	2.9
35	7 1	16 50	0 28	1 31	11 31	1.1	23 27	2.7
30	6 49	17 2	0 26	1 25	11 28	1.3	23 29	2.6
20	6 28	17 23	0 24	1 19	11 23	1.5	23 31	2.3
10	6 9	17 42	0 23	1 15	11 18	1.7	23 34	2.1
0	5 52	17 59	0 23	1 15	11 14	1.9	23 36	1.9
10	5 34	18 17	0 23	1 18	11 10	2.1	23 38	1.7
20	5 15	18 36	0 25	1 24	11 5	2.3	23 40	1.5
30	4 53	18 58	0 27	1 36	10 60	2.6	23 42	1.3
35	4 40	19 11	0 30	1 47	10 56	2.7	23 43	1.1
40	4 26	19 26	0 33	2 3	10 53	2.9	23 45	1.0
45	4 8	19 44	0 37	2 33	10 49	3.0	23 47	.8
50	3 45	20 6	0 45	:::	10 44	3.3	23 49	.6
55	3 15	20 36	0 58	:::	10 38	3.6	23 51	.3
60	2 31	21 20	1 44	:::	10 30	3.9	23 54	.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	106	46.4	135	-8	52.0	149	174	58.1	-23	14.7	283	27.9	9	51.7		
2	135	51.3	135	-8	22.2	150	205	1.8	-23	14.7	313	32.8	9	51.7		
4	164	56.3	135	-7	52.2	151	235	5.5	-23	14.7	343	37.7	9	51.7		
6	194	1.4	135	-7	22.0	152	265	9.2	-23	14.7	13	42.5	9	51.7		
8	223	6.4	135	-6	51.6	153	295	12.8	-23	14.8	43	47.4	9	51.7		
10	252	11.5	135	-6	21.0	154	325	16.5	-23	14.8	73	52.3	9	51.7		
12	281	16.5	135	-5	50.3	155	355	20.2	-23	14.8	103	57.2	9	51.7		
14	310	21.6	135	-5	19.3	155	385	23.9	-23	14.8	134	2.1	9	51.7		
16	339	26.7	135	-4	48.3	156	415	27.6	-23	14.8	164	7.0	9	51.7		
18	8	31.7	135	-4	17.1	157	445	31.3	-23	14.8	194	11.9	9	51.7		
20	37	36.7	135	-3	45.7	157	475	34.9	-23	14.8	224	16.8	9	51.7		
22	66	41.6	134	-3	14.2	158	505	38.6	-23	14.8	254	21.7	9	51.8		
Δ								18		0		24		0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	181	4.1	-23	19.9	85	14.4	223	30.0	-13	41.6	348	54.6	26	25.2	
2	211	3.5	-23	20.1	115	19.4	253	29.1	-13	43.4	19	1.6	26	25.4	
4	241	2.9	-23	20.3	145	24.3	283	28.2	-13	45.2	49	8.7	26	25.7	
6	271	2.3	-23	20.5	175	29.2	313	27.3	-13	47.0	79	15.7	26	26.0	
8	301	1.6	-23	20.7	205	34.1	343	26.4	-13	48.8	109	22.8	26	26.2	
10	331	1.0	-23	20.9	235	39.1	373	25.5	-13	50.6	139	29.8	26	26.5	
12	1	.4	-23	21.1	265	44.0	403	24.6	-13	52.4	169	36.9	26	26.8	
14	30	59.8	-23	21.3	295	48.9	433	23.6	-13	54.1	199	44.0	26	27.0	
16	60	59.2	-23	21.5	325	53.9	463	22.7	-13	55.9	229	51.0	26	27.3	
18	90	58.6	-23	21.6	355	58.8	493	21.8	-13	57.7	259	58.1	26	27.6	
20	120	58.0	-23	21.8	26	3.7	523	20.9	-13	59.5	290	5.2	26	27.8	
22	150	57.4	-23	22.0	56	8.6	553	19.9	-14	1.2	320	12.2	26	28.1	
Δ		-3		-1				-5		-9		35			1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	95	46.5	134	-2	42.6	159	175	42.3	-23	14.9	284	26.6	9	51.8		
2	124	51.3	134	-2	10.9	159	205	46.0	-23	14.9	314	31.5	9	51.8		
4	153	56.1	133	-1	39.0	160	235	49.7	-23	14.9	344	36.4	9	51.8		
6	183	.7	133	-1	7.1	160	265	53.4	-23	14.9	14	41.3	9	51.8		
8	212	5.3	132	-0	35.1	160	295	57.0	-23	14.9	44	46.2	9	51.8		
10	241	9.8	132	-0	3.0	161	326	.7	-23	14.9	74	51.1	9	51.8		
12	270	14.1	131	0	29.1	161	356	4.4	-23	14.9	104	56.0	9	51.8		
14	299	18.3	130	1	1.3	161	26	8.1	-23	14.9	135	.9	9	51.8		
16	328	22.3	129	1	33.6	161	56	11.8	-23	14.9	165	5.8	9	51.9		
18	357	26.2	129	2	5.8	162	86	15.5	-23	14.9	195	10.7	9	51.9		
20	26	30.0	128	2	38.1	162	116	19.1	-23	15.0	225	15.6	9	51.9		
22	55	33.5	127	3	10.5	162	146	22.8	-23	15.0	255	20.5	9	51.9		
Δ							18			0		25			0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 59	14 53	0 58	2 46	11 57	.0	. . . .	.0
55	8 20	15 32	0 45	2 18	11 57	.3	. . . .	.0
50	7 53	15 59	0 38	1 59	11 58	.6	. . . .	.0
45	7 32	16 19	0 34	1 47	11 58	.8	. . . .	.0
40	7 16	16 36	0 31	1 38	11 58	1.0	. . . .	.0
35	7 2	16 50	0 28	1 31	11 58	1.2	. . . .	.0
30	6 49	17 3	0 26	1 25	11 59	1.3	. . . .	.0
20	6 28	17 24	0 24	1 19	11 59	1.5	. . . .	.0
10	6 10	17 42	0 23	1 15	11 59	1.8	. . . .	.0
0	5 52	17 60	0 23	1 15	11 60	2.0	. . . .	.0
10	5 35	18 17	0 23	1 18	11 60	2.2	. . . .	.0
20	5 16	18 36	0 25	1 24	12 0	2.4	. . . .	.0
30	4 54	18 58	0 27	1 37	12 1	2.6	. . . .	.0
35	4 41	19 11	0 30	1 47	12 1	2.8	. . . .	.0
40	4 26	19 26	0 33	2 3	12 1	2.9	. . . .	.0
45	4 8	19 44	0 37	2 33	12 2	3.1	. . . .	.0
50	3 45	20 7	0 45	:::	12 2	3.4	. . . .	.0
55	3 15	20 37	0 58	:::	12 3	3.7	23 59	.4
60	2 31	21 21	1 45	:::	12 4	4.0	23 54	.0
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	4 16.5	-1.2	16.3	T _m	18 11	2.0	58.0	15.8	
12	4 1.8	T _{m☉}	11 h 56.0 min	Starost	7.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♀	h min	'	°	°
♂	9 6	.1	138	-4.0	♃	12 16	.0	90	-1.7
	0 44	.2	264	-1.6	♄	5 1	.0	199	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	56.8	-23	22.2	86	13.6	223	19.0	-14	3.0	350	19.3	26	28.4	
2	210	56.1	-23	22.3	116	18.5	253	18.1	-14	4.8	20	26.4	26	28.6	
4	240	55.5	-23	22.5	146	23.4	283	17.1	-14	6.6	50	33.4	26	28.9	
6	270	54.9	-23	22.6	176	28.4	313	16.2	-14	8.3	80	40.5	26	29.1	
8	300	54.3	-23	22.8	206	33.3	343	15.3	-14	10.1	110	47.6	26	29.4	
10	330	53.7	-23	22.9	236	38.2	373	14.3	-14	11.9	140	54.7	26	29.6	
12	0	53.1	-23	23.1	266	43.1	403	13.4	-14	13.6	171	1.8	26	29.9	
14	30	52.5	-23	23.2	296	48.1	433	12.4	-14	15.4	201	8.8	26	30.2	
16	60	51.8	-23	23.4	326	53.0	463	11.5	-14	17.1	231	15.9	26	30.4	
18	90	51.2	-23	23.5	356	57.9	493	10.5	-14	18.9	261	23.0	26	30.7	
20	120	50.6	-23	23.7	27	2.9	523	9.6	-14	20.6	291	30.1	26	30.9	
22	150	50.0	-23	23.8	57	7.8	553	8.6	-14	22.4	321	37.2	26	31.2	
Δ		-3		-1				-5		-9		35			1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	84	36.9	126	3	42.8	162	176	26.5	-23	15.0	285	25.4	9	51.9		
2	113	40.0	125	4	15.1	162	206	30.2	-23	15.0	315	30.3	9	51.9		
4	142	43.0	124	4	47.4	161	236	33.9	-23	15.0	345	35.2	9	51.9		
6	171	45.7	122	5	19.7	161	266	37.6	-23	15.0	15	40.1	9	52.0		
8	200	48.2	121	5	51.9	161	296	41.2	-23	15.0	45	45.1	9	52.0		
10	229	50.5	120	6	24.1	161	326	44.9	-23	15.0	75	50.0	9	52.0		
12	258	52.4	119	6	56.3	160	356	48.6	-23	15.0	105	54.9	9	52.0		
14	287	54.2	117	7	28.3	160	26	52.3	-23	15.0	135	59.8	9	52.0		
16	316	55.6	116	8	.3	159	56	56.0	-23	15.0	166	4.7	9	52.0		
18	345	56.7	114	8	32.1	159	86	59.7	-23	15.1	196	9.6	9	52.0		
20	14	57.6	113	9	3.9	158	117	3.3	-23	15.1	226	14.5	9	52.1		
22	43	58.1	111	9	35.5	157	147	7.0	-23	15.1	256	19.4	9	52.1		
Δ							18			0		25			0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 60	14 53	0 58	2 46	11 57	.0	0 50	4.1
55	8 21	15 32	0 46	2 18	12 6	.4	0 45	3.7
50	7 54	15 59	0 38	1 60	12 12	.7	0 41	3.4
45	7 33	16 20	0 34	1 47	12 18	.9	0 38	3.2
40	7 16	16 36	0 31	1 38	12 22	1.1	0 35	3.0
35	7 2	16 51	0 28	1 31	12 26	1.3	0 33	2.8
30	6 50	17 3	0 26	1 26	12 30	1.4	0 31	2.7
20	6 29	17 24	0 24	1 19	12 36	1.7	0 27	2.4
10	6 10	17 43	0 23	1 15	12 41	1.9	0 24	2.2
0	5 53	18 0	0 23	1 15	12 47	2.1	0 22	2.0
10	5 35	18 18	0 23	1 18	12 52	2.3	0 19	1.8
20	5 16	18 37	0 25	1 24	12 58	2.5	0 16	1.6
30	4 54	18 59	0 27	1 37	13 4	2.8	0 13	1.3
35	4 41	19 12	0 30	1 47	13 8	2.9	0 11	1.2
40	4 26	19 27	0 33	2 3	13 12	3.1	0 9	1.0
45	4 8	19 45	0 37	2 33	13 17	3.3	0 6	.9
50	3 46	20 7	0 45	:::	13 23	3.5	0 3	.6
55	3 16	20 37	0 58	:::	13 31	3.8	. . . .	.0
60	2 31	21 22	1 46	:::	13 41	4.3	23 54	.0
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s					

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
0	180	49.4	-23	23.9	87	12.7	223	7.7	-14	24.1	351	44.3	26	31.4	
2	210	48.8	-23	24.0	117	17.6	253	6.7	-14	25.9	21	51.4	26	31.7	
4	240	48.2	-23	24.2	147	22.6	283	5.8	-14	27.6	51	58.5	26	31.9	
6	270	47.5	-23	24.3	177	27.5	313	4.8	-14	29.4	82	5.6	26	32.1	
8	300	46.9	-23	24.4	207	32.4	343	3.8	-14	31.1	112	12.7	26	32.4	
10	330	46.3	-23	24.5	237	37.4	13	2.9	-14	32.9	142	19.8	26	32.6	
12	0	45.7	-23	24.6	267	42.3	43	1.9	-14	34.6	172	26.9	26	32.9	
14	30	45.1	-23	24.7	297	47.2	73	.9	-14	36.3	202	34.0	26	33.1	
16	60	44.5	-23	24.8	327	52.1	102	60.0	-14	38.1	232	41.1	26	33.4	
18	90	43.8	-23	24.9	357	57.1	132	59.0	-14	39.8	262	48.2	26	33.6	
20	120	43.2	-23	25.0	28	2.0	162	58.0	-14	41.5	292	55.3	26	33.8	
22	150	42.6	-23	25.1	58	6.9	192	57.0	-14	43.3	323	2.4	26	34.1	
Δ		-3		-1				-5		-9		36			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 0	14 53	0 58	2 46	11 58	.1	2 29	4.4
55	8 22	15 32	0 46	2 18	12 15	.6	2 15	3.9
50	7 55	15 59	0 39	1 60	12 29	.9	2 3	3.6
45	7 34	16 20	0 34	1 47	12 40	1.1	1 54	3.4
40	7 17	16 37	0 31	1 38	12 49	1.3	1 47	3.1
35	7 3	16 51	0 28	1 31	12 57	1.5	1 41	3.0
30	6 50	17 3	0 26	1 26	13 4	1.6	1 35	2.8
20	6 29	17 25	0 24	1 19	13 16	1.9	1 26	2.6
10	6 11	17 43	0 23	1 15	13 26	2.1	1 18	2.4
0	5 53	18 1	0 23	1 15	13 37	2.3	1 10	2.2
10	5 36	18 18	0 23	1 18	13 47	2.5	1 2	2.0
20	5 17	18 37	0 25	1 24	13 58	2.7	0 54	1.7
30	4 55	18 59	0 27	1 37	14 10	2.9	0 45	1.5
35	4 42	19 12	0 30	1 47	14 18	3.1	0 40	1.4
40	4 27	19 27	0 33	2 3	14 26	3.2	0 34	1.2
45	4 8	19 46	0 37	2 33	14 36	3.4	0 27	1.0
50	3 46	20 8	0 45	:::	14 48	3.7	0 19	.8
55	3 16	20 38	0 58	:::	15 3	4.1	0 9	.5
60	2 31	21 23	1 46	:::	15 24	4.6	23 55	.1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	72	58.3	109	10	7.0	157	177	10.7	-23	15.1	286	24.4	9	52.1		
2	101	58.1	108	10	38.4	156	207	14.4	-23	15.1	316	29.3	9	52.1		
4	130	57.6	106	11	9.5	155	237	18.1	-23	15.1	346	34.2	9	52.1		
6	159	56.8	104	11	40.5	154	267	21.7	-23	15.1	16	39.1	9	52.1		
8	188	55.6	102	12	11.3	153	297	25.4	-23	15.1	46	44.0	9	52.2		
10	217	54.0	100	12	41.9	152	327	29.1	-23	15.1	76	48.9	9	52.2		
12	246	52.0	98	13	12.3	151	357	32.8	-23	15.1	106	53.9	9	52.2		
14	275	49.6	96	13	42.4	149	27	36.5	-23	15.1	136	58.8	9	52.2		
16	304	46.8	94	14	12.3	148	57	40.2	-23	15.1	167	3.7	9	52.2		
18	333	43.6	92	14	41.9	147	87	43.8	-23	15.1	197	8.6	9	52.3		
20	2 39.9	90	15	11.3	145	117	47.5	-23	15.1	227	13.5	9	52.3			
22	31	35.8	87	15	40.3	144	147	51.2	-23	15.1	257	18.5	9	52.3		
Δ							18			0		25			0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	3 17.7	-1.2	16.3	T _m	19 49	2.3	59.4	16.2
12	3 2.9	T _m ☉	11 h 57.0 min	Starost	9.3 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 8	.1	136	-4.0	♄	12 10	.0	90	-1.7
♂	0 33	.2	265	-1.6	♂	4 54	.0	199	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	
0	180	42.0	-23	25.2	88	11.8	222	56.1	-14	45.0	353	9.5	26	34.3	
2	210	41.4	-23	25.3	118	16.8	252	55.1	-14	46.7	23	16.6	26	34.5	
4	240	40.8	-23	25.4	148	21.7	282	54.1	-14	48.4	53	23.7	26	34.8	
6	270	40.1	-23	25.5	178	26.6	312	53.1	-14	50.2	83	30.8	26	35.0	
8	300	39.5	-23	25.5	208	31.6	342	52.1	-14	51.9	113	37.9	26	35.2	
10	330	38.9	-23	25.6	238	36.5	12	51.1	-14	53.6	143	45.1	26	35.5	
12	0	38.3	-23	25.7	268	41.4	42	50.1	-14	55.3	173	52.2	26	35.7	
14	30	37.7	-23	25.8	298	46.3	72	49.1	-14	57.0	203	59.3	26	35.9	
16	60	37.0	-23	25.8	328	51.3	102	48.1	-14	58.7	234	6.4	26	36.2	
18	90	36.4	-23	25.9	358	56.2	132	47.1	-15	.4	264	13.5	26	36.4	
20	120	35.8	-23	25.9	29	1.1	162	46.1	-15	2.1	294	20.6	26	36.6	
22	150	35.2	-23	26.0	59	6.1	192	45.1	-15	3.8	324	27.8	26	36.8	
Δ		-3		0				-5		-9		36			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 1	14 54	0 58	2 46	12 1	.3	4 15	4.7
55	8 22	15 33	0 46	2 18	12 29	.8	3 49	4.1
50	7 55	15 50	0 39	1 60	12 50	1.2	3 30	3.7
45	7 34	16 20	0 34	1 47	13 7	1.4	3 15	3.5
40	7 18	16 37	0 31	1 38	13 20	1.6	3 3	3.3
35	7 3	16 52	0 28	1 31	13 32	1.8	2 52	3.1
30	6 51	17 4	0 26	1 26	13 42	1.9	2 43	3.0
20	6 30	17 25	0 24	1 19	14 0	2.1	2 28	2.7
10	6 11	17 44	0 23	1 15	14 16	2.3	2 14	2.5
0	5 54	18 1	0 23	1 15	14 31	2.5	2 2	2.4
10	5 36	18 19	0 23	1 18	14 46	2.6	1 49	2.2
20	5 17	18 38	0 25	1 24	15 2	2.8	1 36	2.0
30	4 55	18 60	0 27	1 37	15 20	3.0	1 21	1.7
35	4 42	19 13	0 30	1 47	15 31	3.2	1 12	1.6
40	4 27	19 28	0 33	2 3	15 44	3.3	1 2	1.4
45	4 9	19 46	0 37	2 33	15 59	3.5	0 51	1.2
50	3 46	20 9	0 45	:::	16 17	3.8	0 37	1.0
55	3 16	20 39	0 58	:::	16 41	4.2	0 20	.7
60	2 31	21 24	1 47	:::	17 14	4.9	23 58	.4

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	60	31.3	85	16	9.0	142	177	54.9	-23	15.2	287	23.4	9	52.3		
2	89	26.3	83	16	37.4	140	207	58.6	-23	15.2	317	28.3	9	52.3		
4	118	20.9	81	17	5.4	138	238	2.2	-23	15.2	347	33.2	9	52.4		
6	147	15.0	78	17	33.1	136	268	5.9	-23	15.2	17	38.2	9	52.4		
8	176	8.6	76	18	.4	134	298	9.6	-23	15.2	47	43.1	9	52.4		
10	205	1.8	73	18	27.3	132	328	13.3	-23	15.2	77	48.0	9	52.4		
12	233	54.5	71	18	53.8	130	358	17.0	-23	15.2	107	52.9	9	52.5		
14	262	46.7	69	19	19.8	128	28	20.7	-23	15.2	137	57.9	9	52.5		
16	291	38.4	66	19	45.4	126	58	24.3	-23	15.2	168	2.8	9	52.5		
18	320	29.6	64	20	10.6	123	88	28.0	-23	15.2	198	7.7	9	52.5		
20	349	20.4	61	20	35.2	121	118	31.7	-23	15.2	228	12.7	9	52.5		
22	18	10.6	59	20	59.4	118	148	35.4	-23	15.2	258	17.6	9	52.6		
Δ							18			0		25			0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	2 48.1	-1.2	16.3	T _m	20 44	2.5	60

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	34.6	-23	26.0	89	11.0	222	44.1	-15	5.5	354	34.9	26	37.1
2	210	34.0	-23	26.1	119	15.9	252	43.1	-15	7.2	24	42.0	26	37.3
4	240	33.3	-23	26.1	149	20.8	282	42.1	-15	8.9	54	49.1	26	37.5
6	270	32.7	-23	26.2	179	25.8	312	41.1	-15	10.6	84	56.2	26	37.7
8	300	32.1	-23	26.2	209	30.7	342	40.1	-15	12.3	115	3.4	26	37.9
10	330	31.5	-23	26.2	239	35.6	12	39.0	-15	14.0	145	10.5	26	38.2
12	0	30.9	-23	26.3	269	40.6	42	38.0	-15	15.7	175	17.6	26	38.4
14	30	30.2	-23	26.3	299	45.5	72	37.0	-15	17.4	205	24.7	26	38.6
16	60	29.6	-23	26.3	329	50.4	102	36.0	-15	19.1	235	31.9	26	38.8
18	90	29.0	-23	26.3	359	55.3	132	34.9	-15	20.7	265	39.0	26	39.0
20	120	28.4	-23	26.4	30	.3	162	33.9	-15	22.4	295	46.1	26	39.2
22	150	27.8	-23	26.4	60	5.2	192	32.9	-15	24.1	325	53.3	26	39.4
Δ		-3		0				-5		-8		36		1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	47	.4	56	21	23.0	115	178	39.1	-23	15.2	288	22.5	9	52.6		
2	75	49.6	54	21	46.1	113	208	42.7	-23	15.2	318	27.5	9	52.6		
4	104	38.4	52	22	8.6	110	238	46.4	-23	15.2	348	32.4	9	52.6		
6	133	26.7	49	22	30.6	107	268	50.1	-23	15.2	18	37.3	9	52.7		
8	162	14.5	47	22	52.0	104	298	53.8	-23	15.2	48	42.3	9	52.7		
10	191	1.9	44	23	12.7	101	328	57.5	-23	15.2	78	47.2	9	52.7		
12	219	48.8	42	23	32.9	98	359	1.1	-23	15.2	108	52.1	9	52.7		
14	248	35.2	40	23	52.4	94	29	4.8	-23	15.2	138	57.1	9	52.8		
16	277	21.2	38	24	11.3	91	59	8.5	-23	15.2	169	2.0	9	52.8		
18	306	6.7	36	24	29.5	88	89	12.2	-23	15.2	199	6.9	9	52.8		
20	334	51.9	34	24	47.0	84	119	15.9	-23	15.2	229	11.9	9	52.8		
22	3	36.6	32	25	3.8	80	149	19.5	-23	15.2	259	16.8	9	52.9		
Δ								18		0		25		0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 2	14 54	0 58	2 46	12 7	.7	6 9	4.8
55	8 23	15 33	0 46	2 18	12 49	1.4	5 28	4.1
50	7 56	16 0	0 39	1 60	13 19	1.7	4 60	3.7
45	7 35	16 21	0 34	1 47	13 41	1.9	4 39	3.5
40	7 18	16 38	0 31	1 38	13 59	2.1	4 22	3.3
35	7 4	16 52	0 28	1 31	14 15	2.2	4 7	3.2
30	6 51	17 4	0 26	1 26	14 28	2.3	3 55	3.1
20	6 30	17 26	0 24	1 19	14 51	2.4	3 34	2.9
10	6 12	17 44	0 23	1 15	15 11	2.6	3 15	2.7
0	5 54	18 2	0 23	1 15	15 30	2.7	2 58	2.6
10	5 37	18 19	0 23	1 18	15 49	2.8	2 41	2.4
20	5 18	18 38	0 25	1 24	16 9	2.9	2 23	2.3
30	4 55	19 0	0 27	1 37	16 33	3.0	2 3	2.1
35	4 42	19 13	0 30	1 47	16 47	3.1	1 51	2.0
40	4 27	19 29	0 33	2 3	17 3	3.2	1 37	1.8
45	4 9	19 47	0 37	2 34	17 23	3.4	1 21	1.6
50	3 47	20 9	0 45	:::	17 48	3.6	1 1	1.4
55	3 17	20 39	0 58	:::	18 21	3.9	0 35	1.0
60	2 32	21 24	1 47	:::	19 11	4.7	...	.0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	s	'	h min	min	'	'
00	2 18.5	-1.2	16.3	T _m	21 45	2.7	60.5 16.5
12	2 3.6	T _{m☉}	11 h 57.9 min	Starost	11.3 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♀	9 9	.1	134	-4.0	♃	12 4	.0	89	-1.7
♂	0 22	.2	265	-1.6	♄	4 46	.0	199	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	27.1	-23	26.4	90	10.1	222	31.9	-15	25.8	356	.4	26	39.6
2	210	26.5	-23	26.4	120	15.1	252	30.8	-15	27.4	26	7.5	26	39.9
4	240	25.9	-23	26.4	150	20.0	282	29.8	-15	29.1	56	14.6	26	40.1
6	270	25.3	-23	26.4	180	24.9	312	28.7	-15	30.8	86	21.8	26	40.3
8	300	24.6	-23	26.4	210	29.8	342	27.7	-15	32.4	116	28.9	26	40.5
10	330	24.0	-23	26.4	240	34.8	12	26.7	-15	34.1	146	36.0	26	40.7
12	0	23.4	-23	26.4	270	39.7	42	25.6	-15	35.8	176	43.2	26	40.9
14	30	22.8	-23	26.4	300	44.6	72	24.6	-15	37.4	206	50.3	26	41.1
16	60	22.2	-23	26.4	330	49.6	102	23.5	-15	39.1	236	57.4	26	41.3
18	90	21.5	-23	26.3	0	54.5	132	22.5	-15	40.7	267	4.6	26	41.5
20	120	20.9	-23	26.3	30	59.4	162	21.4	-15	42.4	297	11.7	26	41.7
22	150	20.3	-23	26.3	61	4.3	192	20.4	-15	44.0	327	18.8	26	41.9
Δ		-3		0				-5		-8		36		1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	32	20.9	30	25	19.9	77	179	23.2	-23	15.2	289	21.8	9	52.9		
2	61	4.8	28	25	35.2	73	209	26.9	-23	15.2	319	26.7	9	52.9		
4	89	48.3	26	25	49.9	69	239	30.6	-23	15.2	349	31.7	9	53.0		
6	118	31.5	24	26	3.7	66	269	34.3	-23	15.2	19	36.6	9	53.0		
8	147	14.4	23	26	16.8	62	299	37.9	-23	15.2	49	41.5	9	53.0		
10	175	56.9	21	26	29.1	58	329	41.6	-23	15.2	79	46.5	9	53.0		
12	204	39.2	20	26	40.7	54	359	45.3	-23	15.2	109	51.4	9	53.1		
14	233	21.1	19	26	51.4	50	29	49.0	-23	15.2	139	56.4	9	53.1		
16	262	2.9	17	27	1.3	45	59	52.7	-23	15.2	170	1.3	9	53.1		
18	290	44.4	16	27	10.4	41	89	56.3	-23	15.2	200	6.3	9	53.2		
20	319	25.7	16	27	18.6	37	120	.0	-23	15.2	230	11.2	9	53.2		
22	348	6.8	15	27	26.1	33	150	3.7	-23	15.2	260	16.2	9	53.2		
Δ								18		0		25		0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 2	14 55	0 58	2 46	12 23	1.8	8 4	4.0
55	8 23	15 33	0 46	2 18	13 22	2.2	7 5	3.5
50	7 56	16 1	0 39	1 60	13 60	2.4	6 29	3.3
45	7 35	16 21	0 34	1 47	14 27	2.5	6 2	3.2
40	7 19	16 38	0 31	1 38	14 49	2.6	5 41	3.1
35	7 4	16 52	0 28	1 31	15 7	2.6	5 23	3.0
30	6 52	17 5	0 26	1 26	15 23	2.6	5 8	3.0
20	6 31	17 26	0 24	1 19	15 49	2.7	4 43	2.9
10	6 12	17 45	0 23	1 15	16 12	2.7	4 21	2.8
0	5 55	18 2	0 23	1 15	16 34	2.8	4 0	2.7
10	5 37	18 20	0 23	1 18	16 56	2.8	3 40	2.7
20	5 18	18 39	0 25	1 24	17 19	2.8	3 18	2.6
30	4 56	19 1	0 27	1 37	17 46	2.9	2 53	2.5
35	4 43	19 14	0 30	1 47	18 2	2.9	2 38	2.4
40	4 28	19 29	0 33	2 3	18 21	2.9	2 21	2.3
45	4 10	19 47	0 37	2 33	18 44	2.9	2 0	2.2
50	3 47	20 10	0 45	:::	19 13	3.0	1 35	2.0
55	3 17	20 40	0 58	:::	19 54	3.0	1 0	1.7
60	2 32	21 25	1 47	:::	21 3	3.2	0 9	1.0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	s	'				

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	19.7	-23	26.3	222	19.3	-15	45.7	357	26.0	26	42.1			
2	210	19.1	-23	26.2	121	14.2	252	18.2	-15	47.3	27	33.1	26	42.3	
4	240	18.4	-23	26.2	151	19.1	282	17.2	-15	49.0	57	40.2	26	42.5	
6	270	17.8	-23	26.2	181	24.0	312	16.1	-15	50.6	87	47.4	26	42.7	
8	300	17.2	-23	26.1	211	29.0	342	15.0	-15	52.2	117	54.5	26	42.9	
10	330	16.6	-23	26.1	241	33.9	12	14.0	-15	53.9	148	1.6	26	43.0	
12	0	16.0	-23	26.0	271	38.8	42	12.9	-15	55.5	178	8.7	26	43.2	
14	30	15.3	-23	26.0	301	43.8	72	11.8	-15	57.1	208	15.9	26	43.4	
16	60	14.7	-23	25.9	331	48.7	102	10.7	-15	58.8	238	23.0	26	43.6	
18	90	14.1	-23	25.9	1	53.6	132	9.7	-16	60.4	268	30.1	26	43.8	
20	120	13.5	-23	25.8	31	58.5	162	8.6	-16	62.0	298	37.3	26	44.0	
22	150	12.9	-23	25.8	62	3.5	192	7.5	-16	63.6	328	44.4	26	44.2	
Δ		-3		0				-5		-8			36		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	14 55	0 58	2 46	13 5	3.6	9 40	2.2
55	8 24	15 34	0 46	2 18	14 16	3.2	8 29	2.5
50	7 57	16 1	0 39	1 60	14 57	3.1	7 48	2.6
45	7 36	16 22	0 34	1 47	15 27	3.0	7 18	2.6
40	7 19	16 39	0 31	1 38	15 50	3.0	6 55	2.7
35	7 5	16 53	0 28	1 31	16 9	2.9	6 36	2.7
30	6 52	17 5	0 26	1 26	16 26	2.9	6 19	2.7
20	6 31	17 27	0 24	1 19	16 54	2.8	5 52	2.7
10	6 13	17 45	0 23	1 15	17 18	2.8	5 28	2.7
0	5 55	18 3	0 23	1 15	17 40	2.7	5 5	2.8
10	5 38	18 20	0 23	1 18	18 3	2.7	4 43	2.8
20	5 19	18 39	0 25	1 24	18 27	2.6	4 19	2.8
30	4 56	19 1	0 27	1 37	18 55	2.5	3 51	2.8
35	4 43	19 14	0 30	1 47	19 12	2.5	3 35	2.8
40	4 28	19 30	0 33	2 3	19 31	2.4	3 16	2.8
45	4 10	19 48	0 37	2 33	19 54	2.3	2 53	2.8
50	3 48	20 10	0 45	:::	20 24	2.2	2 23	2.8
55	3 18	20 40	0 58	:::	21 6	1.9	1 42	2.8
60	2 33	21 25	1 46	:::	22 20	1.2	0 32	2.6
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	16	47.7	14	27	32.7	29	180	7.4	-23	15.2	290	21.1	9	53.3	
2	45	28.6	14	27	38.4	25	210	11.1	-23	15.2	320	26.1	9	53.3	
4	74	9.3	13	27	43.3	20	240	14.7	-23	15.2	350	31.0	9	53.3	
6	102	50.0	13	27	47.3	16	270	18.4	-23	15.2	20	36.0	9	53.3	
8	131	30.6	13	27	50.5	12	300	22.1	-23	15.2	50	40.9	9	53.4	
10	160	11.2	13	27	52.8	7	330	25.8	-23	15.2	80	45.9	9	53.4	
12	188	51.8	13	27	54.3	3	0	29.5	-23	15.2	110	50.8	9	53.4	
14	217	32.5	14	27	54.9	-1	30	33.2	-23	15.2	140	55.8	9	53.5	
16	246	13.2	14	27	54.7	-5	60	36.9	-23	15.2	171	7	9	53.5	
18	274	54.0	15	27	53.6	-10	90	40.5	-23	15.2	201	5.7	9	53.5	
20	303	34.9	15	27	51.6	-14	120	44.2	-23	15.2	231	10.6	9	53.6	
22	332	16.0	16	27	48.8	-18	150	47.9	-23	15.2	261	15.6	9	53.6	
Δ							18			0			25		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	1 18.9	-1.2	16.3	T _m	23 56	2.7	60.7	16.5	
12	1 4.0	T _{m☉}	11 h 58.9 min	Starost	13.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	9 11	.1	131	-4.0	♃	11 58	.0	89	-1.7
	0 10	.2	266	-1.6	♄	4 38	.0	199	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	12.2	-23	25.7	222	6.4	-16	5.3	358	51.5	26	44.3			
2	210	11.6	-23	25.6	122	13.3	252	5.3	-16	6.9	28	58.7	26	44.5	
4	240	11.0	-23	25.5	152	18.3	282	4.2	-16	8.5	59	5.8	26	44.7	
6	270	10.4	-23	25.5	182	23.2	312	3.1	-16	10.1	89	12.9	26	44.9	
8	300	9.8	-23	25.4	212	28.1	342	2.1	-16	11.7	119	20.1	26	45.1	
10	330	9.1	-23	25.3	242	33.0	12	1.0	-16	13.3	149	27.2	26	45.2	
12	0	8.5	-23	25.2	272	38.0	41	59.9	-16	14.9	179	34.3	26	45.4	
14	30	7.9	-23	25.1	302	42.9	71	58.8	-16	16.5	209	41.4	26	45.6	
16	60	7.3	-23	25.0	332	47.8	101	57.7	-16	18.1	239	48.6	26	45.8	
18	90	6.7	-23	24.9	2	52.8	131	56.6	-16	19.7	269	55.7	26	45.9	
20	120	6.0	-23	24.8	32	57.7	161	55.4	-16	21.3	300	2.8	26	46.1	
22	150	5.4	-23	24.7	63	2.6	191	54.3	-16	22.9	330	9.9	26	46.3	
Δ		-3		0				-5		-8			36		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	14 56	0 58	2 46	14 31	4.5	10 32	.8
55	8 24	15 35	0 46	2 18	15 33	3.8	9 29	1.5
50	7 57	16 2	0 39	1 60	16 12	3.5	8 50	1.8
45	7 36	16 23	0 34	1 47	16 39	3.3	8 21	2.0
40	7 20	16 39	0 31	1 38	17 1	3.2	7 59	2.1
35	7 5	16 54	0 28	1 31	17 20	3.0	7 40	2.2
30	6 53	17 6	0 26	1 26	17 35	2.9	7 24	2.3
20	6 32	17 27	0 24	1 19	18 1	2.8	6 57	2.4
10	6 13	17 46	0 23	1 15	18 24	2.6	6 34	2.5
0	5 56	18 3	0 23	1 15	18 45	2.5	6 12	2.6
10	5 38	18 21	0 23	1 18	19 6	2.4	5 50	2.7
20	5 19	18 40	0 25	1 24	19 29	2.3	5 26	2.8
30	4 57	19 2	0 27	1 37	19 55	2.1	4 58	2.9
35	4 44	19 15	0 30	1 47	20 10	2.0	4 42	3.0
40	4 29	19 30	0 33	2 3	20 28	1.9	4 23	3.1
45	4 11	19 48	0 37	2 33	20 50	1.7	3 59	3.2
50	3 48	20 11	0 45	:::	21 16	1.5	3 30	3.4
55	3 18	20 41	0 58	:::	21 53	1.1	2 48	3.6
60	2 33	21 25	1 46	:::	22 49	.4	1 35	4.3
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	0	57.3	17	27	45.2	-22	180	51.6	-23	15.2	291	20.6	9	53.6	
2	29	38.8	19	27	40.7	-26	210	55.3	-23	15.2	321	25.5	9	53.7	
4	58	20.5	20	27	35.4	-31	240	58.9	-23	15.2	351	30.5	9	53.7	
6	87	2.4	21	27	29.3	-35	271	2.6	-23	15.2	21	35.4	9	53.7	
8	115	44.7	23	27	22.4	-39	301	6.3	-23	15.2	51	40.4	9	53.8	
10	144	27.2	24	27	14.7	-43	331	10.0	-23	15.2	81	45.4	9	53.8	
12	173	10.1	26	27	6.2	-46	1	13.6	-23	15.2	111	50.3	9	53.9	
14	201	53.3	28	26	56.9	-50	31	17.3	-23	15.2	141	55.3	9	53.9	
16	230	36.9	30	26	46.8	-54	61	21.0	-23	15.2	172	3	9	53.9	
18	259	20.9	32	26	36.0	-58	91	24.7	-23	15.2	202	5.2	9	54.0	
20	288	5.2	34	26	24.5	-61	121	28.4	-23	15.2	232	10.2	9	54.0	
22	316	50.0	36	26	12.2	-65	151	32.0	-23	15.2	262	15.2	9	54.0	
Δ							18			0			25		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	0 49.1	-1.2	16.3	T _m	1.0	60.4	16.5
12	0 34.2	T _{m☉}	11 h 59.4 min	Starost	14.3 d	Faza	☉
PLANETE							
Pl.	T _m						

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	4.8	-23	24.6	93	7.5	221	53.2	-16	24.5	0	17.1	26	46.4
2	210	4.2	-23	24.5	123	12.5	251	52.1	-16	26.1	30	24.2	26	46.6
4	240	3.6	-23	24.4	153	17.4	281	51.0	-16	27.7	60	31.3	26	46.8
6	270	2.9	-23	24.3	183	22.3	311	49.9	-16	29.2	90	38.4	26	46.9
8	300	2.3	-23	24.2	213	27.3	341	48.8	-16	30.8	120	45.6	26	47.1
10	330	1.7	-23	24.1	243	32.2	11	47.6	-16	32.4	150	52.7	26	47.3
12	0	1.1	-23	23.9	273	37.1	41	46.5	-16	34.0	180	59.8	26	47.4
14	30	.5	-23	23.8	303	42.0	71	45.4	-16	35.5	211	6.9	26	47.6
16	59	59.8	-23	23.7	333	47.0	101	44.3	-16	37.1	241	14.0	26	47.8
18	89	59.2	-23	23.5	3	51.9	131	43.1	-16	38.7	271	21.2	26	47.9
20	119	58.6	-23	23.4	33	56.8	161	42.0	-16	40.2	301	28.3	26	48.1
22	149	58.0	-23	23.3	64	1.8	191	40.9	-16	41.8	331	35.4	26	48.2
Δ		-3		1				-6		-8		36		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	14 57	0 58	2 46	16 20	4.5	10 52	.3
55	8 25	15 35	0 46	2 18	17 5	3.9	10 5	.9
50	7 58	16 2	0 39	1 60	17 36	3.5	9 33	1.3
45	7 37	16 23	0 34	1 47	17 59	3.3	9 9	1.5
40	7 20	16 40	0 31	1 38	18 17	3.1	8 50	1.7
35	7 6	16 54	0 28	1 31	18 32	3.0	8 34	1.8
30	6 53	17 7	0 26	1 26	18 46	2.8	8 20	1.9
20	6 32	17 28	0 24	1 19	19 8	2.6	7 55	2.1
10	6 14	17 46	0 23	1 15	19 28	2.5	7 34	2.3
0	5 56	18 4	0 23	1 15	19 46	2.3	7 15	2.4
10	5 39	18 21	0 23	1 18	20 4	2.1	6 55	2.6
20	5 20	18 40	0 25	1 24	20 23	1.9	6 34	2.7
30	4 58	19 2	0 27	1 37	20 45	1.7	6 9	2.9
35	4 45	19 15	0 30	1 47	20 58	1.6	5 54	3.0
40	4 29	19 30	0 33	2 3	21 13	1.5	5 37	3.2
45	4 11	19 48	0 37	2 33	21 30	1.3	5 16	3.3
50	3 49	20 11	0 45	:::	21 52	1.0	4 50	3.6
55	3 19	20 41	0 58	:::	22 20	.7	4 15	3.9
60	2 34	21 25	1 48	:::	22 60	.2	3 19	4.7
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	345	35.3	38	25	59.2	-68	181	35.7	-23	15.2	292	20.1	9	54.1		
2	14	21.0	41	25	45.5	-72	211	39.4	-23	15.2	322	25.1	9	54.1		
4	43	7.1	43	25	31.1	-75	241	43.1	-23	15.2	352	30.1	9	54.2		
6	71	53.8	46	25	16.1	-78	271	46.8	-23	15.2	22	35.0	9	54.2		
8	100	40.9	48	25	.4	-82	301	50.5	-23	15.2	52	40.0	9	54.2		
10	129	28.5	51	24	44.0	-85	331	54.1	-23	15.2	82	45.0	9	54.3		
12	158	16.7	53	24	27.1	-88	1	57.8	-23	15.1	112	49.9	9	54.3		
14	187	5.3	56	24	9.5	-91	32	1.5	-23	15.1	142	54.9	9	54.3		
16	215	54.5	59	23	51.3	-94	62	5.2	-23	15.1	172	59.9	9	54.4		
18	244	44.3	61	23	32.6	-96	92	8.9	-23	15.1	203	4.9	9	54.4		
20	273	34.5	64	23	13.3	-99	122	12.5	-23	15.1	233	9.8	9	54.5		
22	302	25.4	67	22	53.5	-102	152	16.2	-23	15.1	263	14.8	9	54.5		
Δ							18			0	25			0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	0 19.4	-1.2	16.3	T _m	1 0	2.5	59.9	16.3	
12	0 4.5	T _{m☉}	11 h 59.9 min	Starost	15.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♀	h min	'	°	°
♂	9 13	.1	129	-4.0	♃	11 52	.0	88	-1.7
♄	23 53	.2	267	-1.6	♄	4 30	.0	199	.6

26. DECEMBAR

SREDA

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	57.4	-23	23.1	94	6.7	221	39.7	-16	43.4	1	42.5	26	48.4
2	209	56.7	-23	23.0	124	11.6	251	38.6	-16	44.9	31	49.6	26	48.5
4	239	56.1	-23	22.8	154	16.5	281	37.4	-16	46.5	61	56.7	26	48.7
6	269	55.5	-23	22.7	184	21.5	311	36.3	-16	48.0	92	3.8	26	48.8
8	299	54.9	-23	22.5	214	26.4	341	35.1	-16	49.6	122	11.0	26	49.0
10	329	54.3	-23	22.3	244	31.3	11	34.0	-16	51.1	152	18.1	26	49.1
12	359	53.7	-23	22.2	274	36.3	41	32.9	-16	52.6	182	25.2	26	49.3
14	29	53.0	-23	22.0	304	41.2	71	31.7	-16	54.2	212	32.3	26	49.4
16	59	52.4	-23	21.8	334	46.1	101	30.5	-16	55.7	242	39.4	26	49.6
18	89	51.8	-23	21.7	4	51.0	131	29.4	-16	57.3	272	46.5	26	49.7
20	119	51.2	-23	21.5	34	56.0	161	28.2	-16	58.8	302	53.6	26	49.9
22	149	50.6	-23	21.3	65	.9	191	27.1	-17	.3	333	.7	26	50.0
Δ		-3		1				-6		-8		36		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 4	14 57	0 58	2 46	18 8	4.2	10 60	.1
55	8 25	15 36	0 46	2 18	18 39	3.7	10 27	.6
50	7 58	16 3	0 38	1 59	19 1	3.4	10 4	.9
45	7 37	16 24	0 34	1 47	19 18	3.2	9 45	1.1
40	7 20	16 41	0 31	1 38	19 32	3.0	9 30	1.3
35	7 6	16 55	0 28	1 31	19 44	2.8	9 17	1.5
30	6 54	17 7	0 26	1 26	19 54	2.7	9 5	1.6
20	6 33	17 28	0 24	1 19	20 11	2.4	8 46	1.8
10	6 14	17 47	0 23	1 15	20 27	2.2	8 29	2.0
0	5 57	18 4	0 23	1 15	20 41	2.1	8 13	2.2
10	5 39	18 22	0 23	1 18	20 55	1.9	7 56	2.4
20	5 20	18 41	0 25	1 24	21 10	1.7	7 39	2.5
30	4 58	19 3	0 27	1 37	21 27	1.5	7 19	2.8
35	4 45	19 16	0 30	1 47	21 37	1.3	7 7	2.9
40	4 30	19 31	0 33	2 3	21 48	1.2	6 53	3.1
45	4 12	19 49	0 37	2 33	22 1	1.0	6 37	3.3
50	3 50	20 11	0 45	:::	22 17	.8	6 16	3.5
55	3 20	20 41	0 58	:::	22 37	.5	5 50	3.9
60	2 35	21 26	1 44	:::	23 4	.1	5 12	4.4
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	331	16.7	70	22	33.2	-104	182	19.9	-23	15.1	293	19.8	9	54.6		
2	0	8.6	72	22	12.4	-107	212	23.6	-23	15.1	323	24.8	9	54.6		
4	29	1.1	75	21	51.0	-109	242	27.3	-23	15.1	353	29.7	9	54.6		
6	57	54.0	78	21	29.2	-111	272	30.9	-23	15.1	23	34.7	9	54.7		
8	86	47.6	80	21	7.0	-113	302	34.6	-23	15.1	53	39.7	9	54.7		
10	115	41.7	83	20	44.3	-116	332	38.3	-23	15.1	83	44.7	9	54.8		
12	144	36.3	86	20	21.2	-118	2	42.0	-23	15.1	113	49.7	9	54.8		
14	173	31.5	88	19	57.7	-120	32	45.7	-23	15.1	143	54.6	9	54.8		
16	202	27.2	91	19	33.7	-121	62	49.3	-23	15.1	173	59.6	9	54.9		
18	231	23.4	94	19	9.5	-123	92	53.0	-23	15.0	204	4.6	9	54.9		
20	260	20.1	96	18	44.8	-125	122	56.7	-23	15.0	234	9.6	9	55.0		
22	289	17.4	99	18	19.9	-127	153	.4	-23	15.0	264	14.6	9	55.0		
Δ							18			0	25			0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	s	h min	min	'	'

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	°	'
0	179 50.0	-23 21.1	95 5.8	221 25.9	-17 1.8	3 7.8	26 50.1
2	209 49.3	-23 20.9	125 10.7	251 24.7	-17 3.4	33 14.9	26 50.3
4	239 48.7	-23 20.7	155 15.7	281 23.6	-17 4.9	63 22.0	26 50.4
6	269 48.1	-23 20.5	185 20.6	311 22.4	-17 6.4	93 29.1	26 50.6
8	299 47.5	-23 20.4	215 25.5	341 21.2	-17 7.9	123 36.2	26 50.7
10	329 46.9	-23 20.2	245 30.5	11 20.0	-17 9.4	153 43.3	26 50.8
12	359 46.3	-23 19.9	275 35.4	41 18.9	-17 10.9	183 50.4	26 51.0
14	29 45.7	-23 19.7	305 40.3	71 17.7	-17 12.5	213 57.4	26 51.1
16	59 45.0	-23 19.5	335 45.2	101 16.5	-17 14.0	244 4.5	26 51.2
18	89 44.4	-23 19.3	5 50.2	131 15.3	-17 15.5	274 11.6	26 51.4
20	119 43.8	-23 19.1	35 55.1	161 14.1	-17 17.0	304 18.7	26 51.5
22	149 43.2	-23 18.9	66 .0	191 13.0	-17 18.5	334 25.8	26 51.6
Δ	-3	1		-6	-8	35	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 4	14 58	0 58	2 46	19 49	3.9	11 3	.0
55	8 25	15 37	0 45	2 18	20 8	3.5	10 41	.4
50	7 58	16 4	0 38	1 59	20 22	3.2	10 25	.7
45	7 37	16 24	0 34	1 47	20 34	3.0	10 12	.9
40	7 21	16 41	0 31	1 38	20 43	2.8	10 1	1.1
35	7 7	16 55	0 28	1 31	20 51	2.6	9 52	1.2
30	6 54	17 8	0 26	1 25	20 58	2.5	9 44	1.4
20	6 33	17 29	0 24	1 19	21 10	2.3	9 29	1.6
10	6 15	17 47	0 23	1 15	21 20	2.1	9 17	1.8
0	5 57	18 5	0 23	1 15	21 30	1.9	9 5	2.0
10	5 40	18 22	0 23	1 18	21 40	1.7	8 53	2.2
20	5 21	18 41	0 25	1 24	21 50	1.5	8 40	2.4
30	4 59	19 3	0 27	1 36	22 2	1.3	8 25	2.6
35	4 46	19 16	0 30	1 47	22 8	1.1	8 16	2.7
40	4 31	19 31	0 33	2 3	22 16	1.0	8 6	2.9
45	4 13	19 49	0 37	2 32	22 25	.8	7 55	3.1
50	3 50	20 11	0 44	:::	22 35	.6	7 40	3.3
55	3 20	20 41	0 58	:::	22 48	.4	7 22	3.6
60	2 36	21 25	1 43	:::	23 5	.0	6 57	4.0
S								

UT	MESEC				JUPITER				SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♄	δ _♄	S _♅	δ _♅
h	°	'	°	'	°	'	°	'	°	'	°	'
0	318 15.2	101	17 54.6	-128	183 4.1	-23 15.0	294 19.5	9 55.1	294 19.5	9 55.1	294 19.5	9 55.1
2	347 13.5	104	17 28.9	-130	213 7.7	-23 15.0	324 24.5	9 55.1	324 24.5	9 55.1	324 24.5	9 55.1
4	16 12.3	106	17 3.0	-131	243 11.4	-23 15.0	354 29.5	9 55.2	354 29.5	9 55.2	354 29.5	9 55.2
6	45 11.6	109	16 36.8	-132	273 15.1	-23 15.0	24 34.5	9 55.2	24 34.5	9 55.2	24 34.5	9 55.2
8	74 11.3	111	16 10.4	-134	303 18.8	-23 15.0	54 39.5	9 55.2	54 39.5	9 55.2	54 39.5	9 55.2
10	103 11.6	114	15 43.7	-135	333 22.5	-23 15.0	84 44.5	9 55.3	84 44.5	9 55.3	84 44.5	9 55.3
12	132 12.3	116	15 16.7	-136	3 26.1	-23 15.0	114 49.5	9 55.3	114 49.5	9 55.3	114 49.5	9 55.3
14	161 13.4	118	14 49.5	-137	33 29.8	-23 15.0	144 54.5	9 55.4	144 54.5	9 55.4	144 54.5	9 55.4
16	190 15.0	120	14 22.1	-138	63 33.5	-23 15.0	174 59.4	9 55.4	174 59.4	9 55.4	174 59.4	9 55.4
18	219 17.1	122	13 54.5	-139	93 37.2	-23 14.9	205 4.4	9 55.5	205 4.4	9 55.5	205 4.4	9 55.5
20	248 19.5	124	13 26.7	-140	123 40.9	-23 14.9	235 9.4	9 55.5	235 9.4	9 55.5	235 9.4	9 55.5
22	277 22.4	126	12 58.7	-141	153 44.5	-23 14.9	265 14.4	9 55.6	265 14.4	9 55.6	265 14.4	9 55.6
Δ					18	0	25	0				

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 0 40.0	-1.2	16.3	T _m	2 53	2.0	58.2	15.9	
12	- 0 54.8	T _{m☉}	12 h .9 min	Starost	17.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	9 15	.1	126	-4.0	♄	11 46	.0	88	-1.7
♂	23 42	.2	268	-1.6	♅	4 22	.0	199	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	°	'
0	179 42.6	-23 18.7	96 5.0	221 11.8	-17 19.9	4 32.9	26 51.7
2	209 42.0	-23 18.4	126 9.9	251 10.6	-17 21.4	34 39.9	26 51.9
4	239 41.4	-23 18.2	156 14.8	281 9.4	-17 22.9	64 47.0	26 52.0
6	269 40.7	-23 18.0	186 19.7	311 8.2	-17 24.4	94 54.1	26 52.1
8	299 40.1	-23 17.7	216 24.7	341 7.0	-17 25.9	125 1.2	26 52.2
10	329 39.5	-23 17.5	246 29.6	11 5.8	-17 27.4	155 8.2	26 52.4
12	359 38.9	-23 17.3	276 34.5	41 4.6	-17 28.8	185 15.3	26 52.5
14	29 38.3	-23 17.0	306 39.5	71 3.4	-17 30.3	215 22.4	26 52.6
16	59 37.7	-23 16.8	336 44.4	101 2.2	-17 31.8	245 29.4	26 52.7
18	89 37.1	-23 16.5	6 49.3	131 1.0	-17 33.3	275 36.5	26 52.8
20	119 36.5	-23 16.2	36 54.2	160 59.7	-17 34.7	305 43.6	26 52.9
22	149 35.9	-23 16.0	66 59.2	190 58.5	-17 36.2	335 50.6	26 53.1
Δ	-3	1		-6	-7	35	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 4	14 59	0 57	2 46	21 22	3.6	11 4	.0
55	8 25	15 38	0 45	2 17	21 32	3.3	10 51	.3
50	7 58	16 5	0 38	1 59	21 39	3.0	10 42	.6
45	7 38	16 25	0 34	1 47	21 45	2.8	10 34	.8
40	7 21	16 42	0 31	1 38	21 50	2.6	10 27	.9
35	7 7	16 56	0 28	1 31	21 54	2.5	10 21	1.1
30	6 55	17 8	0 26	1 25	21 58	2.4	10 16	1.2
20	6 33	17 29	0 24	1 19	22 4	2.1	10 7	1.4
10	6 15	17 48	0 23	1 15	22 10	1.9	9 59	1.6
0	5 58	18 5	0 23	1 15	22 15	1.8	9 52	1.8
10	5 40	18 23	0 23	1 18	22 20	1.6	9 45	2.0
20	5 21	18 41	0 25	1 24	22 26	1.4	9 36	2.2
30	4 59	19 3	0 27	1 36	22 32	1.2	9 27	2.4
35	4 46	19 16	0 30	1 47	22 36	1.0	9 22	2.6
40	4 31	19 31	0 33	2 3	22 40	.9	9 16	2.7
45	4 13	19 49	0 37	2 32	22 45	.7	9 9	2.9
50	3 51	20 12	0 44	:::	22 50	.5	8 60	3.1
55	3 21	20 41	0 58	:::	22 57	.3	8 49	3.4
60	2 37	21 25	1 42	:::	23 5	.0	8 35	3.8
S								

UT	MESEC				JUPITER				SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♄	δ _♄	S _♅	δ _♅
h	°	'	°	'	°	'	°	'	°	'	°	'
0	306 25.7	128	12 30.6	-141	183 48.2	-23 14.9	295 19.4	9 55.6	295 19.4	9 55.6	295 19.4	9 55.6
2	335 29.4	130	12 2.3	-142	213 51.9	-23 14.9	325 24.4	9 55.7	325 24.4	9 55.7	325 24.4	9 55.7
4	4 33.5	132	11 33.9	-143	243 55.6	-23 14.9	355 29.4	9 55.7	355 29.4	9 55.7	355 29.4	9 55.7
6	33 37.9	134	11 5.3	-143	273 59.3	-23 14.9	25 34.4	9 55.8	25 34.4	9 55.8	25 34.4	9 55.8
8	62 42.7	136	10 36.6	-144	304 3.0	-23 14.9	55 39.4	9 55.8	55 39.4	9 55.8	55 39.4	9 55.8
10	91 47.9	138	10 7.8	-144	334 6.6	-23 14.9	85 44.4	9 55.9	85 44.4	9 55.9	85 44.4	9 55.9
12	120 53.4	139	9 39.0	-145	4 10.3	-23 14.8	115 49.4	9 55.9	115 49.4	9 55.9	115 49.4	9 55.9
14	149 59.2	141	9 10.0	-145	34 14.0	-23 14.8	145 54.4	9 56.0	145 54.4	9 56.0	145 54.4	9 56.0
16	179 5.4	142	8 40.9	-146	64 17.7	-23 14.8	175 59.4	9 56.0	175 59.4	9 56.0	175 59.4	9 56.0
18	208 11.9	144	8 11.8	-146	94 21.4	-23 14.8	206 4.4	9 56.1	206 4.4	9 56.1	206 4.4	9 56.1
20	237 18.6	145	7 42.6	-146	124 25.0	-23 14.8	236 9.4	9 56.1	236 9.4	9 56.1	236 9.4	9 56.1
22	266 25.7	147	7 13.3	-146	154 28.7	-23 14.8	266 14.4	9 56.2	266 14.4	9 56.2	266 14.4	9 56.2
Δ					18	0	25	0				

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	- 1 9.5	-1.2	16.3	T _m	3 41	1.9	57.3	15.6
12	- 1 24.2	T _{m☉}	12 h 1.4 min	Starost	18.3 d	Faza	☉	
PLANETE								
Pl.	T							

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	°	'
0	179 35.2	-23 15.7	97 4.1	220 57.3	-17 37.6	5 57.7	26 53.2
2	209 34.6	-23 15.5	127 9.0	250 56.1	-17 39.1	36 4.7	26 53.3
4	239 34.0	-23 15.2	157 14.0	280 54.9	-17 40.6	66 11.8	26 53.4
6	269 33.4	-23 14.9	187 18.9	310 53.7	-17 42.0	96 18.8	26 53.5
8	299 32.8	-23 14.6	217 23.8	340 52.4	-17 43.4	126 25.9	26 53.6
10	329 32.2	-23 14.4	247 28.7	10 51.2	-17 44.9	156 32.9	26 53.7
12	359 31.6	-23 14.1	277 33.7	40 50.0	-17 46.3	186 40.0	26 53.8
14	29 31.0	-23 13.8	307 38.6	70 48.7	-17 47.8	216 47.0	26 53.9
16	59 30.4	-23 13.5	337 43.5	100 47.5	-17 49.2	246 54.0	26 54.0
18	89 29.8	-23 13.2	7 48.5	130 46.3	-17 50.6	277 1.1	26 54.1
20	119 29.2	-23 12.9	37 53.4	160 45.0	-17 52.1	307 8.1	26 54.2
22	149 28.6	-23 12.6	67 58.3	190 43.8	-17 53.5	337 15.1	26 54.3
Δ	-3	1		-6	-7	35	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	15 0	0 57	2 45	22 49	3.5	11 4	.0
55	8 25	15 39	0 45	2 17	22 51	3.2	10 59	.3
50	7 58	16 5	0 38	1 59	22 52	2.9	10 55	.5
45	7 38	16 26	0 34	1 47	22 53	2.7	10 52	.7
40	7 21	16 43	0 31	1 38	22 54	2.6	10 50	.9
35	7 7	16 57	0 28	1 31	22 54	2.4	10 47	1.0
30	6 55	17 9	0 26	1 25	22 55	2.3	10 45	1.1
20	6 34	17 30	0 24	1 19	22 56	2.1	10 42	1.4
10	6 15	17 48	0 23	1 15	22 57	1.9	10 39	1.5
0	5 58	18 6	0 23	1 15	22 57	1.7	10 36	1.7
10	5 41	18 23	0 23	1 18	22 58	1.5	10 33	1.9
20	5 22	18 42	0 25	1 24	22 59	1.3	10 29	2.1
30	4 60	19 4	0 27	1 36	23 0	1.1	10 26	2.3
35	4 47	19 17	0 30	1 47	23 1	1.0	10 23	2.5
40	4 32	19 32	0 33	2 3	23 1	.9	10 21	2.6
45	4 14	19 49	0 37	2 32	23 2	.7	10 18	2.8
50	3 52	20 12	0 44	:::	23 3	.5	10 15	3.0
55	3 22	20 41	0 57	:::	23 4	.3	10 10	3.2
60	2 38	21 25	1 41	:::	23 5	.0	10 5	3.6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	'	°	'	'
0	295 33.0	148	6 44.0	-147	184 32.4	-23 14.8	296 19.4	9 56.2
2	324 40.6	149	6 14.7	-147	214 36.1	-23 14.8	326 24.4	9 56.3
4	353 48.5	150	5 45.3	-147	244 39.8	-23 14.7	356 29.4	9 56.3
6	22 56.6	152	5 15.9	-147	274 43.4	-23 14.7	26 34.4	9 56.4
8	52 4.9	153	4 46.5	-147	304 47.1	-23 14.7	56 39.4	9 56.4
10	81 13.5	154	4 17.1	-147	334 50.8	-23 14.7	86 44.4	9 56.5
12	110 22.2	155	3 47.7	-147	4 54.5	-23 14.7	116 49.4	9 56.5
14	139 31.2	156	3 18.4	-147	34 58.2	-23 14.7	146 54.4	9 56.6
16	168 40.4	157	2 49.0	-147	65 1.9	-23 14.7	176 59.4	9 56.6
18	197 49.7	158	2 19.6	-147	95 5.5	-23 14.7	207 4.4	9 56.7
20	226 59.2	158	1 50.3	-146	125 9.2	-23 14.6	237 9.4	9 56.7
22	256 8.9	159	1 21.1	-146	155 12.9	-23 14.6	267 14.4	9 56.8
Δ					18	0	25	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 1 38.8	-1.2	16.3	T _m	4 26	1.7	56.4 15.4
12	- 1 53.5	T _{m☉}	12 h 1.9 min	Starost	19.3 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	9 17	.1	124	-4.0	♃	11 40	.0	87	-1.7
♂	23 31	.2	269	-1.6	♄	4 14	.0	199	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	°	'
0	179 27.9	-23 12.3	98 3.2	220 42.6	-17 54.9	7 22.2	26 54.4
2	209 27.3	-23 12.0	128 8.2	250 41.3	-17 56.3	37 29.2	26 54.5
4	239 26.7	-23 11.7	158 13.1	280 40.1	-17 57.8	67 36.2	26 54.6
6	269 26.1	-23 11.4	188 18.0	310 38.8	-17 59.2	97 43.2	26 54.7
8	299 25.5	-23 11.1	218 22.9	340 37.6	-18 .6	127 50.3	26 54.8
10	329 24.9	-23 10.8	248 27.9	10 36.3	-18 2.0	157 57.3	26 54.9
12	359 24.3	-23 10.5	278 32.8	40 35.1	-18 3.4	188 4.3	26 55.0
14	29 23.7	-23 10.1	308 37.7	70 33.8	-18 4.8	218 11.3	26 55.1
16	59 23.1	-23 9.8	338 42.7	100 32.5	-18 6.2	248 18.3	26 55.2
18	89 22.5	-23 9.5	8 47.6	130 31.3	-18 7.6	278 25.3	26 55.3
20	119 21.9	-23 9.1	38 52.5	160 30.0	-18 9.0	308 32.3	26 55.4
22	149 21.3	-23 8.8	68 57.4	190 28.8	-18 10.4	338 39.3	26 55.4
Δ	-3	2		-6	-7	35	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	15 2	0 57	2 45	...	.0	11 4	.0
55	8 25	15 40	0 45	2 17	...	.0	11 6	.3
50	7 59	16 6	0 38	1 59	...	.0	11 8	.5
45	7 38	16 27	0 34	1 47	23 58	2.7	11 9	.7
40	7 21	16 43	0 30	1 37	23 55	2.5	11 11	.9
35	7 7	16 57	0 28	1 31	23 52	2.4	11 12	1.0
30	6 55	17 10	0 26	1 25	23 50	2.3	11 13	1.1
20	6 34	17 31	0 24	1 19	23 45	2.0	11 14	1.3
10	6 16	17 49	0 23	1 15	23 42	1.9	11 16	1.5
0	5 59	18 6	0 22	1 15	23 38	1.7	11 17	1.7
10	5 41	18 24	0 23	1 18	23 35	1.5	11 18	1.9
20	5 22	18 42	0 25	1 24	23 31	1.3	11 20	2.1
30	5 1	19 4	0 27	1 36	23 27	1.1	11 21	2.3
35	4 48	19 17	0 30	1 47	23 25	1.0	11 22	2.4
40	4 33	19 32	0 33	2 2	23 22	.9	11 23	2.5
45	4 15	19 50	0 37	2 31	23 19	.7	11 25	2.7
50	3 53	20 12	0 44	:::	23 15	.5	11 26	2.9
55	3 23	20 41	0 57	:::	23 11	.3	11 28	3.2
60	2 39	21 25	1 39	:::	23 5	.0	11 30	3.5

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	'	°	'	'
0	285 18.7	160	0 51.8	-146	185 16.6	-23 14.6	297 19.5	9 56.9
2	314 28.6	160	0 22.7	-146	215 20.3	-23 14.6	327 24.5	9 56.9
4	343 38.7	161	- 0 6.5	-145	245 23.9	-23 14.6	357 29.5	9 57.0
6	12 48.9	161	- 0 35.5	-145	275 27.6	-23 14.6	27 34.5	9 57.0
8	41 59.2	162	- 1 4.5	-145	305 31.3	-23 14.5	57 39.5	9 57.1
10	71 9.6	162	- 1 33.4	-144	335 35.0	-23 14.5	87 44.5	9 57.1
12	100 20.0	163	- 2 2.2	-144	5 38.7	-23 14.5	117 49.5	9 57.2
14	129 30.6	163	- 2 31.0	-143	35 42.4	-23 14.5	147 54.5	9 57.2
16	158 41.2	163	- 2 59.6	-143	65 46.0	-23 14.5	177 59.6	9 57.3
18	187 51.9	164	- 3 28.2	-142	95 49.7	-23 14.5	208 4.6	9 57.4
20	217 2.6	164	- 3 56.6	-142	125 53.4	-23 14.5	238 9.6	9 57.4
22	246 13.3	164	- 4 24.9	-141	155 57.1	-23 14.4	268 14.6	9 57.5
Δ					18	0	25	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 2 8.0	-1.2	16.3	T _m	5 7	1.7	55.7 15.2
12	- 2 22.5	T _{m☉}	12 h 2.4 min	Starost	20.3 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	9 18	.1	123	-4.0	♃	11 37	.0	87	-1.7
♂	23 25	.2	269	-1.5	♄	4 10	.0	199	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	20.7	-23	8.5	99	2.4	220	27.5	-18	11.8	8	46.3	26	55.5	
2	209	20.1	-23	8.1	129	7.3	250	26.2	-18	13.2	38	53.3	26	55.6	
4	239	19.5	-23	7.8	159	12.2	280	24.9	-18	14.5	69	.3	26	55.7	
6	269	18.9	-23	7.4	189	17.2	310	23.7	-18	15.9	99	7.3	26	55.8	
8	299	18.3	-23	7.1	219	22.1	340	22.4	-18	17.3	129	14.3	26	55.9	
10	329	17.7	-23	6.7	249	27.0	10	21.1	-18	18.7	159	21.3	26	55.9	
12	359	17.1	-23	6.4	279	31.9	40	19.8	-18	20.0	189	28.2	26	56.0	
14	29	16.5	-23	6.0	309	36.9	70	18.6	-18	21.4	219	35.2	26	56.1	
16	59	15.9	-23	5.6	339	41.8	100	17.3	-18	22.8	249	42.2	26	56.2	
18	89	15.3	-23	5.3	9	46.7	130	16.0	-18	24.1	279	49.1	26	56.2	
20	119	14.7	-23	4.9	39	51.7	160	14.7	-18	25.5	309	56.1	26	56.3	
22	149	14.1	-23	4.5	69	56.6	190	13.4	-18	26.8	340	3.1	26	56.4	
Δ		-3		2				-6		-7			35		0

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	275	24.1	164	-4	53.1	-140	186	.8	-23	14.4	298	19.6	9	57.5		
2	304	34.9	164	-5	21.2	-140	216	4.5	-23	14.4	328	24.7	9	57.6		
4	333	45.7	164	-5	49.2	-139	246	8.1	-23	14.4	358	29.7	9	57.6		
6	2	56.5	164	-6	17.1	-139	276	11.8	-23	14.4	28	34.7	9	57.7		
8	32	7.3	164	-6	44.8	-138	306	15.5	-23	14.4	58	39.7	9	57.8		
10	61	18.1	164	-7	12.3	-137	336	19.2	-23	14.3	88	44.7	9	57.8		
12	90	28.8	164	-7	39.7	-136	6	22.9	-23	14.3	118	49.8	9	57.9		
14	119	39.6	163	-8	7.0	-136	36	26.6	-23	14.3	148	54.8	9	57.9		
16	148	50.2	163	-8	34.1	-135	66	30.2	-23	14.3	178	59.8	9	58.0		
18	178	.8	163	-9	1.0	-134	96	33.9	-23	14.3	209	4.8	9	58.1		
20	207	11.4	162	-9	27.8	-133	126	37.6	-23	14.2	239	9.9	9	58.1		
22	236	21.8	162	-9	54.4	-132	156	41.3	-23	14.2	269	14.9	9	58.2		
Δ								18		0			25		0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	15 3	0 57	2 45	0 15	3.5	11 3	.0
55	8 25	15 41	0 45	2 17	0 8	3.1	11 13	.3
50	7 59	16 7	0 38	1 59	0 3	2.9	11 20	.6
45	7 38	16 28	0 34	1 47	...	.0	11 26	.7
40	7 22	16 44	0 30	1 37	...	.0	11 31	.9
35	7 8	16 58	0 28	1 31	...	.0	11 36	1.0
30	6 56	17 10	0 26	1 25	...	.0	11 39	1.2
20	6 35	17 31	0 24	1 19	...	.0	11 46	1.4
10	6 16	17 49	0 23	1 15	...	.0	11 52	1.5
0	5 59	18 7	0 22	1 15	...	.0	11 58	1.7
10	5 42	18 24	0 23	1 17	...	.0	12 3	1.9
20	5 23	18 43	0 24	1 24	...	.0	12 9	2.1
30	5 1	19 4	0 27	1 36	23 54	1.2	12 16	2.3
35	4 48	19 17	0 30	1 46	23 49	1.1	12 20	2.4
40	4 34	19 32	0 33	2 2	23 43	.9	12 24	2.5
45	4 16	19 50	0 37	2 31	23 36	.8	12 30	2.7
50	3 54	20 12	0 44	:::	23 28	.6	12 36	2.9
55	3 24	20 41	0 57	:::	23 18	.3	12 44	3.2
60	2 41	21 24	1 38	:::	23 4	.0	12 54	3.5
S								

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	'	h min	min	'	'	
00	- 2 37.0	-1.2	16.3	T _m	5 48	1.7	55.0	15.0
12	- 2 51.4	T _{m☉}	12 h 2.9 min	Starost	21.3 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☉	h min	'	°		♃	h min	'	°	
♃	9 19	.1	121	-4.0	♄	11 35	.0	87	-1.7
♄	23 19	.2	270	-1.5	♅	4 6	.0	199	.6

1. JANUAR

UTORAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	13.5	-23	4.1	100	1.5	220	12.1	-18	28.2	10	10.0	26	56.5	
2	209	12.9	-23	3.8	130	6.4	250	10.8	-18	29.5	40	17.0	26	56.5	
4	239	12.3	-23	3.4	160	11.4	280	9.5	-18	30.9	70	23.9	26	56.6	
6	269	11.7	-23	3.0	190	16.3	310	8.2	-18	32.2	100	30.9	26	56.7	
8	299	11.1	-23	2.6	220	21.2	340	6.9	-18	33.6	130	37.8	26	56.7	
10	329	10.5	-23	2.2	250	26.2	10	5.6	-18	34.9	160	44.8	26	56.8	
12	359	10.0	-23	1.8	280	31.1	40	4.3	-18	36.2	190	51.7	26	56.9	
14	29	9.4	-23	1.4	310	36.0	70	3.0	-18	37.5	220	58.7	26	56.9	
16	59	8.8	-23	1.0	340	40.9	100	1.7	-18	38.9	251	5.6	26	57.0	
18	89	8.2	-23	.6	10	45.9	130	.4	-18	40.2	281	12.5	26	57.1	
20	119	7.6	-23	.2	40	50.8	159	59.1	-18	41.5	311	19.5	26	57.1	
22	149	7.0	-22	59.8	70	55.7	189	57.8	-18	42.8	341	26.4	26	57.2	
Δ		-3		2				-7		-7			35		0

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	265	32.2	161	-10	20.8	-131	186	45.0	-23	14.2	299	19.9	9	58.2		
2	294	42.5	161	-10	47.1	-130	216	48.7	-23	14.2	329	24.9	9	58.3		
4	323	52.7	160	-11	13.1	-129	246	52.3	-23	14.2	359	30.0	9	58.4		
6	353	2.8	160	-11	39.0	-128	276	56.0	-23	14.2	29	35.0	9	58.4		
8	22	12.8	159	-12	4.6	-127	306	59.7	-23	14.1	59	40.0	9	58.5		
10	51	22.6	159	-12	30.1	-126	337	3.4	-23	14.1	89	45.1	9	58.6		
12	80	32.3	158	-12	55.3	-125	7	7.1	-23	14.1	119	50.1	9	58.6		
14	109	41.9	157	-13	20.4	-124	37	10.8	-23	14.1	149	55.1	9	58.7		
16	138	51.4	156	-13	45.2	-123	67	14.4	-23	14.1	180	.2	9	58.7		
18	168	.6	156	-14	9.7	-122	97	18.1	-23	14.0	210	5.2	9	58.8		
20	197	9.8	155	-14	34.1	-121	127	21.8	-23	14.0	240	10.2	9	58.9		
22	226	18.7	154	-14	58.2	-119	157	25.5	-23	14.0	270	15.3	9	58.9		
Δ								18		0			25		0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	15 4	0 57	2 44	1 38	3.6	11 3	.0
55	8 25	15 42	0 45	2 17	1 23	3.2	11 20	.4
50	7 59	16 8	0 38	1 59	1 12	2.9	11 33	.6
45	7 38	16 29	0 34	1 46	1 3	2.7	11 44	.8
40	7 22	16 45	0 30	1 37	0 56	2.5	11 53	1.0
35	7 8	16 59	0 28	1 30	0 50	2.4	12 0	1.1
30	6 56	17 11	0 26	1 25	0 44	2.3	12 7	1.2
20	6 35	17 32	0 24	1 18	0 35	2.1	12 19	1.4
10	6 17	17 50	0 23	1 15	0 26	1.9	12 29	1.6
0	5 60	18 7	0 22	1 15	0 19	1.7	12 39	1.8
10	5 42	18 24	0 23	1 17	0 11	1.6	12 48	1.9
20	5 24	18 43	0 24	1 24	0 3	1.4	12 59	2.1
30	5 2	19 5	0 27	1 36	...	.0	13 10	2.3
35	4 49	19 17	0 30	1 46	...	.0	13 17	2.4
40	4 34	19 32	0 33	2 2	...	.0	13 25	2.6
45	4 17	19 50	0 37	2 30	23 55	.9	13 34	2.7
50	3 55	20 12	0 44	:::	23 42	.7	13 46	2.9
55	3 25	20 41	0 57	:::	23 26	.5	13 60	3.2
60	2 42	21 24	1 36	:::	23 5	.1	14 18	3.6
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s					



Efemeride

NAUTIČKIH ZVEZDA

SUREKTASCENZIJE NAUČIČKIH ZVEZDA

za 1. u mesecu

R. b.	Ime zvezde	$360^\circ - \alpha$	2007 JAN	FEB	MAR	APR	MAJ	JUN	JUL	AVG	SEP	OKT	NOV	DEC	2008 JAN
1	ALPHERATZ	357	48.8	48.9	48.9	48.9	48.8	48.6	48.3	48.0	47.9	47.8	47.8	47.8	47.9
2	CAPH	357	36.9	37.2	37.3	37.3	37.1	36.7	36.3	36.0	35.7	35.6	35.6	35.8	36.0
3	DIPHDA	349	0.8	0.9	0.9	0.9	0.8	0.6	0.4	0.1	60.0	59.9	59.8	59.9	60.0
4	ACHERNAR	335	30.0	30.2	30.4	30.5	30.5	30.3	30.0	29.7	29.3	29.1	29.1	29.2	29.4
5	HAMAL	328	6.3	6.4	6.5	6.6	6.5	6.4	6.1	5.9	5.6	5.5	5.3	5.3	5.4
6	POLARIS	319	53.2	5.4	17.1	26.3	28.2	22.3	11.0	56.7	42.4	30.9	24.1	24.3	31.6
7	MIRFAK	308	47.3	47.4	47.6	47.7	47.8	47.7	47.4	47.1	46.7	46.4	46.2	46.1	46.1
8	ALDEBARAN	290	54.8	54.8	54.9	55.1	55.1	55.1	54.9	54.7	54.5	54.3	54.0	53.9	53.8
9	RIGEL	281	16.5	16.5	16.6	16.8	16.9	16.9	16.8	16.6	16.4	16.1	15.9	15.8	15.7
10	CAPELLA	280	41.4	41.4	41.5	41.7	41.8	41.8	41.7	41.4	41.1	40.8	40.5	40.3	40.1
11	BELLATRIX	278	37.0	37.0	37.1	37.2	37.3	37.3	37.2	37.0	36.8	36.6	36.4	36.2	36.1
12	EL NATH	278	18.6	18.6	18.7	18.8	18.9	18.9	18.8	18.6	18.3	18.0	17.8	17.6	17.5
13	ALNILAM	275	51.1	51.1	51.2	51.3	51.4	51.4	51.3	51.1	50.9	50.7	50.5	50.3	50.2
14	BETELGEUSE	271	6.3	6.3	6.4	6.5	6.6	6.7	6.6	6.4	6.2	6.0	5.7	5.5	5.4
15	CANOPUS	263	57.8	57.9	58.1	58.3	58.6	58.7	58.8	58.6	58.4	58.1	57.8	57.5	57.4
16	SIRIUS	258	37.8	37.7	37.8	38.0	38.1	38.1	38.1	38.0	37.8	37.6	37.4	37.2	37.0
17	ADHARA	255	16.1	16.0	16.1	16.3	16.4	16.5	16.5	16.4	16.2	16.0	15.8	15.6	15.4
18	PROCYON	245	4.6	4.5	4.5	4.6	4.8	4.8	4.8	4.7	4.6	4.4	4.1	3.9	3.7
19	POLLUX	243	33.4	33.3	33.3	33.4	33.6	33.6	33.6	33.5	33.3	33.1	32.8	32.6	32.4
20	AVIOR	234	19.6	19.6	19.7	19.9	20.2	20.5	20.7	20.7	20.6	20.3	19.9	19.6	19.3
21	AL SUHAIL	222	55.9	55.7	55.7	55.9	56.0	56.2	56.3	56.3	56.2	56.1	55.8	55.5	55.2
22	MIAPLACIDUS	221	40.4	40.2	40.3	40.6	41.0	41.5	41.8	42.0	41.9	41.6	41.1	40.6	40.2
23	ALPHARD	218	0.7	0.6	0.5	0.6	0.7	0.8	0.8	0.8	0.8	0.6	0.4	0.2	59.9
24	REGULUS	207	48.5	48.3	48.3	48.3	48.4	48.5	48.5	48.5	48.5	48.4	48.2	47.9	47.7
25	DUBHE	193	57.1	56.7	56.5	56.5	56.7	56.9	57.1	57.3	57.3	57.2	56.9	56.5	56.1
26	DENEbola	182	38.6	38.3	38.2	38.1	38.2	38.2	38.3	38.4	38.4	38.4	38.2	38.0	37.8
27	ACRUX	173	15.3	14.9	14.6	14.5	14.5	14.7	14.9	15.1	15.3	15.4	15.2	14.8	14.3
28	GACRUX	172	6.8	6.4	6.1	6.0	6.0	6.2	6.3	6.5	6.7	6.7	6.5	6.2	5.8
29	MINOSA	167	58.2	57.8	57.5	57.3	57.3	57.4	57.6	57.8	58.0	58.1	57.9	57.6	57.2
30	ALIOTh	166	24.8	24.4	24.1	24.0	24.0	24.1	24.3	24.5	24.7	24.7	24.7	24.4	24.1
31	MIZAR	158	56.8	56.4	56.1	56.0	55.9	56.1	56.2	56.4	56.6	56.7	56.7	56.5	56.2
32	SPICA	158	36.6	36.3	36.1	36.0	36.0	36.0	36.0	36.1	36.2	36.2	36.1	36.0	35.7
33	ALKAID	153	2.7	2.4	2.1	1.9	1.9	2.0	2.1	2.3	2.4	2.6	2.5	2.4	2.1
34	MENKENT	148	13.7	13.4	13.2	13.0	12.9	12.9	12.9	13.0	13.2	13.2	13.2	13.0	12.7
35	ARCTURUS	146	0.4	0.1	59.9	59.7	59.6	59.6	59.7	59.8	59.9	59.9	59.9	59.8	59.6
36	RIGEL KENTAURUS	139	59.3	58.8	58.4	58.1	58.0	57.9	58.0	58.2	58.5	58.7	58.7	58.5	58.1
37	KOHAB	137	20.0	19.3	18.7	18.2	18.1	18.2	18.6	19.2	19.8	20.2	20.5	20.4	20.0
38	ALPHECCA	126	15.4	15.2	14.9	14.7	14.6	14.5	14.5	14.6	14.8	14.9	14.9	14.9	14.7
39	DSCHUBBA	119	49.0	48.8	48.5	48.3	48.1	48.0	48.0	48.0	48.1	48.2	48.3	48.2	48.0
40	ANTARES	112	32.7	32.5	32.2	32.0	31.8	31.6	31.6	31.6	31.7	31.8	31.9	31.9	31.7
41	ATRIA	107	39.7	39.2	38.6	38.0	37.5	37.2	37.1	37.2	37.6	38.0	38.2	38.2	37.9
42	SHAULA	96	29.1	28.8	28.6	28.3	28.0	27.8	27.7	27.7	27.8	28.0	28.1	28.1	28.0
43	RASALHAGUE	96	11.4	11.2	11.0	10.8	10.6	10.4	10.3	10.3	10.4	10.6	10.7	10.7	10.6
44	ELTANIN	90	49.0	48.8	48.6	48.2	48.0	47.8	47.7	47.8	48.0	48.2	48.5	48.6	48.6
45	KAUS AUSTRALIS	83	50.8	50.6	50.4	50.1	49.8	49.6	49.4	49.4	49.5	49.6	49.7	49.8	49.7
46	VEGA	80	42.8	42.7	42.5	42.2	42.0	41.7	41.6	41.6	41.8	41.9	42.1	42.2	42.2
47	NUNKI	76	4.8	4.7	4.5	4.2	4.0	3.7	3.6	3.5	3.5	3.7	3.8	3.8	3.8
48	ALTAIR	62	13.4	13.3	13.2	13.0	12.8	12.5	12.4	12.3	12.3	12.4	12.5	12.6	12.6
49	PEACOCK	53	27.4	27.3	27.1	26.8	26.4	26.0	25.7	25.5	25.5	25.6	25.8	26.0	26.1
50	DENEB	49	35.4	35.4	35.3	35.1	34.8	34.5	34.3	34.2	34.2	34.4	34.5	34.7	34.8
51	ENIF	33	52.3	52.3	52.2	52.1	51.9	51.6	51.4	51.2	51.2	51.2	51.3	51.4	51.4
52	AL NA IR	27	50.0	50.1	50.0	49.8	49.6	49.2	48.9	48.7	48.6	48.6	48.7	48.9	49.0
53	FOMALHAUT	15	29.5	29.5	29.5	29.4	29.2	29.0	28.7	28.5	28.3	28.3	28.4	28.5	28.6
54	MARKAB	13	43.5	43.5	43.5	43.4	43.2	43.0	42.8	42.6	42.5	42.4	42.5	42.6	42.6

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R.b.	Zvezda–Sazvežđe	δ	2007 JAN	FEB	MAR	APR	MAJ	JUN	JUL	AVG	SEP	OKT	NOV	DEC	2008 JAN
		°	'	'	'	'	'	'	'	'	'	'	'	'	'
1	α Andromedae	29	7.5	7.5	7.4	7.3	7.3	7.4	7.4	7.6	7.7	7.8	7.9	7.9	7.9
2	β Cassiopeae	59	11.2	11.2	11.1	10.9	10.8	10.8	10.9	11.0	11.2	11.3	11.5	11.6	11.6
3	β Ceti	-17	57.3	57.4	57.3	57.3	57.1	57.0	56.9	56.8	56.8	56.8	56.9	56.9	57.0
4	α Eridani	-57	12.6	12.6	12.5	12.4	12.2	12.0	11.9	11.8	11.8	11.9	12.1	12.2	12.3
5	α Arietis	23	29.6	29.6	29.5	29.5	29.5	29.5	29.5	29.6	29.7	29.8	29.9	29.9	29.9
6	α Ursae Minoris	89	17.8	17.9	17.8	17.7	17.6	17.4	17.3	17.3	17.4	17.5	17.7	17.9	18.1
7	α Persei	49	53.2	53.3	53.2	53.2	53.1	53.0	53.0	53.0	53.0	53.1	53.3	53.4	53.4
8	α Tauri	16	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.5	31.5	31.5	31.6	31.5	31.5
9	β Orionis	- 8	11.6	11.7	11.7	11.7	11.7	11.6	11.5	11.4	11.3	11.3	11.4	11.4	11.5
10	α Aurigae	46	0.4	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.5
11	γ Orionis	6	21.4	21.4	21.4	21.3	21.4	21.4	21.5	21.5	21.6	21.6	21.6	21.5	21.5
12	β Tauri	28	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9
13	ε Orionis	- 1	11.8	11.9	11.9	11.9	11.9	11.8	11.7	11.7	11.6	11.6	11.6	11.7	11.8
14	α Orionis	7	24.6	24.6	24.5	24.5	24.5	24.6	24.6	24.7	24.7	24.7	24.7	24.7	24.6
15	α Carinae	-52	41.8	42.0	42.1	42.1	42.1	42.0	41.8	41.6	41.5	41.5	41.5	41.7	41.9
16	α Canis Majoris	-16	43.4	43.5	43.5	43.6	43.5	43.5	43.4	43.3	43.2	43.2	43.2	43.3	43.5
17	ε Canis Majoris	-28	58.7	58.8	58.9	59.0	58.9	58.9	58.7	58.6	58.5	58.5	58.5	58.6	58.8
18	α Canis Minoris	5	12.7	12.6	12.6	12.6	12.6	12.6	12.6	12.7	12.7	12.7	12.6	12.6	12.5
19	β Geminorum	28	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.6
20	ε Carinae	-59	31.5	31.7	31.9	32.0	32.0	32.0	31.8	31.7	31.5	31.5	31.4	31.5	31.7
21	λ Velorum	-43	27.2	27.4	27.5	27.6	27.7	27.7	27.6	27.4	27.3	27.2	27.2	27.3	27.5
22	β Carinae	-69	44.2	44.4	44.6	44.7	44.8	44.8	44.7	44.6	44.4	44.3	44.3	44.3	44.5
23	α Hydrae	- 8	41.0	41.1	41.2	41.2	41.2	41.2	41.2	41.1	41.0	41.0	41.1	41.2	41.3
24	α Leonis	11	56.3	56.2	56.2	56.2	56.2	56.2	56.3	56.3	56.2	56.2	56.1	56.0	55.9
25	α Ursae Majoris	61	42.9	42.9	43.0	43.1	43.2	43.3	43.3	43.2	43.0	42.8	42.7	42.6	42.5
26	β Leonis	14	32.2	32.1	32.1	32.1	32.2	32.2	32.2	32.2	32.2	32.2	32.1	32.0	31.8
27	α Crucis	-63	7.6	7.8	7.9	8.1	8.3	8.4	8.4	8.4	8.3	8.1	8.0	8.0	8.0
28	γ Crucis	-57	8.5	8.7	8.8	9.0	9.1	9.2	9.3	9.2	9.1	9.0	8.9	8.9	8.9
29	β Crucis	-59	43.0	43.1	43.3	43.5	43.6	43.7	43.8	43.7	43.6	43.5	43.4	43.3	43.4
30	ε Ursae Majoris	55	55.3	55.3	55.3	55.4	55.6	55.7	55.7	55.7	55.6	55.4	55.3	55.1	55.0
31	ζ Ursae Majoris	54	53.3	53.3	53.3	53.4	53.5	53.7	53.7	53.7	53.6	53.5	53.3	53.1	53.0
32	α Virginis	-11	11.5	11.7	11.7	11.8	11.8	11.8	11.8	11.8	11.7	11.7	11.7	11.8	11.9
33	η Ursae Majoris	49	16.7	16.6	16.6	16.7	16.9	17.0	17.0	17.1	17.0	16.9	16.7	16.5	16.4
34	θ Centauri	-36	23.8	23.9	24.0	24.1	24.2	24.3	24.3	24.3	24.3	24.2	24.2	24.1	24.2
35	α Bootis	19	8.9	8.8	8.7	8.8	8.8	8.9	9.0	9.0	9.0	8.9	8.8	8.7	8.5
36	α Centauri	-60	51.4	51.5	51.6	51.7	51.8	52.0	52.0	52.1	52.0	51.9	51.8	51.7	51.7
37	β Ursae Minoris	74	7.5	7.4	7.4	7.5	7.7	7.8	7.9	7.9	7.9	7.8	7.6	7.4	7.2
38	α Coronae Borealis	26	41.4	41.3	41.3	41.3	41.4	41.5	41.6	41.7	41.7	41.6	41.5	41.4	41.2
39	δ Scorpii	-22	38.4	38.4	38.5	38.5	38.5	38.6	38.6	38.6	38.6	38.5	38.5	38.5	38.5
40	α Scorpii	-26	26.8	26.8	26.8	26.9	26.9	26.9	26.9	27.0	27.0	26.9	26.9	26.9	26.9
41	α Trianguli Australi	-69	2.3	2.2	2.2	2.2	2.3	2.5	2.6	2.7	2.7	2.7	2.6	2.5	2.4
42	λ Scorpii	-37	6.6	6.5	6.5	6.6	6.6	6.6	6.7	6.7	6.7	6.7	6.7	6.6	6.6
43	α Ophiuchi	12	33.2	33.1	33.0	33.0	33.1	33.1	33.2	33.3	33.4	33.4	33.3	33.2	33.1
44	γ Draconis	51	29.1	28.9	28.8	28.8	28.9	29.1	29.2	29.4	29.5	29.5	29.4	29.3	29.1
45	ε Sagittarii	-34	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.1	23.1	23.1	23.0	23.0
46	α Lyrae	38	47.2	47.0	46.9	46.9	47.0	47.1	47.3	47.4	47.5	47.6	47.5	47.4	47.3
47	σ Sagittarii	-26	17.5	17.5	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
48	α Aquilae	8	52.9	52.8	52.8	52.8	52.8	52.9	53.0	53.1	53.2	53.2	53.2	53.2	53.1
49	α Pavonis	-56	43.2	43.1	43.0	42.8	42.8	42.8	42.8	42.9	43.0	43.1	43.1	43.1	43.0
50	α Cygni	45	18.1	18.0	17.8	17.8	17.8	17.9	18.0	18.2	18.3	18.5	18.5	18.5	18.4
51	ε Pegasi	9	54.1	54.0	54.0	54.0	54.0	54.1	54.2	54.3	54.4	54.5	54.5	54.4	54.4
52	α Gruis	-46	56.2	56.1	56.0	55.9	55.7	55.6	55.6	55.6	55.7	55.8	55.9	55.9	55.9
53	α Piscis Austrini	-29	35.6	35.6	35.5	35.4	35.3	35.2	35.1	35.1	35.1	35.2	35.2	35.3	35.3
54	α Pegasi	15	14.3	14.2	14.2	14.1	14.1	14.2	14.3	14.4	14.6	14.6	14.7	14.7	14.6

VREMENA GORNJIH PROLAZA NAUTIČKIH ZVEZDA

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R.b.	Ime zvezde	2007 JAN	FEB	MAR	APR	MAJ	JUN	JUL	AVG	SEP	OKT	NOV	DEC	2008 JAN
		h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min
1	ALPHERATZ	17 28	15 25	13 35	11 33	9 35	7 32	5 34	3 32	1 30	23 31	21 29	19 31	17 29
2	CAPH	17 28	15 26	13 36	11 34	9 35	7 33	5 35	3 33	1 30	23 32	21 30	19 32	17 29
3	DIPHDA	18 3	16 1	14 10	12 8	10 10	8 8	6 9	4 7	2 5	0 7	22 4	20 6	18 4
4	ACHERNAR	18 57	16 55	15 4	13 2	11 4	9 2	7 3	5 1	2 59	1 1	22 58	21 0	18 58
5	HAMAL	19 27	17 24	15 34	13 32	11 33	9 31	7 33	5 31	3 28	1 30	23 28	21 30	19 28
6	POLARIS	19 59	17 56	16 5	14 2	12 4	10 2	8 5	6 3	4 2	2 4	0 3	22 4	20 2
7	MIRFAK	20 44	18 42	16 51	14 49	12 51	10 48	8 50	6 48	4 46	2 47	0 45	22 47	20 45
8	ALDEBARAN	21 55	19 53	18 3	16 0	14 2	11 60	10 2	7 59	5 57	3 59	1 57	23 59	21 56
9	RIGEL	22 34	20 32	18 41	16 39	14 41	12 38	10 40	8 38	6 36	4 38	2 35	0 37	22 35
10	CAPELLA	22 36	20 34	18 44	16 41	14 43	12 41	10 43	8 40	6 38	4 40	2 38	0 39	22 37
11	BELLATRIX	22 44	20 42	18 52	16 50	14 51	12 49	10 51	8 49	6 46	4 48	2 46	0 48	22 45
12	EL NATH	22 46	20 43	18 53	16 51	14 53	12 50	10 52	8 50	6 48	4 49	2 47	0 49	22 47
13	ALNILAM	22 56	20 53	19 3	17 1	15 2	13 0	11 2	8 60	6 57	4 59	2 57	0 59	22 57
14	BETELGEUSE	23 15	21 12	19 22	17 20	15 21	13 19	11 21	9 19	7 16	5 18	3 16	1 18	23 16
15	CANOPUS	23 43	21 41	19 50	17 48	15 50	13 48	11 49	9 47	7 45	5 47	3 45	1 46	23 44
16	SIRIUS	0 4	22 2	20 12	18 10	16 11	14 9	12 11	10 9	8 6	6 8	4 6	2 8	0 5
17	ADHARA	0 18	22 16	20 25	18 23	16 25	14 22	12 24	10 22	8 20	6 22	4 19	2 21	0 19
18	PROCYON	0 59	22 56	21 6	19 4	17 5	15 3	13 5	11 3	9 1	7 2	5 0	3 2	0 60
19	POLLUX	1 5	23 2	21 12	19 10	17 12	15 9	13 11	11 9	9 7	7 8	5 6	3 8	1 6
20	AVIOR	1 42	23 39	21 49	19 47	17 48	15 46	13 48	11 46	9 43	7 45	5 43	3 45	1 43
21	AL SUHAIL	2 27	0 25	22 35	20 32	18 34	16 32	14 34	12 31	10 29	8 31	6 29	4 30	2 28
22	MIAPLACIDUS	2 32	0 30	22 40	20 37	18 39	16 37	14 39	12 36	10 34	8 36	6 34	4 35	2 33
23	ALPHARD	2 47	0 45	22 54	20 52	18 54	16 52	14 53	12 51	10 49	8 51	6 48	4 50	2 48
24	REGULUS	3 28	1 25	23 35	21 33	19 35	17 32	15 34	13 32	11 30	9 31	7 29	5 31	3 29
25	DUBHE	4 23	2 21	0 31	22 28	20 30	18 28	16 30	14 27	12 25	10 27	8 25	6 26	4 24
26	DENEbola	5 8	3 6	1 16	23 14	21 15	19 13	17 15	15 13	13 10	11 12	9 10	7 12	5 9
27	ACRUX	5 46	3 44	1 53	23 51	21 53	19 51	17 52	15 50	13 48	11 50	9 47	7 49	5 47
28	GACRUX	5 50	3 48	1 58	23 56	21 57	19 55	17 57	15 55	13 52	11 54	9 52	7 54	5 51
29	MINOSA	6 7	4 5	2 14	0 12	22 14	20 12	18 13	16 11	14 9	12 11	10 9	8 10	6 8
30	ALIOth	6 13	4 11	2 21	0 18	22 20	20 18	18 20	16 17	14 15	12 17	10 15	8 16	6 14
31	MIZAR	6 43	4 41	2 51	0 48	22 50	20 48	18 50	16 47	14 45	12 47	10 45	8 46	6 44
32	SPICA	6 44	4 42	2 52	0 50	22 51	20 49	18 51	16 49	14 46	12 48	10 46	8 48	6 45
33	ALKAID	7 7	5 5	3 14	1 12	23 14	21 11	19 13	17 11	15 9	13 10	11 8	9 10	7 8
34	MENKENT	7 26	5 24	3 33	1 31	23 33	21 31	19 32	17 30	15 28	13 30	11 27	9 29	7 27
35	ARCTURUS	7 35	5 33	3 42	1 40	23 42	21 40	19 41	17 39	15 37	13 39	11 36	9 38	7 36
36	RIGEL KENTAURUS	7 59	5 57	4 6	2 4	0 6	22 4	20 5	18 3	16 1	14 3	12 0	10 2	7 60
37	KOHAB	8 10	6 7	4 17	2 15	0 17	22 14	20 16	18 14	16 12	14 13	12 11	10 13	8 11
38	ALPHECCA	8 54	6 52	5 1	2 59	1 1	22 59	21 0	18 58	16 56	14 58	12 55	10 57	8 55
39	DSCHUBBA	9 20	7 17	5 27	3 25	1 27	23 24	21 26	19 24	17 22	15 23	13 21	11 23	9 21
40	ANTARES	9 49	7 47	5 56	3 54	1 56	23 53	21 55	19 53	17 51	15 52	13 50	11 52	9 50
41	ATRIA	10 8	8 6	6 16	4 14	2 15	0 13	22 15	20 13	18 10	16 12	14 10	12 12	10 9
42	SHAULA	10 53	8 51	7 0	4 58	2 60	0 58	22 59	20 57	18 55	16 57	14 55	12 56	10 54
43	RASALHAGUE	10 54	8 52	7 2	4 59	3 1	0 59	23 1	20 58	18 56	16 58	14 56	12 57	10 55
44	ELTANIN	11 16	9 13	7 23	5 21	3 23	1 20	23 22	21 20	19 18	17 19	15 17	13 19	11 17
45	KAUS AUSTRALIS	11 44	9 41	7 51	5 49	3 50	1 48	23 50	21 48	19 46	17 47	15 45	13 47	11 45
46	VEGA	11 56	9 54	8 3	6 1	4 3	2 1	0 3	22 0	19 58	17 60	15 58	13 59	11 57
47	NUNKI	12 15	10 12	8 22	6 20	4 22	2 19	0 21	22 19	20 17	18 18	16 16	14 18	12 16
48	ALTAIR	13 10	11 8	9 17	7 15	5 17	3 15	1 16	23 14	21 12	19 14	17 12	15 13	13 11
49	PEACOCK	13 45	11 43	9 53	7 50	5 52	3 50	1 52	23 49	21 47	19 49	17 47	15 48	13 46
50	DENEB	14 1	11 58	10 8	8 6	6 7	4 5	2 7	0 5	22 3	20 4	18 2	16 4	14 2
51	ENIF	15 3	13 1	11 11	9 9	7 10	5 8	3 10	1 8	23 5	21 7	19 5	17 7	15 4
52	AL NA IR	15 28	13 25	11 35	9 33	7 35	5 32	3 34	1 32	23 30	21 31	19 29	17 31	15 29
53	FOMALHAUT	16 17	14 15	12 24	10 22	8 24	6 22	4 23	2 21	0 19	22 21	20 18	18 20	16 18
54	MARKAB	16 24	14 22	12 31	10 29	8 31	6 29	4 30	2 28	0 26	22 28	20 26	18 27	16 25

POPRAVKA ZA DATUM uvek se oduzima

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.
h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min
0 00	0 04	0 08	0 12	0 16	0 20	0 24	0 28	0 31	0 35	0 39	0 43	0 47	0 51	0 55	0 59	1 03	1 07	1 11	1 15	1 19	1 23	1 27	1 30	1 34	1 38	1 42	1 46	1 50	1 54	1 58

★ ★ ★ ★ ★

Tablice

ZA

*ODREĐIVANJE GEOGRAFSKE ŠIRINE
POMOĆU VISINE I AZIMUTA SEVERNJAČE*

TABLICA I

S _γ	Popravka	S _γ	Popravka	S _γ	Popravka	S _γ	Popravka	S _γ	Popravka	S _γ	Popravka
o	/	o	/	o	/	o	/	o	/	o	/
0	-32.6	60	-39.2	120	-6.6	180	32.6	240	39.2	300	6.6
1	-33.1	61	-39.0	121	-5.9	181	33.1	241	39.0	301	5.9
2	-33.5	62	-38.7	122	-5.2	182	33.5	242	38.7	302	5.2
3	-33.9	63	-38.4	123	-4.4	183	33.9	243	38.4	303	4.4
4	-34.4	64	-38.1	124	-3.7	184	34.4	244	38.1	304	3.7
5	-34.8	65	-37.8	125	-3.0	185	34.8	245	37.8	305	3.0
6	-35.2	66	-37.4	126	-2.3	186	35.2	246	37.4	306	2.3
7	-35.6	67	-37.1	127	-1.5	187	35.6	247	37.1	307	1.5
8	-36.0	68	-36.8	128	-0.8	188	36.0	248	36.8	308	0.8
9	-36.3	69	-36.4	129	-0.1	189	36.3	249	36.4	309	0.1
10	-36.7	70	-36.0	130	0.7	190	36.7	250	36.0	310	-0.7
11	-37.1	71	-35.6	131	1.4	191	37.1	251	35.6	311	-1.4
12	-37.4	72	-35.3	132	2.1	192	37.4	252	35.3	312	-2.1
13	-37.7	73	-34.9	133	2.9	193	37.7	253	34.9	313	-2.9
14	-38.0	74	-34.4	134	3.6	194	38.0	254	34.4	314	-3.6
15	-38.3	75	-34.0	135	4.3	195	38.3	255	34.0	315	-4.3
16	-38.6	76	-33.6	136	5.1	196	38.6	256	33.6	316	-5.1
17	-38.9	77	-33.1	137	5.8	197	38.9	257	33.1	317	-5.8
18	-39.2	78	-32.7	138	6.5	198	39.2	258	32.7	318	-6.5
19	-39.4	79	-32.2	139	7.2	199	39.4	259	32.2	319	-7.2
20	-39.7	80	-31.7	140	8.0	200	39.7	260	31.7	320	-8.0
21	-39.9	81	-31.2	141	8.7	201	39.9	261	31.2	321	-8.7
22	-40.1	82	-30.8	142	9.4	202	40.1	262	30.8	322	-9.4
23	-40.4	83	-30.3	143	10.1	203	40.4	263	30.3	323	-10.1
24	-40.6	84	-29.7	144	10.8	204	40.6	264	29.7	324	-10.8
25	-40.7	85	-29.2	145	11.5	205	40.7	265	29.2	325	-11.5
26	-40.9	86	-28.7	146	12.2	206	40.9	266	28.7	326	-12.2
27	-41.1	87	-28.1	147	12.9	207	41.1	267	28.1	327	-12.9
28	-41.2	88	-27.6	148	13.6	208	41.2	268	27.6	328	-13.6
29	-41.4	89	-27.0	149	14.3	209	41.4	269	27.0	329	-14.3
30	-41.5	90	-26.5	150	15.0	210	41.5	270	26.5	330	-15.0
31	-41.6	91	-25.9	151	15.7	211	41.6	271	25.9	331	-15.7
32	-41.7	92	-25.3	152	16.4	212	41.7	272	25.3	332	-16.4
33	-41.8	93	-24.7	153	17.0	213	41.8	273	24.7	333	-17.0
34	-41.8	94	-24.1	154	17.7	214	41.8	274	24.1	334	-17.7
35	-41.9	95	-23.5	155	18.4	215	41.9	275	23.5	335	-18.4
36	-41.9	96	-22.9	156	19.0	216	41.9	276	22.9	336	-19.0
37	-42.0	97	-22.3	157	19.7	217	42.0	277	22.3	337	-19.7
38	-42.0	98	-21.7	158	20.3	218	42.0	278	21.7	338	-20.3
39	-42.0	99	-21.0	159	21.0	219	42.0	279	21.0	339	-21.0
40	-42.0	100	-20.4	160	21.6	220	42.0	280	20.4	340	-21.6
41	-42.0	101	-19.8	161	22.2	221	42.0	281	19.8	341	-22.2
42	-41.9	102	-19.1	162	22.8	222	41.9	282	19.1	342	-22.8
43	-41.9	103	-18.5	163	23.4	223	41.9	283	18.5	343	-23.4
44	-41.8	104	-17.8	164	24.0	224	41.8	284	17.8	344	-24.0
45	-41.8	105	-17.1	165	24.6	225	41.8	285	17.1	345	-24.6
46	-41.7	106	-16.5	166	25.2	226	41.7	286	16.5	346	-25.2
47	-41.6	107	-15.8	167	25.8	227	41.6	287	15.8	347	-25.8
48	-41.5	108	-15.1	168	26.4	228	41.5	288	15.1	348	-26.4
49	-41.4	109	-14.4	169	27.0	229	41.4	289	14.4	349	-27.0
50	-41.2	110	-13.7	170	27.5	230	41.2	290	13.7	350	-27.5
51	-41.1	111	-13.0	171	28.1	231	41.1	291	13.0	351	-28.1
52	-40.9	112	-12.3	172	28.6	232	40.9	292	12.3	352	-28.6
53	-40.8	113	-11.6	173	29.1	233	40.8	293	11.6	353	-29.1
54	-40.6	114	-10.9	174	29.7	234	40.6	294	10.9	354	-29.7
55	-40.4	115	-10.2	175	30.2	235	40.4	295	10.2	355	-30.2
56	-40.2	116	-9.5	176	30.7	236	40.2	296	9.5	356	-30.7
57	-40.0	117	-8.8	177	31.2	237	40.0	297	8.8	357	-31.2
58	-39.7	118	-8.1	178	31.7	238	39.7	298	8.1	358	-31.7
59	-39.5	119	-7.3	179	32.1	239	39.5	299	7.3	359	-32.1
60	-39.2	120	-6.6	180	32.6	240	39.2	300	6.6	360	-32.6

TABLICA II

S _Г \ φ		φ															S _Г \ φ	
		0°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	62°	64°	66°		
h	°	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	°	h
1	15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	15	1
2	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30	2
3	45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45	3
4	60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	60	4
5	75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	75	5
6	90	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	90	6
7	105	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	105	7
8	120	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.5	0.5	120	8
9	135	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	135	9
10	150	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	150	10
11	165	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	165	11
12	180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	180	12
13	195	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	195	13
14	210	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	210	14
15	225	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	225	15
16	240	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	240	16
17	255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	255	17
18	270	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	270	18
19	285	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	285	19
20	300	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.5	0.5	300	20
21	315	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	315	21
22	330	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	330	22
23	345	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.4	345	23
24	360	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	360	24

TABLICA III

Datum \ S _Г		2007													2008		Datum \ S _Г	
		1. JAN	1. FEB	1. MAR	1. APR	1. MAJ	1. JUN	1. JUL	1. AVG	1. SEP	1. OKT	1. NOV	1. DEC	1. JAN				
h	°	/	/	/	/	/	/	/	/	/	/	/	/	/	°	h		
1	15	- .1	- .1	- .1	.0	.1	.2	.3	.4	.3	.2	.0	- .1	- .3	15	1		
2	30	- .1	- .1	- .1	.0	.2	.3	.4	.4	.3	.2	.0	- .2	- .4	30	2		
3	45	- .1	- .1	- .1	.0	.2	.3	.4	.4	.3	.2	.0	- .2	- .4	45	3		
4	60	- .1	- .1	- .1	.0	.2	.3	.4	.4	.3	.2	.0	- .2	- .4	60	4		
5	75	- .1	- .1	.0	.1	.2	.3	.4	.3	.2	.1	- .1	- .2	- .4	75	5		
6	90	- .1	.0	.0	.1	.2	.3	.3	.3	.2	.1	- .1	- .2	- .3	90	6		
7	105	.0	.0	.0	.1	.2	.2	.2	.2	.1	.0	- .1	- .2	- .2	105	7		
8	120	.0	.0	.0	.1	.1	.1	.1	.1	.0	.0	- .1	- .1	- .1	120	8		
9	135	.0	.0	.1	.1	.1	.1	.0	.0	- .1	- .1	- .1	- .1	.0	135	9		
10	150	.0	.1	.1	.1	.0	.0	- .1	- .1	- .1	- .1	- .1	.0	.1	150	10		
11	165	.1	.1	.1	.1	.0	- .1	- .2	- .2	- .2	- .2	- .1	.0	.2	165	11		
12	180	.1	.1	.1	.1	- .1	- .2	- .3	- .3	- .3	- .2	- .1	.1	.3	180	12		
13	195	.1	.1	.1	.0	- .1	- .2	- .3	- .4	- .3	- .2	.0	.1	.3	195	13		
14	210	.1	.1	.1	.0	- .2	- .3	- .4	- .4	- .3	- .2	.0	.2	.4	210	14		
15	225	.1	.1	.1	.0	- .2	- .3	- .4	- .4	- .3	- .2	.0	.2	.4	225	15		
16	240	.1	.1	.1	.0	- .2	- .3	- .4	- .4	- .3	- .2	.0	.2	.4	240	16		
17	255	.1	.1	.0	- .1	- .2	- .3	- .4	- .3	- .2	- .1	.1	.2	.4	255	17		
18	270	.1	.0	.0	- .1	- .2	- .3	- .3	- .3	- .2	- .1	.1	.2	.3	270	18		
19	285	.0	.0	.0	- .1	- .2	- .2	- .2	- .2	- .1	.0	.1	.2	.2	285	19		
20	300	.0	.0	.0	- .1	- .1	- .1	- .1	- .1	.0	.0	.1	.1	.1	300	20		
21	315	.0	.0	- .1	- .1	- .1	- .1	.0	.0	.1	.1	.1	.1	.0	315	21		
22	330	.0	- .1	- .1	- .1	.0	.0	.1	.1	.1	.1	.1	.0	- .1	330	22		
23	345	- .1	- .1	- .1	- .1	.0	.1	.2	.2	.2	.2	.1	.0	- .2	345	23		
24	360	- .1	- .1	- .1	- .1	.1	.2	.3	.3	.3	.2	.1	- .1	- .3	360	24		

AZIMUTI SEVERNJAČE

φ s_{γ}	0°	30°	40°	50°	55°	60°	65°	70°	75°	+ $\varphi = \nu$
0	0.5	0.5	0.6	0.7	0.8	0.9	1.1	1.4	1.9	0
15	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.9	1.2	15
30	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	30
45	359.9	359.9	359.9	359.9	359.9	359.9	359.8	359.8	359.7	45
60	359.8	359.7	359.7	359.6	359.6	359.5	359.4	359.3	359.0	60
75	359.6	359.5	359.5	359.3	359.3	359.2	359.0	358.8	358.3	75
90	359.4	359.4	359.3	359.1	359.0	358.9	358.7	358.3	357.8	90
105	359.3	359.2	359.1	359.0	358.8	358.7	358.4	358.1	357.4	105
120	359.3	359.2	359.1	358.9	358.8	358.6	358.3	357.9	357.2	120
135	359.3	359.2	359.1	358.9	358.7	358.6	358.3	357.9	357.2	135
150	359.3	359.2	359.1	358.9	358.8	358.6	358.4	358.0	357.4	150
165	359.4	359.3	359.2	359.1	359.0	358.8	358.6	358.3	357.8	165
180	359.5	359.5	359.4	359.3	359.2	359.1	358.9	358.7	358.3	180
195	359.7	359.6	359.6	359.5	359.5	359.4	359.3	359.1	358.9	195
210	359.9	359.9	359.8	359.8	359.8	359.8	359.7	359.6	359.5	210
225	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	225
240	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.7	0.9	240
255	0.4	0.5	0.5	0.6	0.7	0.8	1.0	1.2	1.5	255
270	0.6	0.6	0.7	0.9	1.0	1.1	1.3	1.6	2.1	270
285	0.7	0.8	0.9	1.0	1.1	1.3	1.5	1.9	2.5	285
300	0.7	0.8	0.9	1.1	1.2	1.4	1.7	2.1	2.7	300
315	0.7	0.8	0.9	1.1	1.3	1.4	1.7	2.1	2.8	315
330	0.7	0.8	0.9	1.1	1.2	1.4	1.6	2.0	2.7	330
345	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.8	2.4	345
360	0.5	0.5	0.6	0.7	0.8	0.9	1.1	1.4	1.9	360

O B J A Š N J E N J E

Poslednja rubrika daje podatak, koji algebarski sabran sa geografskom širinom zbirne pozicije broda daje približnu visinu sa tačnošću od nekoliko lučnih minuta radi njenog prethodnog postavljanja na sekstant u cilju olakšanja rada pri merenju visine Severnjače.

★ ★ ★ ★ ★

I_n terpolacione

|

POMOĆNE TABLICE

INTERPOLACIONA TABLICA

za izračunavanje trenutaka izlaza i zalaza Sunca i Meseca

ZA $\varphi = 0^\circ$ DO $\pm 30^\circ$									
$\Delta\varphi$ Δt_s	1°	2°	3°	4°	5°	6°	7°	8°	9°
1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
2	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8
3	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7
4	0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6
5	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5
6	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4
7	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3
8	0.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2
9	0.9	1.8	2.7	3.6	4.5	5.4	6.3	7.2	8.1
10	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
11	1.1	2.2	3.3	4.4	5.5	6.6	7.7	8.8	9.9
12	1.2	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.8
13	1.3	2.6	3.9	5.2	6.5	7.8	9.1	10.4	11.7
14	1.4	2.8	4.2	5.6	7.0	8.4	9.8	11.2	12.6
15	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5
16	1.6	3.2	4.8	6.4	8.0	9.6	11.2	12.8	14.4
17	1.7	3.4	5.1	6.8	8.5	10.2	11.9	13.6	15.3
18	1.8	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.2
19	1.9	3.8	5.7	7.6	9.5	11.4	13.3	15.2	17.1
20	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0
21	2.1	4.2	6.3	8.4	10.5	12.6	14.7	16.8	18.9
22	2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8
23	2.3	4.6	6.9	9.2	11.5	13.8	16.1	18.4	20.7
24	2.4	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6
25	2.5	5.0	7.5	10.0	12.5	15.0	17.5	20.0	22.5
26	2.6	5.2	7.8	10.4	13.0	15.6	18.2	20.8	23.4
27	2.7	5.4	8.1	10.8	13.5	16.2	18.9	21.6	24.3
28	2.8	5.6	8.4	11.2	14.0	16.8	19.6	22.4	25.2
29	2.9	5.8	8.7	11.6	14.5	17.4	20.3	23.2	26.1
30	3.0	6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0
31	3.1	6.2	9.3	12.4	15.5	18.6	21.7	24.8	27.9
32	3.2	6.4	9.6	12.8	16.0	19.2	22.4	25.6	28.8
33	3.3	6.6	9.9	13.2	16.5	19.8	23.1	26.4	29.7
34	3.4	6.8	10.2	13.6	17.0	20.4	23.8	27.2	30.6
35	3.5	7.0	10.5	14.0	17.5	21.0	24.5	28.0	31.5
36	3.6	7.2	10.8	14.4	18.0	21.6	25.2	28.8	32.4
37	3.7	7.4	11.1	14.8	18.5	22.2	25.9	29.6	33.3
38	3.8	7.6	11.4	15.2	19.0	22.8	26.6	30.4	34.2
39	3.9	7.8	11.7	15.6	19.5	23.4	27.3	31.2	35.1
40	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0
41	4.1	8.2	12.3	16.4	20.5	24.6	28.7	32.8	36.9
42	4.2	8.4	12.6	16.8	21.0	25.2	29.4	33.6	37.8
43	4.3	8.6	12.9	17.2	21.5	25.8	30.1	34.4	38.7
44	4.4	8.8	13.2	17.6	22.0	26.4	30.8	35.2	39.6
45	4.5	9.0	13.5	18.0	22.5	27.0	31.5	36.0	40.5
46	4.6	9.2	13.8	18.4	23.0	27.6	32.2	36.8	41.4
47	4.7	9.4	14.1	18.8	23.5	28.2	32.9	37.6	42.3
48	4.8	9.6	14.4	19.2	24.0	28.8	33.6	38.4	43.2
49	4.9	9.8	14.7	19.6	24.5	29.4	34.3	39.2	44.1
50	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0
51	5.1	10.2	15.3	20.4	25.5	30.6	35.7	40.8	45.9
52	5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8
53	5.3	10.6	15.9	21.2	26.5	31.8	37.1	42.4	47.7
54	5.4	10.8	16.2	21.6	27.0	32.4	37.8	43.2	48.6
55	5.5	11.0	16.5	22.0	27.5	33.0	38.5	44.0	49.5
56	5.6	11.2	16.8	22.4	28.0	33.6	39.2	44.8	50.4
57	5.7	11.4	17.1	22.8	28.5	34.2	39.9	45.6	51.3
58	5.8	11.6	17.4	23.2	29.0	34.8	40.6	46.4	52.2
59	5.9	11.8	17.7	23.6	29.5	35.4	41.3	47.2	53.1
60	6.0	12.0	18.0	24.0	30.0	36.0	42.0	48.0	54.0

ZA $\varphi = 0^\circ$ DO $\pm 30^\circ$									
0°.1	0°.2	0°.3	0°.4	0°.5	0°.6	0°.7	0°.8	0°.9	$\Delta\varphi$ Δt_s
0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	1
0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	2
0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	3
0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	4
0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	5
0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	6
0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.5	0.6	7
0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.6	0.7	8
0.1	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	10
0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9	1.0	11
0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.1	12
0.1	0.3	0.4	0.5	0.7	0.8	0.9	1.0	1.2	13
0.1	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.3	14
0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	15
0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.4	16
0.2	0.3	0.5	0.7	0.9	1.0	1.2	1.4	1.5	17
0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.4	1.6	18
0.2	0.4	0.6	0.8	1.0	1.1	1.3	1.5	1.7	19
0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	20
0.2	0.4	0.6	0.8	1.1	1.3	1.5	1.7	1.9	21
0.2	0.4	0.7	0.9	1.1	1.3	1.5	1.8	2.0	22
0.2	0.5	0.7	0.9	1.2	1.4	1.6	1.8	2.1	23
0.2	0.5	0.7	1.0	1.2	1.4	1.7	1.9	2.2	24
0.3	0.5	0.8	1.0	1.3	1.5	1.8	2.0	2.3	25
0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.3	26
0.3	0.5	0.8	1.1	1.4	1.6	1.9	2.2	2.4	27
0.3	0.6	0.8	1.1	1.4	1.7	2.0	2.2	2.5	28
0.3	0.6	0.9	1.2	1.5	1.7	2.0	2.3	2.6	29
0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	30
0.3	0.6	0.9	1.2	1.6	1.9	2.2	2.5	2.8	31
0.3	0.6	1.0	1.3	1.6	1.9	2.2	2.6	2.9	32
0.3	0.7	1.0	1.3	1.7	2.0	2.3	2.6	3.0	33
0.3	0.7	1.0	1.4	1.7	2.0	2.4	2.7	3.1	34
0.4	0.7	1.1	1.4	1.8	2.1	2.5	2.8	3.2	35
0.4	0.7	1.1	1.4	1.8	2.2	2.5	2.9	3.2	36
0.4	0.7	1.1	1.5	1.9	2.2	2.6	3.0	3.3	37
0.4	0.8	1.1	1.5	1.9	2.3	2.7	3.0	3.4	38
0.4	0.8	1.2	1.6	2.0	2.3	2.7	3.1	3.5	39
0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	40
0.4	0.8	1.2	1.6	2.1	2.5	2.9	3.3	3.7	41
0.4	0.8	1.3	1.7	2.1	2.5	2.9	3.4	3.8	42
0.4	0.9	1.3	1.7	2.2	2.6	3.0	3.4	3.9	43
0.4	0.9	1.3	1.8	2.2	2.6	3.1	3.5	4.0	44
0.5	0.9	1.4	1.8	2.3	2.7	3.2	3.6	4.1	45
0.5	0.9	1.4	1.8	2.3	2.8	3.2	3.7	4.1	46
0.5	0.9	1.4	1.9	2.4	2.8	3.3	3.8	4.2	47
0.5	1.0	1.4	1.9	2.4	2.9	3.4	3.8	4.3	48
0.5	1.0	1.5	2.0	2.5	2.9	3.4	3.9	4.4	49
0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	50
0.5	1.0	1.5	2.0	2.6	3.1	3.6	4.1	4.6	51
0.5	1.0	1.6	2.1	2.6	3.1	3.6	4.2	4.7	52
0.5	1.1	1.6	2.1	2.7	3.2	3.7	4.2	4.8	53
0.5	1.1	1.6	2.2	2.7	3.2	3.8	4.3	4.9	54
0.6	1.1	1.7	2.2	2.8	3.3	3.9	4.4	5.0	55
0.6	1.1	1.7	2.2	2.8	3.4	3.9	4.5	5.0	56
0.6	1.1	1.7	2.3	2.9	3.4	4.0	4.6	5.1	57
0.6	1.2	1.7	2.3	2.9	3.5	4.1	4.6	5.2	58
0.6	1.2	1.8	2.4	3.0	3.5	4.1	4.7	5.3	59
0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	60

INTERPOLACIONA TABLICA

za izračunavanje trenutaka izlaza i zalaza Sunca i Meseca

ZA $\varphi = \pm(30^\circ \text{ DO } 60^\circ)$				
$\Delta\varphi$ Δt_s	1°	2°	3°	4°
1	0.2	0.4	0.6	0.8
2	0.4	0.8	1.2	1.6
3	0.6	1.2	1.8	2.4
4	0.8	1.6	2.4	3.2
5	1.0	2.0	3.0	4.0
6	1.2	2.4	3.6	4.8
7	1.4	2.8	4.2	5.6
8	1.6	3.2	4.8	6.4
9	1.8	3.6	5.4	7.2
10	2.0	4.0	6.0	8.0
11	2.2	4.4	6.6	8.8
12	2.4	4.8	7.2	9.6
13	2.6	5.2	7.8	10.4
14	2.8	5.6	8.4	11.2
15	3.0	6.0	9.0	12.0
16	3.2	6.4	9.6	12.8
17	3.4	6.8	10.2	13.6
18	3.6	7.2	10.8	14.4
19	3.8	7.6	11.4	15.2
20	4.0	8.0	12.0	16.0
21	4.2	8.4	12.6	16.8
22	4.4	8.8	13.2	17.6
23	4.6	9.2	13.8	18.4
24	4.8	9.6	14.4	19.2
25	5.0	10.0	15.0	20.0
26	5.2	10.4	15.6	20.8
27	5.4	10.8	16.2	21.6
28	5.6	11.2	16.8	22.4
29	5.8	11.6	17.4	23.2
30	6.0	12.0	18.0	24.0
31	6.2	12.4	18.6	24.8
32	6.4	12.8	19.2	25.6
33	6.6	13.2	19.8	26.4
34	6.8	13.6	20.4	27.2
35	7.0	14.0	21.0	28.0
36	7.2	14.4	21.6	28.8
37	7.4	14.8	22.2	29.6
38	7.6	15.2	22.8	30.4
39	7.8	15.6	23.4	31.2
40	8.0	16.0	24.0	32.0
41	8.2	16.4	24.6	32.8
42	8.4	16.8	25.2	33.6
43	8.6	17.2	25.8	34.4
44	8.8	17.6	26.4	35.2
45	9.0	18.0	27.0	36.0
46	9.2	18.4	27.6	36.8
47	9.4	18.8	28.2	37.6
48	9.6	19.2	28.8	38.4
49	9.8	19.6	29.4	39.2
50	10.0	20.0	30.0	40.0
51	10.2	20.4	30.6	40.8
52	10.4	20.8	31.2	41.6
53	10.6	21.2	31.8	42.4
54	10.8	21.6	32.4	43.2
55	11.0	22.0	33.0	44.0
56	11.2	22.4	33.6	44.8
57	11.4	22.8	34.2	45.6
58	11.6	23.2	34.8	46.4
59	11.8	23.6	35.4	47.2
60	12.0	24.0	36.0	48.0

ZA $\varphi = \pm(30^\circ \text{ DO } 60^\circ)$													
0°.1	0°.2	0°.3	0°.4	0°.5	0°.6	0°.7	0°.8	0°.9	$\Delta\varphi$ Δt_s				
0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1				
0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	2				
0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	3				
0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.6	0.7	4				
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	5				
0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.1	6				
0.1	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.3	7				
0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.4	8				
0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.4	1.6	9				
0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	10				
0.2	0.4	0.7	0.9	1.1	1.3	1.5	1.8	2.0	11				
0.2	0.5	0.7	1.0	1.2	1.4	1.7	1.9	2.2	12				
0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.3	13				
0.3	0.6	0.8	1.1	1.4	1.7	2.0	2.2	2.5	14				
0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	15				
0.3	0.6	1.0	1.3	1.6	1.9	2.2	2.6	2.9	16				
0.3	0.7	1.0	1.4	1.7	2.0	2.4	2.7	3.1	17				
0.4	0.7	1.1	1.4	1.8	2.2	2.5	2.9	3.2	18				
0.4	0.8	1.1	1.5	1.9	2.3	2.7	3.0	3.4	19				
0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	20				
0.4	0.8	1.3	1.7	2.1	2.5	2.9	3.4	3.8	21				
0.4	0.9	1.3	1.8	2.2	2.6	3.1	3.5	4.0	22				
0.5	0.9	1.4	1.8	2.3	2.8	3.2	3.7	4.1	23				
0.5	1.0	1.4	1.9	2.4	2.9	3.4	3.8	4.3	24				
0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	25				
0.5	1.0	1.6	2.1	2.6	3.1	3.6	4.2	4.7	26				
0.5	1.1	1.6	2.2	2.7	3.2	3.8	4.3	4.9	27				
0.6	1.1	1.7	2.2	2.8	3.4	3.9	4.5	5.0	28				
0.6	1.2	1.7	2.3	2.9	3.5	4.1	4.6	5.2	29				
0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	30				
0.6	1.2	1.9	2.5	3.1	3.7	4.3	5.0	5.6	31				
0.6	1.3	1.9	2.6	3.2	3.8	4.5	5.1	5.8	32				
0.7	1.3	2.0	2.6	3.3	4.0	4.6	5.3	5.9	33				
0.7	1.4	2.0	2.7	3.4	4.1	4.8	5.4	6.1	34				
0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	35				
0.7	1.4	2.2	2.9	3.6	4.3	5.0	5.8	6.5	36				
0.7	1.5	2.2	3.0	3.7	4.4	5.2	5.9	6.7	37				
0.8	1.5	2.3	3.0	3.8	4.6	5.3	6.1	6.8	38				
0.8	1.6	2.3	3.1	3.9	4.7	5.5	6.2	7.0	39				
0.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	40				
0.8	1.6	2.5	3.3	4.1	4.9	5.7	6.6	7.4	41				
0.8	1.7	2.5	3.4	4.2	5.0	5.9	6.7	7.6	42				
0.9	1.7	2.6	3.4	4.3	5.2	6.0	6.9	7.7	43				
0.9	1.8	2.6	3.5	4.4	5.3	6.2	7.0	7.9	44				
0.9	1.8	2.7	3.6	4.5	5.4	6.3	7.2	8.1	45				
0.9	1.8	2.8	3.7	4.6	5.5	6.4	7.4	8.3	46				
0.9	1.9	2.8	3.8	4.7	5.6	6.6	7.5	8.5	47				
1.0	1.9	2.9	3.8	4.8	5.8	6.7	7.7	8.6	48				
1.0	2.0	2.9	3.9	4.9	5.9	6.9	7.8	8.8	49				
1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	50				
1.0	2.0	3.1	4.1	5.1	6.1	7.1	8.2	9.2	51				
1.0	2.1	3.1	4.2	5.2	6.2	7.3	8.3	9.4	52				
1.1	2.1	3.2	4.2	5.3	6.4	7.4	8.5	9.5	53				
1.1	2.2	3.2	4.3	5.4	6.5	7.6	8.6	9.7	54				
1.1	2.2	3.3	4.4	5.5	6.6	7.7	8.8	9.9	55				
1.1	2.2	3.4	4.5	5.6	6.7	7.8	9.0	10.1	56				
1.1	2.3	3.4	4.6	5.7	6.8	8.0	9.1	10.3	57				
1.2	2.3	3.5	4.6	5.8	7.0	8.1	9.3	10.4	58				
1.2	2.4	3.5	4.7	5.9	7.1	8.3	9.4	10.6	59				
1.2	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.8	60				

INTERPOLACIONA TABLICA

za izračunavanje trenutaka izlaza, zalaza i prolaza Meseca kroz meridijan

λ $\frac{\Delta}{24}$	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	λ $\frac{\Delta}{24}$
0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2
0.3	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3
0.4	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4
0.5	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.5
0.6	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.6
0.7	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.7
0.8	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.0	1.1	0.8
0.9	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.0	1.1	1.1	1.2	0.9
1.0	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.2	1.3	1.3	1.0
1.1	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.1
1.2	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.2
1.3	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.6	1.7	1.3
1.4	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.4
1.5	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	1.5
1.6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	1.6
1.7	0.1	0.2	0.3	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.3	1.7
1.8	0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.1	1.2	1.3	1.4	1.6	1.7	1.8	1.9	2.0	2.2	2.3	2.4	1.8
1.9	0.1	0.3	0.4	0.5	0.6	0.8	0.9	1.0	1.1	1.3	1.4	1.5	1.6	1.8	1.9	2.0	2.2	2.3	2.4	2.5	1.9
2.0	0.1	0.3	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.9	2.0	2.1	2.3	2.4	2.5	2.7	2.0
2.1	0.1	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.3	1.4	1.5	1.7	1.8	2.0	2.1	2.2	2.4	2.5	2.7	2.8	2.1
2.2	0.1	0.3	0.4	0.6	0.7	0.9	1.0	1.2	1.3	1.5	1.6	1.8	1.9	2.1	2.2	2.3	2.5	2.6	2.8	2.9	2.2
2.3	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1	2.3	2.5	2.6	2.8	2.9	3.1	2.3
2.4	0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.4	1.6	1.8	1.9	2.1	2.2	2.4	2.6	2.7	2.9	3.0	3.2	2.4
2.5	0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1.5	1.7	1.8	2.0	2.2	2.3	2.5	2.7	2.8	3.0	3.2	3.3	2.5
2.6	0.2	0.3	0.5	0.7	0.9	1.0	1.2	1.4	1.6	1.7	1.9	2.1	2.3	2.4	2.6	2.8	2.9	3.1	3.3	3.5	2.6
2.7	0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.4	1.6	1.8	2.0	2.2	2.3	2.5	2.7	2.9	3.1	3.2	3.4	3.6	2.7
2.8	0.2	0.4	0.6	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.5	3.7	2.8
2.9	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	3.7	3.9	2.9
3.0	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	3.0
3.1	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	3.7	3.9	4.1	3.1
3.2	0.2	0.4	0.6	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.1	4.3	3.2
3.3	0.2	0.4	0.7	0.9	1.1	1.3	1.5	1.8	2.0	2.2	2.4	2.6	2.9	3.1	3.3	3.5	3.7	4.0	4.2	4.4	3.3
3.4	0.2	0.5	0.7	0.9	1.1	1.4	1.6	1.8	2.0	2.3	2.5	2.7	2.9	3.2	3.4	3.6	3.9	4.1	4.3	4.5	3.4
3.5	0.2	0.5	0.7	0.9	1.2	1.4	1.6	1.9	2.1	2.3	2.6	2.8	3.0	3.3	3.5	3.7	4.0	4.2	4.4	4.7	3.5
3.6	0.2	0.5	0.7	1.0	1.2	1.4	1.7	1.9	2.2	2.4	2.6	2.9	3.1	3.4	3.6	3.8	4.1	4.3	4.6	4.8	3.6
3.7	0.2	0.5	0.7	1.0	1.2	1.5	1.7	2.0	2.2	2.5	2.7	3.0	3.2	3.5	3.7	3.9	4.2	4.4	4.7	4.9	3.7
3.8	0.3	0.5	0.8	1.0	1.3	1.5	1.8	2.0	2.3	2.5	2.8	3.0	3.3	3.5	3.8	4.1	4.3	4.6	4.8	5.1	3.8
3.9	0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.3	2.6	2.9	3.1	3.4	3.6	3.9	4.2	4.4	4.7	4.9	5.2	3.9
4.0	0.3	0.5	0.8	1.1	1.3	1.6	1.9	2.1	2.4	2.7	2.9	3.2	3.5	3.7	4.0	4.3	4.5	4.8	5.1	5.3	4.0
4.1	0.3	0.5	0.8	1.1	1.4	1.6	1.9	2.2	2.5	2.7	3.0	3.3	3.6	3.8	4.1	4.4	4.6	4.9	5.2	5.5	4.1
4.2	0.3	0.6	0.8	1.1	1.4	1.7	2.0	2.2	2.5	2.8	3.1	3.4	3.6	3.9	4.2	4.5	4.8	5.0	5.3	5.6	4.2
4.3	0.3	0.6	0.9	1.1	1.4	1.7	2.0	2.3	2.6	2.9	3.2	3.4	3.7	4.0	4.3	4.6	4.9	5.2	5.4	5.7	4.3
4.4	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.3	2.6	2.9	3.2	3.5	3.8	4.1	4.4	4.7	5.0	5.3	5.6	5.9	4.4
4.5	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.0	4.5
4.6	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9	5.2	5.5	5.8	6.1	4.6
4.7	0.3	0.6	0.9	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.8	4.1	4.4	4.7	5.0	5.3	5.6	6.0	6.3	4.7
4.8	0.3	0.6	1.0	1.3	1.6	1.9	2.2	2.6	2.9	3.2	3.5	3.8	4.2	4.5	4.8	5.1	5.4	5.8	6.1	6.4	4.8
4.9	0.3	0.7	1.0	1.3	1.6	2.0	2.3	2.6	2.9	3.3	3.6	3.9	4.2	4.6	4.9	5.2	5.6	5.9	6.2	6.5	4.9
5.0	0.3	0.7	1.0	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	4.3	4.7	5.0	5.3	5.7	6.0	6.3	6.7	5.0

INTERPOLACIONA TABLICA

za izračunavanje trenutaka izlaza, zalaza i prolaza Meseca kroz meridijan

λ $\frac{\Delta}{24}$	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°	160°	170°	180°	λ $\frac{\Delta}{24}$
0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.2	0.1
0.2	0.3	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.9	2.0	2.1	2.3	2.4	0.2
0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	0.3
0.4	0.5	0.8	1.1	1.3	1.6	1.9	2.1	2.4	2.7	2.9	3.2	3.5	3.7	4.0	4.3	4.5	4.8	0.4
0.5	0.7	1.0	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	4.3	4.7	5.0	5.3	5.7	6.0	0.5
0.6	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	6.8	7.2	0.6
0.7	0.9	1.4	1.9	2.3	2.8	3.3	3.7	4.2	4.7	5.1	5.6	6.1	6.5	7.0	7.5	7.9	8.4	0.7
0.8	1.1	1.6	2.1	2.7	3.2	3.7	4.3	4.8	5.3	5.9	6.4	6.9	7.5	8.0	8.5	9.1	9.6	0.8
0.9	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6	7.2	7.8	8.4	9.0	9.6	10.2	10.8	0.9
1.0	1.3	2.0	2.7	3.3	4.0	4.7	5.3	6.0	6.7	7.3	8.0	8.7	9.3	10.0	10.7	11.3	12.0	1.0
1.1	1.5	2.2	2.9	3.7	4.4	5.1	5.9	6.6	7.3	8.1	8.8	9.5	10.3	11.0	11.7	12.5	13.2	1.1
1.2	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0	8.8	9.6	10.4	11.2	12.0	12.8	13.6	14.4	1.2
1.3	1.7	2.6	3.5	4.3	5.2	6.1	6.9	7.8	8.7	9.5	10.4	11.3	12.1	13.0	13.9	14.7	15.6	1.3
1.4	1.9	2.8	3.7	4.7	5.6	6.5	7.5	8.4	9.3	10.3	11.2	12.1	13.1	14.0	14.9	15.9	16.8	1.4
1.5	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	1.5
1.6	2.1	3.2	4.3	5.3	6.4	7.5	8.5	9.6	10.7	11.7	12.8	13.9	14.9	16.0	17.1	18.1	19.2	1.6
1.7	2.3	3.4	4.5	5.7	6.8	7.9	9.1	10.2	11.3	12.5	13.6	14.7	15.9	17.0	18.1	19.3	20.4	1.7
1.8	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.8	12.0	13.2	14.4	15.6	16.8	18.0	19.2	20.4	21.6	1.8
1.9	2.5	3.8	5.1	6.3	7.6	8.9	10.1	11.4	12.7	13.9	15.2	16.5	17.7	19.0	20.3	21.5	22.8	1.9
2.0	2.7	4.0	5.3	6.7	8.0	9.3	10.7	12.0	13.3	14.7	16.0	17.3	18.7	20.0	21.3	22.7	24.0	2.0
2.1	2.8	4.2	5.6	7.0	8.4	9.8	11.2	12.6	14.0	15.4	16.8	18.2	19.6	21.0	22.4	23.8	25.2	2.1
2.2	2.9	4.4	5.9	7.3	8.8	10.3	11.7	13.2	14.7	16.1	17.6	19.1	20.5	22.0	23.5	24.9	26.4	2.2
2.3	3.1	4.6	6.1	7.7	9.2	10.7	12.3	13.8	15.3	16.9	18.4	19.9	21.5	23.0	24.5	26.1	27.6	2.3
2.4	3.2	4.8	6.4	8.0	9.6	11.2	12.8	14.4	16.0	17.6	19.2	20.8	22.4	24.0	25.6	27.2	28.8	2.4
2.5	3.3	5.0	6.7	8.3	10.0	11.7	13.3	15.0	16.7	18.3	20.0	21.7	23.3	25.0	26.7	28.3	30.0	2.5
2.6	3.5	5.2	6.9	8.7	10.4	12.1	13.9	15.6	17.3	19.1	20.8	22.5	24.3	26.0	27.7	29.5	31.2	2.6
2.7	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.2	18.0	19.8	21.6	23.4	25.2	27.0	28.8	30.6	32.4	2.7
2.8	3.7	5.6	7.5	9.3	11.2	13.1	14.9	16.8	18.7	20.5	22.4	24.3	26.1	28.0	29.9	31.7	33.6	2.8
2.9	3.9	5.8	7.7	9.7	11.6	13.5	15.5	17.4	19.3	21.3	23.2	25.1	27.1	29.0	30.9	32.9	34.8	2.9
3.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0	36.0	3.0
3.1	4.1	6.2	8.3	10.3	12.4	14.5	16.5	18.6	20.7	22.7	24.8	26.9	28.9	31.0	33.1	35.1	37.2	3.1
3.2	4.3	6.4	8.5	10.7	12.8	14.9	17.1	19.2	21.3	23.5	25.6	27.7	29.9	32.0	34.1	36.3	38.4	3.2
3.3	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	3.3
3.4	4.5	6.8	9.1	11.3	13.6	15.9	18.1	20.4	22.7	24.9	27.2	29.5	31.7	34.0	36.3	38.5	40.8	3.4
3.5	4.7	7.0	9.3	11.7	14.0	16.3	18.7	21.0	23.3	25.7	28.0	30.3	32.7	35.0	37.3	39.7	42.0	3.5
3.6	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6	24.0	26.4	28.8	31.2	33.6	36.0	38.4	40.8	43.2	3.6
3.7	4.9	7.4	9.9	12.3	14.8	17.3	19.7	22.2	24.7	27.1	29.6	32.1	34.5	37.0	39.5	41.9	44.4	3.7
3.8	5.1	7.6	10.1	12.7	15.2	17.7	20.3	22.8	25.3	27.9	30.4	32.9	35.5	38.0	40.5	43.1	45.6	3.8
3.9	5.2	7.8	10.4	13.0	15.6	18.2	20.8	23.4	26.0	28.6	31.2	33.8	36.4	39.0	41.6	44.2	46.8	3.9
4.0	5.3	8.0	10.7	13.3	16.0	18.7	21.3	24.0	26.7	29.3	32.0	34.7	37.3	40.0	42.7	45.3	48.0	4.0
4.1	5.5	8.2	10.9	13.7	16.4	19.1	21.9	24.6	27.3	30.1	32.8	35.5	38.3	41.0	43.7	46.5	49.2	4.1
4.2	5.6	8.4	11.2	14.0	16.8	19.6	22.4	25.2	28.0	30.8	33.6	36.4	39.2	42.0	44.8	47.6	50.4	4.2
4.3	5.7	8.6	11.5	14.3	17.2	20.1	22.9	25.8	28.7	31.5	34.4	37.3	40.1	43.0	45.9	48.7	51.6	4.3
4.4	5.9	8.8	11.7	14.7	17.6	20.5	23.5	26.4	29.3	32.3	35.2	38.1	41.1	44.0	46.9	49.9	52.8	4.4
4.5	6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0	45.0	48.0	51.0	54.0	4.5
4.6	6.1	9.2	12.3	15.3	18.4	21.5	24.5	27.6	30.7	33.7	36.8	39.9	42.9	46.0	49.1	52.1	55.2	4.6
4.7	6.3	9.4	12.5	15.7	18.8	21.9	25.1	28.2	31.3	34.5	37.6	40.7	43.9	47.0	50.1	53.3	56.4	4.7
4.8	6.4	9.6	12.8	16.0	19.2	22.4	25.6	28.8	32.0	35.2	38.4	41.6	44.8	48.0	51.2	54.4	57.6	4.8
4.9	6.5	9.8	13.1	16.3	19.6	22.9	26.1	29.4	32.7	35.9	39.2	42.5	45.7	49.0	52.3	55.5	58.8	4.9
5.0	6.7	10.0	13.3	16.7	20.0	23.3	26.7	30.0	33.3	36.7	40.0	43.3	46.7	50.0	53.3	56.7	60.0	5.0

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I_nterpolaciona tablica

ZA

POPRAVKU ČASOVNOG UGLA I DEKLINACIJE

0 h 0 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	0	.0	0	.0	0	.0	0	.0	60	.1	120	.1
1	0	.3	0	.3	0	.2	1	.0	61	.1	121	.1
2	0	.5	0	.5	0	.5	2	.0	62	.1	122	.1
3	0	.8	0	.8	0	.7	3	.0	63	.1	123	.1
4	0	1.0	0	1.0	0	1.0	4	.0	64	.1	124	.1
5	0	1.3	0	1.3	0	1.2	5	.0	65	.1	125	.1
6	0	1.5	0	1.5	0	1.4	6	.0	66	.1	126	.1
7	0	1.8	0	1.8	0	1.7	7	.0	67	.1	127	.1
8	0	2.0	0	2.0	0	1.9	8	.0	68	.1	128	.1
9	0	2.3	0	2.3	0	2.1	9	.0	69	.1	129	.1
10	0	2.5	0	2.5	0	2.4	10	.0	70	.1	130	.1
11	0	2.8	0	2.8	0	2.6	11	.0	71	.1	131	.1
12	0	3.0	0	3.0	0	2.9	12	.0	72	.1	132	.1
13	0	3.3	0	3.3	0	3.1	13	.0	73	.1	133	.1
14	0	3.5	0	3.5	0	3.3	14	.0	74	.1	134	.1
15	0	3.8	0	3.8	0	3.6	15	.0	75	.1	135	.1
16	0	4.0	0	4.0	0	3.8	16	.0	76	.1	136	.1
17	0	4.3	0	4.3	0	4.1	17	.0	77	.1	137	.1
18	0	4.5	0	4.5	0	4.3	18	.0	78	.1	138	.1
19	0	4.8	0	4.8	0	4.5	19	.0	79	.1	139	.1
20	0	5.0	0	5.0	0	4.8	20	.0	80	.1	140	.1
21	0	5.3	0	5.3	0	5.0	21	.0	81	.1	141	.1
22	0	5.5	0	5.5	0	5.2	22	.0	82	.1	142	.1
23	0	5.8	0	5.8	0	5.5	23	.0	83	.1	143	.1
24	0	6.0	0	6.0	0	5.7	24	.0	84	.1	144	.1
25	0	6.3	0	6.3	0	6.0	25	.0	85	.1	145	.1
26	0	6.5	0	6.5	0	6.2	26	.0	86	.1	146	.1
27	0	6.8	0	6.8	0	6.4	27	.0	87	.1	147	.1
28	0	7.0	0	7.0	0	6.7	28	.0	88	.1	148	.1
29	0	7.3	0	7.3	0	6.9	29	.0	89	.1	149	.1
30	0	7.5	0	7.5	0	7.2	30	.0	90	.1	150	.1
31	0	7.8	0	7.8	0	7.4	31	.0	91	.1	151	.1
32	0	8.0	0	8.0	0	7.6	32	.0	92	.1	152	.1
33	0	8.3	0	8.3	0	7.9	33	.0	93	.1	153	.1
34	0	8.5	0	8.5	0	8.1	34	.0	94	.1	154	.1
35	0	8.8	0	8.8	0	8.4	35	.0	95	.1	155	.1
36	0	9.0	0	9.0	0	8.6	36	.0	96	.1	156	.1
37	0	9.3	0	9.3	0	8.8	37	.0	97	.1	157	.1
38	0	9.5	0	9.5	0	9.1	38	.0	98	.1	158	.1
39	0	9.8	0	9.8	0	9.3	39	.0	99	.1	159	.1
40	0	10.0	0	10.0	0	9.5	40	.0	100	.1	160	.1
41	0	10.3	0	10.3	0	9.8	41	.0	101	.1	161	.1
42	0	10.5	0	10.5	0	10.0	42	.0	102	.1	162	.1
43	0	10.8	0	10.8	0	10.3	43	.0	103	.1	163	.1
44	0	11.0	0	11.0	0	10.5	44	.0	104	.1	164	.1
45	0	11.3	0	11.3	0	10.7	45	.0	105	.1	165	.1
46	0	11.5	0	11.5	0	11.0	46	.0	106	.1	166	.1
47	0	11.8	0	11.8	0	11.2	47	.0	107	.1	167	.1
48	0	12.0	0	12.0	0	11.5	48	.0	108	.1	168	.1
49	0	12.3	0	12.3	0	11.7	49	.0	109	.1	169	.1
50	0	12.5	0	12.5	0	11.9	50	.0	110	.1	170	.1
51	0	12.8	0	12.8	0	12.2	51	.0	111	.1	171	.1
52	0	13.0	0	13.0	0	12.4	52	.0	112	.1	172	.1
53	0	13.3	0	13.3	0	12.6	53	.0	113	.1	173	.1
54	0	13.5	0	13.5	0	12.9	54	.0	114	.1	174	.1
55	0	13.8	0	13.8	0	13.1	55	.0	115	.1	175	.1
56	0	14.0	0	14.0	0	13.4	56	.0	116	.1	176	.1
57	0	14.3	0	14.3	0	13.6	57	.0	117	.1	177	.1
58	0	14.5	0	14.5	0	13.8	58	.0	118	.1	178	.1
59	0	14.8	0	14.8	0	14.1	59	.0	119	.1	179	.1
60	0	15.0	0	15.0	0	14.3	60	.1	120	.1	180	.2

0 h 1 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	0	15.0	0	15.0	0	14.3	0	.0	60	.2	120	.3
1	0	15.3	0	15.3	0	14.6	1	.0	61	.2	121	.3
2	0	15.5	0	15.5	0	14.8	2	.0	62	.2	122	.3
3	0	15.8	0	15.8	0	15.0	3	.0	63	.2	123	.3
4	0	16.0	0	16.0	0	15.3	4	.0	64	.2	124	.3
5	0	16.3	0	16.3	0	15.5	5	.0	65	.2	125	.3
6	0	16.5	0	16.5	0	15.7	6	.0	66	.2	126	.3
7	0	16.8	0	16.8	0	16.0	7	.0	67	.2	127	.3
8	0	17.0	0	17.0	0	16.2	8	.0	68	.2	128	.3
9	0	17.3	0	17.3	0	16.5	9	.0	69	.2	129	.3
10	0	17.5	0	17.5	0	16.7	10	.0	70	.2	130	.3
11	0	17.8	0	17.8	0	16.9	11	.0	71	.2	131	.3
12	0	18.0	0	18.1	0	17.2	12	.0	72	.2	132	.3
13	0	18.3	0	18.3	0	17.4	13	.0	73	.2	133	.3
14	0	18.5	0	18.6	0	17.7	14	.0	74	.2	134	.3
15	0	18.8	0	18.8	0	17.9	15	.0	75	.2	135	.3
16	0	19.0	0	19.1	0	18.1	16	.0	76	.2	136	.3
17	0	19.3	0	19.3	0	18.4	17	.0	77	.2	137	.3
18	0	19.5	0	19.6	0	18.6	18	.0	78	.2	138	.3
19	0	19.8	0	19.8	0	18.9	19	.0	79	.2	139	.3
20	0	20.0	0	20.1	0	19.1	20	.1	80	.2	140	.4
21	0	20.3	0	20.3	0	19.3	21	.1	81	.2	141	.4
22	0	20.5	0	20.6	0	19.6	22	.1	82	.2	142	.4
23	0	20.8	0	20.8	0	19.8	23	.1	83	.2	143	.4
24	0	21.0	0	21.1	0	20.0	24	.1	84	.2	144	.4
25	0	21.3	0	21.3	0	20.3	25	.1	85	.2	145	.4
26	0	21.5	0	21.6	0	20.5	26	.1	86	.2	146	.4
27	0	21.8	0	21.8	0	20.8	27	.1	87	.2	147	.4
28	0	22.0	0	22.1	0	21.0	28	.1	88	.2	148	.4
29	0	22.3	0	22.3	0	21.2	29	.1	89	.2	149	.4
30	0	22.5	0	22.6	0	21.5	30	.1	90	.2	150	.4
31	0	22.8	0	22.8	0	21.7	31	.1	91	.2	151	.4
32	0	23.0	0	23.1	0	22.0	32	.1	92	.2	152	.4
33	0	23.3	0	23.3	0	22.2	33	.1	93	.2	153	.4
34	0	23.5	0	23.6	0	22.4	34	.1	94	.2	154	.4
35	0	23.8	0	23.8	0	22.7	35	.1	95	.2	155	.4
36	0	24.0	0	24.1	0	22.9	36	.1	96	.2	156	.4
37	0	24.3	0	24.3	0	23.1	37	.1	97	.2	157	.4
38	0	24.5	0	24.6	0	23.4	38	.1	98	.2	158	.4
39	0	24.8	0	24.8	0	23.6	39	.1	99	.2	159	.4
40	0	25.0	0	25.1	0	23.9	40	.1	100	.3	160	.4
41	0	25.3	0	25.3	0	24.1	41	.1	101	.3	161	.4
42	0	25.5	0	25.6	0	24.3	42	.1	102	.3	162	.4
43	0	25.8	0	25.8	0	24.6	43	.1	103	.3	163	.4
44	0	26.0	0	26.1	0	24.8	44	.1	104	.3	164	.4
45	0	26.3	0	26.3	0	25.1	45	.1	105	.3	165	.4
46	0	26.5	0	26.6	0	25.3	46	.1	106	.3	166	.4
47	0	26.8	0	26.8	0	25.5	47	.1	107	.3	167	.4
48	0	27.0	0	27.1	0	25.8	48	.1	108	.3	168	.4
49	0	27.3	0	27.3	0	26.0	49	.1	109	.3	169	.4
50	0	27.5	0	27.6	0	26.2	50	.1	110	.3	170	.4
51	0	27.8	0	27.8	0	26.5	51	.1	111	.3	171	.4
52	0	28.0	0	28.1	0	26.7	52	.1	112	.3	172	.4
53	0	28.3	0	28.3	0	27.0	53	.1	113	.3	173	.4
54	0	28.5	0	28.6	0	27.2	54	.1	114	.3	174	.4
55	0	28.8	0	28.8	0	27.4	55	.1	115	.3	175	.4
56	0	29.0	0	29.1	0	27.7	56	.1	116	.3	176	.4
57	0	29.3	0	29.3	0	27.9	57	.1	117	.3	177	.4
58	0	29.5	0	29.6	0	28.2	58	.1	118	.3	178	.4
59	0	29.8	0	29.8	0	28.4	59	.1	119	.3	179	.4
60	0	30.0	0	30.1	0	28.6	60	.2	120	.3	180	.5

0 h 2 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	0 30.0	0 30.1	0 28.6	0 .0	60 .3	120 .5	
1	0 30.3	0 30.3	0 28.9	1 .0	61 .3	121 .5	
2	0 30.5	0 30.6	0 29.1	2 .0	62 .3	122 .5	
3	0 30.8	0 30.8	0 29.3	3 .0	63 .3	123 .5	
4	0 31.0	0 31.1	0 29.6	4 .0	64 .3	124 .5	
5	0 31.3	0 31.3	0 29.8	5 .0	65 .3	125 .5	
6	0 31.5	0 31.6	0 30.1	6 .0	66 .3	126 .5	
7	0 31.8	0 31.8	0 30.3	7 .0	67 .3	127 .5	
8	0 32.0	0 32.1	0 30.5	8 .0	68 .3	128 .5	
9	0 32.3	0 32.3	0 30.8	9 .0	69 .3	129 .5	
10	0 32.5	0 32.6	0 31.0	10 .0	70 .3	130 .5	
11	0 32.8	0 32.8	0 31.3	11 .0	71 .3	131 .5	
12	0 33.0	0 33.1	0 31.5	12 .1	72 .3	132 .6	
13	0 33.3	0 33.3	0 31.7	13 .1	73 .3	133 .6	
14	0 33.5	0 33.6	0 32.0	14 .1	74 .3	134 .6	
15	0 33.8	0 33.8	0 32.2	15 .1	75 .3	135 .6	
16	0 34.0	0 34.1	0 32.5	16 .1	76 .3	136 .6	
17	0 34.3	0 34.3	0 32.7	17 .1	77 .3	137 .6	
18	0 34.5	0 34.6	0 32.9	18 .1	78 .3	138 .6	
19	0 34.8	0 34.8	0 33.2	19 .1	79 .3	139 .6	
20	0 35.0	0 35.1	0 33.4	20 .1	80 .3	140 .6	
21	0 35.3	0 35.3	0 33.6	21 .1	81 .3	141 .6	
22	0 35.5	0 35.6	0 33.9	22 .1	82 .3	142 .6	
23	0 35.8	0 35.8	0 34.1	23 .1	83 .3	143 .6	
24	0 36.0	0 36.1	0 34.4	24 .1	84 .4	144 .6	
25	0 36.3	0 36.4	0 34.6	25 .1	85 .4	145 .6	
26	0 36.5	0 36.6	0 34.8	26 .1	86 .4	146 .6	
27	0 36.8	0 36.9	0 35.1	27 .1	87 .4	147 .6	
28	0 37.0	0 37.1	0 35.3	28 .1	88 .4	148 .6	
29	0 37.3	0 37.4	0 35.6	29 .1	89 .4	149 .6	
30	0 37.5	0 37.6	0 35.8	30 .1	90 .4	150 .6	
31	0 37.8	0 37.9	0 36.0	31 .1	91 .4	151 .6	
32	0 38.0	0 38.1	0 36.3	32 .1	92 .4	152 .6	
33	0 38.3	0 38.4	0 36.5	33 .1	93 .4	153 .6	
34	0 38.5	0 38.6	0 36.7	34 .1	94 .4	154 .6	
35	0 38.8	0 38.9	0 37.0	35 .1	95 .4	155 .6	
36	0 39.0	0 39.1	0 37.2	36 .2	96 .4	156 .7	
37	0 39.3	0 39.4	0 37.5	37 .2	97 .4	157 .7	
38	0 39.5	0 39.6	0 37.7	38 .2	98 .4	158 .7	
39	0 39.8	0 39.9	0 37.9	39 .2	99 .4	159 .7	
40	0 40.0	0 40.1	0 38.2	40 .2	100 .4	160 .7	
41	0 40.3	0 40.4	0 38.4	41 .2	101 .4	161 .7	
42	0 40.5	0 40.6	0 38.7	42 .2	102 .4	162 .7	
43	0 40.8	0 40.9	0 38.9	43 .2	103 .4	163 .7	
44	0 41.0	0 41.1	0 39.1	44 .2	104 .4	164 .7	
45	0 41.3	0 41.4	0 39.4	45 .2	105 .4	165 .7	
46	0 41.5	0 41.6	0 39.6	46 .2	106 .4	166 .7	
47	0 41.8	0 41.9	0 39.8	47 .2	107 .4	167 .7	
48	0 42.0	0 42.1	0 40.1	48 .2	108 .5	168 .7	
49	0 42.3	0 42.4	0 40.3	49 .2	109 .5	169 .7	
50	0 42.5	0 42.6	0 40.6	50 .2	110 .5	170 .7	
51	0 42.8	0 42.9	0 40.8	51 .2	111 .5	171 .7	
52	0 43.0	0 43.1	0 41.0	52 .2	112 .5	172 .7	
53	0 43.3	0 43.4	0 41.3	53 .2	113 .5	173 .7	
54	0 43.5	0 43.6	0 41.5	54 .2	114 .5	174 .7	
55	0 43.8	0 43.9	0 41.8	55 .2	115 .5	175 .7	
56	0 44.0	0 44.1	0 42.0	56 .2	116 .5	176 .7	
57	0 44.3	0 44.4	0 42.2	57 .2	117 .5	177 .7	
58	0 44.5	0 44.6	0 42.5	58 .2	118 .5	178 .7	
59	0 44.8	0 44.9	0 42.7	59 .2	119 .5	179 .7	
60	0 45.0	0 45.1	0 43.0	60 .3	120 .5	180 .8	

0 h 3 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	0 45.0	0 45.1	0 43.0	0 .0	60 .4	120 .7	
1	0 45.3	0 45.4	0 43.2	1 .0	61 .4	121 .7	
2	0 45.5	0 45.6	0 43.4	2 .0	62 .4	122 .7	
3	0 45.8	0 45.9	0 43.7	3 .0	63 .4	123 .7	
4	0 46.0	0 46.1	0 43.9	4 .0	64 .4	124 .7	
5	0 46.3	0 46.4	0 44.1	5 .0	65 .4	125 .7	
6	0 46.5	0 46.6	0 44.4	6 .0	66 .4	126 .7	
7	0 46.8	0 46.9	0 44.6	7 .0	67 .4	127 .7	
8	0 47.0	0 47.1	0 44.9	8 .0	68 .4	128 .7	
9	0 47.3	0 47.4	0 45.1	9 .1	69 .4	129 .8	
10	0 47.5	0 47.6	0 45.3	10 .1	70 .4	130 .8	
11	0 47.8	0 47.9	0 45.6	11 .1	71 .4	131 .8	
12	0 48.0	0 48.1	0 45.8	12 .1	72 .4	132 .8	
13	0 48.3	0 48.4	0 46.1	13 .1	73 .4	133 .8	
14	0 48.5	0 48.6	0 46.3	14 .1	74 .4	134 .8	
15	0 48.8	0 48.9	0 46.5	15 .1	75 .4	135 .8	
16	0 49.0	0 49.1	0 46.8	16 .1	76 .4	136 .8	
17	0 49.3	0 49.4	0 47.0	17 .1	77 .4	137 .8	
18	0 49.5	0 49.6	0 47.2	18 .1	78 .5	138 .8	
19	0 49.8	0 49.9	0 47.5	19 .1	79 .5	139 .8	
20	0 50.0	0 50.1	0 47.7	20 .1	80 .5	140 .8	
21	0 50.3	0 50.4	0 48.0	21 .1	81 .5	141 .8	
22	0 50.5	0 50.6	0 48.2	22 .1	82 .5	142 .8	
23	0 50.8	0 50.9	0 48.4	23 .1	83 .5	143 .8	
24	0 51.0	0 51.1	0 48.7	24 .1	84 .5	144 .8	
25	0 51.3	0 51.4	0 48.9	25 .1	85 .5	145 .8	
26	0 51.5	0 51.6	0 49.2	26 .2	86 .5	146 .9	
27	0 51.8	0 51.9	0 49.4	27 .2	87 .5	147 .9	
28	0 52.0	0 52.1	0 49.6	28 .2	88 .5	148 .9	
29	0 52.3	0 52.4	0 49.9	29 .2	89 .5	149 .9	
30	0 52.5	0 52.6	0 50.1	30 .2	90 .5	150 .9	
31	0 52.8	0 52.9	0 50.3	31 .2	91 .5	151 .9	
32	0 53.0	0 53.1	0 50.6	32 .2	92 .5	152 .9	
33	0 53.3	0 53.4	0 50.8	33 .2	93 .5	153 .9	
34	0 53.5	0 53.6	0 51.1	34 .2	94 .5	154 .9	
35	0 53.8	0 53.9	0 51.3	35 .2	95 .6	155 .9	
36	0 54.0	0 54.2	0 51.5	36 .2	96 .6	156 .9	
37	0 54.3	0 54.4	0 51.8	37 .2	97 .6	157 .9	
38	0 54.5	0 54.7	0 52.0	38 .2	98 .6	158 .9	
39	0 54.8	0 54.9	0 52.3	39 .2	99 .6	159 .9	
40	0 55.0	0 55.2	0 52.5	40 .2	100 .6	160 .9	
41	0 55.3	0 55.4	0 52.7	41 .2	101 .6	161 .9	
42	0 55.5	0 55.7	0 53.0	42 .2	102 .6	162 .9	
43	0 55.8	0 55.9	0 53.2	43 .3	103 .6	163 1.0	
44	0 56.0	0 56.2	0 53.4	44 .3	104 .6	164 1.0	
45	0 56.3	0 56.4	0 53.7	45 .3	105 .6	165 1.0	
46	0 56.5	0 56.7	0 53.9	46 .3	106 .6	166 1.0	
47	0 56.8	0 56.9	0 54.2	47 .3	107 .6	167 1.0	
48	0 57.0	0 57.2	0 54.4	48 .3	108 .6	168 1.0	
49	0 57.3	0 57.4	0 54.6	49 .3	109 .6	169 1.0	
50	0 57.5	0 57.7	0 54.9	50 .3	110 .6	170 1.0	
51	0 57.8	0 57.9	0 55.1	51 .3	111 .6	171 1.0	
52	0 58.0	0 58.2	0 55.4	52 .3	112 .7	172 1.0	
53	0 58.3	0 58.4	0 55.6	53 .3	113 .7	173 1.0	
54	0 58.5	0 58.7	0 55.8	54 .3	114 .7	174 1.0	
55	0 58.8	0 58.9	0 56.1	55 .3	115 .7	175 1.0	
56	0 59.0	0 59.2	0 56.3	56 .3	116 .7	176 1.0	
57	0 59.3	0 59.4	0 56.6	57 .3	117 .7	177 1.0	
58	0 59.5	0 59.7	0 56.8	58 .3	118 .7	178 1.0	
59	0 59.8	0 59.9	0 57.0	59 .3	119 .7	179 1.0	
60	1 .0	1 .2	0 57.3	60 .4	120 .7	180 1.1	

0 h 4 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	1	.0	1	.2	0	57.3	0	.0	60	.5	120	.9
1	1	.3	1	.4	0	57.5	1	.0	61	.5	121	.9
2	1	.5	1	.7	0	57.7	2	.0	62	.5	122	.9
3	1	.8	1	.9	0	58.0	3	.0	63	.5	123	.9
4	1	1.0	1	1.2	0	58.2	4	.0	64	.5	124	.9
5	1	1.3	1	1.4	0	58.5	5	.0	65	.5	125	.9
6	1	1.5	1	1.7	0	58.7	6	.0	66	.5	126	.9
7	1	1.8	1	1.9	0	58.9	7	.1	67	.5	127	1.0
8	1	2.0	1	2.2	0	59.2	8	.1	68	.5	128	1.0
9	1	2.3	1	2.4	0	59.4	9	.1	69	.5	129	1.0
10	1	2.5	1	2.7	0	59.7	10	.1	70	.5	130	1.0
11	1	2.8	1	2.9	0	59.9	11	.1	71	.5	131	1.0
12	1	3.0	1	3.2	1	.1	12	.1	72	.5	132	1.0
13	1	3.3	1	3.4	1	.4	13	.1	73	.5	133	1.0
14	1	3.5	1	3.7	1	.6	14	.1	74	.6	134	1.0
15	1	3.8	1	3.9	1	.8	15	.1	75	.6	135	1.0
16	1	4.0	1	4.2	1	1.1	16	.1	76	.6	136	1.0
17	1	4.3	1	4.4	1	1.3	17	.1	77	.6	137	1.0
18	1	4.5	1	4.7	1	1.6	18	.1	78	.6	138	1.0
19	1	4.8	1	4.9	1	1.8	19	.1	79	.6	139	1.0
20	1	5.0	1	5.2	1	2.0	20	.2	80	.6	140	1.1
21	1	5.3	1	5.4	1	2.3	21	.2	81	.6	141	1.1
22	1	5.5	1	5.7	1	2.5	22	.2	82	.6	142	1.1
23	1	5.8	1	5.9	1	2.8	23	.2	83	.6	143	1.1
24	1	6.0	1	6.2	1	3.0	24	.2	84	.6	144	1.1
25	1	6.3	1	6.4	1	3.2	25	.2	85	.6	145	1.1
26	1	6.5	1	6.7	1	3.5	26	.2	86	.6	146	1.1
27	1	6.8	1	6.9	1	3.7	27	.2	87	.7	147	1.1
28	1	7.0	1	7.2	1	3.9	28	.2	88	.7	148	1.1
29	1	7.3	1	7.4	1	4.2	29	.2	89	.7	149	1.1
30	1	7.5	1	7.7	1	4.4	30	.2	90	.7	150	1.1
31	1	7.8	1	7.9	1	4.7	31	.2	91	.7	151	1.1
32	1	8.0	1	8.2	1	4.9	32	.2	92	.7	152	1.1
33	1	8.3	1	8.4	1	5.1	33	.2	93	.7	153	1.1
34	1	8.5	1	8.7	1	5.4	34	.3	94	.7	154	1.2
35	1	8.8	1	8.9	1	5.6	35	.3	95	.7	155	1.2
36	1	9.0	1	9.2	1	5.9	36	.3	96	.7	156	1.2
37	1	9.3	1	9.4	1	6.1	37	.3	97	.7	157	1.2
38	1	9.5	1	9.7	1	6.3	38	.3	98	.7	158	1.2
39	1	9.8	1	9.9	1	6.6	39	.3	99	.7	159	1.2
40	1	10.0	1	10.2	1	6.8	40	.3	100	.8	160	1.2
41	1	10.3	1	10.4	1	7.0	41	.3	101	.8	161	1.2
42	1	10.5	1	10.7	1	7.3	42	.3	102	.8	162	1.2
43	1	10.8	1	10.9	1	7.5	43	.3	103	.8	163	1.2
44	1	11.0	1	11.2	1	7.8	44	.3	104	.8	164	1.2
45	1	11.3	1	11.4	1	8.0	45	.3	105	.8	165	1.2
46	1	11.5	1	11.7	1	8.2	46	.3	106	.8	166	1.2
47	1	11.8	1	11.9	1	8.5	47	.4	107	.8	167	1.3
48	1	12.0	1	12.2	1	8.7	48	.4	108	.8	168	1.3
49	1	12.3	1	12.5	1	9.0	49	.4	109	.8	169	1.3
50	1	12.5	1	12.7	1	9.2	50	.4	110	.8	170	1.3
51	1	12.8	1	13.0	1	9.4	51	.4	111	.8	171	1.3
52	1	13.0	1	13.2	1	9.7	52	.4	112	.8	172	1.3
53	1	13.3	1	13.5	1	9.9	53	.4	113	.8	173	1.3
54	1	13.5	1	13.7	1	10.2	54	.4	114	.9	174	1.3
55	1	13.8	1	14.0	1	10.4	55	.4	115	.9	175	1.3
56	1	14.0	1	14.2	1	10.6	56	.4	116	.9	176	1.3
57	1	14.3	1	14.5	1	10.9	57	.4	117	.9	177	1.3
58	1	14.5	1	14.7	1	11.1	58	.4	118	.9	178	1.3
59	1	14.8	1	15.0	1	11.3	59	.4	119	.9	179	1.3
60	1	15.0	1	15.2	1	11.6	60	.5	120	.9	180	1.4

0 h 5 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	1	15.0	1	15.2	1	11.6	0	.0	60	.6	120	1.1
1	1	15.3	1	15.5	1	11.8	1	.0	61	.6	121	1.1
2	1	15.5	1	15.7	1	12.1	2	.0	62	.6	122	1.1
3	1	15.8	1	16.0	1	12.3	3	.0	63	.6	123	1.1
4	1	16.0	1	16.2	1	12.5	4	.0	64	.6	124	1.1
5	1	16.3	1	16.5	1	12.8	5	.0	65	.6	125	1.1
6	1	16.5	1	16.7	1	13.0	6	.1	66	.6	126	1.2
7	1	16.8	1	17.0	1	13.3	7	.1	67	.6	127	1.2
8	1	17.0	1	17.2	1	13.5	8	.1	68	.6	128	1.2
9	1	17.3	1	17.5	1	13.7	9	.1	69	.6	129	1.2
10	1	17.5	1	17.7	1	14.0	10	.1	70	.6	130	1.2
11	1	17.8	1	18.0	1	14.2	11	.1	71	.7	131	1.2
12	1	18.0	1	18.2	1	14.4	12	.1	72	.7	132	1.2
13	1	18.3	1	18.5	1	14.7	13	.1	73	.7	133	1.2
14	1	18.5	1	18.7	1	14.9	14	.1	74	.7	134	1.2
15	1	18.8	1	19.0	1	15.2	15	.1	75	.7	135	1.2
16	1	19.0	1	19.2	1	15.4	16	.1	76	.7	136	1.2
17	1	19.3	1	19.5	1	15.6	17	.2	77	.7	137	1.3
18	1	19.5	1	19.7	1	15.9	18	.2	78	.7	138	1.3
19	1	19.8	1	20.0	1	16.1	19	.2	79	.7	139	1.3
20	1	20.0	1	20.2	1	16.4	20	.2	80	.7	140	1.3
21	1	20.3	1	20.5	1	16.6	21	.2	81	.7	141	1.3
22	1	20.5	1	20.7	1	16.8	22	.2	82	.8	142	1.3
23	1	20.8	1	21.0	1	17.1	23	.2	83	.8	143	1.3
24	1	21.0	1	21.2	1	17.3	24	.2	84	.8	144	1.3
25	1	21.3	1	21.5	1	17.5	25	.2	85	.8	145	1.3
26	1	21.5	1	21.7	1	17.8	26	.2	86	.8	146	1.3
27	1	21.8	1	22.0	1	18.0	27	.2	87	.8	147	1.3
28	1	22.0	1	22.2	1	18.3	28	.3	88	.8	148	1.4
29	1	22.3	1	22.5	1	18.5	29	.3	89	.8	149	1.4
30	1	22.5	1	22.7	1	18.7	30	.3	90	.8	150	1.4
31	1	22.8	1	23.0	1	19.0	31	.3	91	.8	151	1.4
32	1	23.0	1	23.2	1	19.2	32	.3	92	.8	152	1.4
33	1	23.3	1	23.5	1	19.5	33	.3	93	.9	153	1.4
34	1	23.5	1	23.7	1	19.7	34	.3	94	.9	154	1.4
35	1	23.8	1	24.0	1	19.9	35	.3	95	.9	155	1.4
36	1	24.0	1	24.2	1	20.2	36	.3	96	.9	156	1.4
37	1	24.3	1	24.5	1	20.4	37	.3	97	.9	157	1.4
38	1	24.5	1	24.7	1	20.7	38	.3	98	.9	158	1.4
39	1	24.8	1	25.0	1	20.9	39	.4	99	.9	159	1.5
40	1	25.0	1	25.2	1	21.1	40	.4	100	.9	160	1.5
41	1	25.3	1	25.5	1	21.4	41	.4	101	.9	161	1.5
42	1	25.5	1	25.7	1	21.6	42	.4	102	.9	162	1.5
43	1	25.8	1	26.0	1	21.8	43	.4	103	.9	163	1.5
44	1	26.0	1	26.2	1	22.1	44	.4	104	1.0	164	1.5
45	1	26.3	1	26.5	1	22.3	45	.4	105	1.0	165	1.5
46	1	26.5	1	26.7	1	22.6	46	.4	106	1.0	166	1.5
47	1	26.8	1	27.0	1	22.8	47	.4	107	1.0	167	1.5
48	1	27.0	1	27.2	1	23.0	48	.4	108	1.0	168	1.5
49	1	27.3	1	27.5	1	23.3	49	.4	109	1.0	169	1.5
50	1	27.5	1	27.7	1	23.5	50	.5	110	1.0	170	1.6
51	1	27.8	1	28.0	1	23.8	51	.5	111	1.0	171	1.6
52	1	28.0	1	28.2	1	24.0	52	.5	112	1.0	172	1.6
53	1	28.3	1	28.5	1	24.2	53	.5	113	1.0	173	1.6
54	1	28.5	1	28.7	1	24.5	54	.5	114	1.0	174	1.6
55	1	28.8	1	29.0	1	24.7	55	.5	115	1.1	175	1.6
56	1	29.0	1	29.2	1	24.9	56	.5	116	1.1	176	1.6
57	1	29.3	1	29.5	1	25.2	57	.5	117	1.1	177	1.6
58	1	29.5	1	29.7	1	25.4	58	.5	118	1.1	178	1.6
59	1	29.8	1	30.								

0 h 6 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.					
	o	'	o	'	'	'	'	'				
0	1	30.0	1	30.3	1	25.9	0	.0	60	.7	120	1.3
1	1	30.3	1	30.5	1	26.1	1	.0	61	.7	121	1.3
2	1	30.5	1	30.8	1	26.4	2	.0	62	.7	122	1.3
3	1	30.8	1	31.0	1	26.6	3	.0	63	.7	123	1.3
4	1	31.0	1	31.3	1	26.9	4	.0	64	.7	124	1.3
5	1	31.3	1	31.5	1	27.1	5	.1	65	.7	125	1.4
6	1	31.5	1	31.8	1	27.3	6	.1	66	.7	126	1.4
7	1	31.8	1	32.0	1	27.6	7	.1	67	.7	127	1.4
8	1	32.0	1	32.3	1	27.8	8	.1	68	.7	128	1.4
9	1	32.3	1	32.5	1	28.0	9	.1	69	.7	129	1.4
10	1	32.5	1	32.8	1	28.3	10	.1	70	.8	130	1.4
11	1	32.8	1	33.0	1	28.5	11	.1	71	.8	131	1.4
12	1	33.0	1	33.3	1	28.8	12	.1	72	.8	132	1.4
13	1	33.3	1	33.5	1	29.0	13	.1	73	.8	133	1.4
14	1	33.5	1	33.8	1	29.2	14	.2	74	.8	134	1.5
15	1	33.8	1	34.0	1	29.5	15	.2	75	.8	135	1.5
16	1	34.0	1	34.3	1	29.7	16	.2	76	.8	136	1.5
17	1	34.3	1	34.5	1	30.0	17	.2	77	.8	137	1.5
18	1	34.5	1	34.8	1	30.2	18	.2	78	.8	138	1.5
19	1	34.8	1	35.0	1	30.4	19	.2	79	.9	139	1.5
20	1	35.0	1	35.3	1	30.7	20	.2	80	.9	140	1.5
21	1	35.3	1	35.5	1	30.9	21	.2	81	.9	141	1.5
22	1	35.5	1	35.8	1	31.1	22	.2	82	.9	142	1.5
23	1	35.8	1	36.0	1	31.4	23	.2	83	.9	143	1.5
24	1	36.0	1	36.3	1	31.6	24	.3	84	.9	144	1.6
25	1	36.3	1	36.5	1	31.9	25	.3	85	.9	145	1.6
26	1	36.5	1	36.8	1	32.1	26	.3	86	.9	146	1.6
27	1	36.8	1	37.0	1	32.3	27	.3	87	.9	147	1.6
28	1	37.0	1	37.3	1	32.6	28	.3	88	1.0	148	1.6
29	1	37.3	1	37.5	1	32.8	29	.3	89	1.0	149	1.6
30	1	37.5	1	37.8	1	33.1	30	.3	90	1.0	150	1.6
31	1	37.8	1	38.0	1	33.3	31	.3	91	1.0	151	1.6
32	1	38.0	1	38.3	1	33.5	32	.3	92	1.0	152	1.6
33	1	38.3	1	38.5	1	33.8	33	.4	93	1.0	153	1.7
34	1	38.5	1	38.8	1	34.0	34	.4	94	1.0	154	1.7
35	1	38.8	1	39.0	1	34.3	35	.4	95	1.0	155	1.7
36	1	39.0	1	39.3	1	34.5	36	.4	96	1.0	156	1.7
37	1	39.3	1	39.5	1	34.7	37	.4	97	1.1	157	1.7
38	1	39.5	1	39.8	1	35.0	38	.4	98	1.1	158	1.7
39	1	39.8	1	40.0	1	35.2	39	.4	99	1.1	159	1.7
40	1	40.0	1	40.3	1	35.4	40	.4	100	1.1	160	1.7
41	1	40.3	1	40.5	1	35.7	41	.4	101	1.1	161	1.7
42	1	40.5	1	40.8	1	35.9	42	.5	102	1.1	162	1.8
43	1	40.8	1	41.0	1	36.2	43	.5	103	1.1	163	1.8
44	1	41.0	1	41.3	1	36.4	44	.5	104	1.1	164	1.8
45	1	41.3	1	41.5	1	36.6	45	.5	105	1.1	165	1.8
46	1	41.5	1	41.8	1	36.9	46	.5	106	1.1	166	1.8
47	1	41.8	1	42.0	1	37.1	47	.5	107	1.2	167	1.8
48	1	42.0	1	42.3	1	37.4	48	.5	108	1.2	168	1.8
49	1	42.3	1	42.5	1	37.6	49	.5	109	1.2	169	1.8
50	1	42.5	1	42.8	1	37.8	50	.5	110	1.2	170	1.8
51	1	42.8	1	43.0	1	38.1	51	.6	111	1.2	171	1.9
52	1	43.0	1	43.3	1	38.3	52	.6	112	1.2	172	1.9
53	1	43.3	1	43.5	1	38.5	53	.6	113	1.2	173	1.9
54	1	43.5	1	43.8	1	38.8	54	.6	114	1.2	174	1.9
55	1	43.8	1	44.0	1	39.0	55	.6	115	1.2	175	1.9
56	1	44.0	1	44.3	1	39.3	56	.6	116	1.3	176	1.9
57	1	44.3	1	44.5	1	39.5	57	.6	117	1.3	177	1.9
58	1	44.5	1	44.8	1	39.7	58	.6	118	1.3	178	1.9
59	1	44.8	1	45.0	1	40.0	59	.6	119	1.3	179	1.9
60	1	45.0	1	45.3	1	40.2	60	.7	120	1.3	180	2.0

0 h 7 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.					
	o	'	o	'	'	'	'	'				
0	1	45.0	1	45.3	1	40.2	0	.0	60	.8	120	1.5
1	1	45.3	1	45.5	1	40.5	1	.0	61	.8	121	1.5
2	1	45.5	1	45.8	1	40.7	2	.0	62	.8	122	1.5
3	1	45.8	1	46.0	1	40.9	3	.0	63	.8	123	1.5
4	1	46.0	1	46.3	1	41.2	4	.1	64	.8	124	1.6
5	1	46.3	1	46.5	1	41.4	5	.1	65	.8	125	1.6
6	1	46.5	1	46.8	1	41.6	6	.1	66	.8	126	1.6
7	1	46.8	1	47.0	1	41.9	7	.1	67	.8	127	1.6
8	1	47.0	1	47.3	1	42.1	8	.1	68	.9	128	1.6
9	1	47.3	1	47.5	1	42.4	9	.1	69	.9	129	1.6
10	1	47.5	1	47.8	1	42.6	10	.1	70	.9	130	1.6
11	1	47.8	1	48.0	1	42.8	11	.1	71	.9	131	1.6
12	1	48.0	1	48.3	1	43.1	12	.2	72	.9	132	1.7
13	1	48.3	1	48.6	1	43.3	13	.2	73	.9	133	1.7
14	1	48.5	1	48.8	1	43.6	14	.2	74	.9	134	1.7
15	1	48.8	1	49.1	1	43.8	15	.2	75	.9	135	1.7
16	1	49.0	1	49.3	1	44.0	16	.2	76	1.0	136	1.7
17	1	49.3	1	49.6	1	44.3	17	.2	77	1.0	137	1.7
18	1	49.5	1	49.8	1	44.5	18	.2	78	1.0	138	1.7
19	1	49.8	1	50.1	1	44.8	19	.2	79	1.0	139	1.7
20	1	50.0	1	50.3	1	45.0	20	.3	80	1.0	140	1.8
21	1	50.3	1	50.6	1	45.2	21	.3	81	1.0	141	1.8
22	1	50.5	1	50.8	1	45.5	22	.3	82	1.0	142	1.8
23	1	50.8	1	51.1	1	45.7	23	.3	83	1.0	143	1.8
24	1	51.0	1	51.3	1	45.9	24	.3	84	1.1	144	1.8
25	1	51.3	1	51.6	1	46.2	25	.3	85	1.1	145	1.8
26	1	51.5	1	51.8	1	46.4	26	.3	86	1.1	146	1.8
27	1	51.8	1	52.1	1	46.7	27	.3	87	1.1	147	1.8
28	1	52.0	1	52.3	1	46.9	28	.4	88	1.1	148	1.9
29	1	52.3	1	52.6	1	47.1	29	.4	89	1.1	149	1.9
30	1	52.5	1	52.8	1	47.4	30	.4	90	1.1	150	1.9
31	1	52.8	1	53.1	1	47.6	31	.4	91	1.1	151	1.9
32	1	53.0	1	53.3	1	47.9	32	.4	92	1.2	152	1.9
33	1	53.3	1	53.6	1	48.1	33	.4	93	1.2	153	1.9
34	1	53.5	1	53.8	1	48.3	34	.4	94	1.2	154	1.9
35	1	53.8	1	54.1	1	48.6	35	.4	95	1.2	155	1.9
36	1	54.0	1	54.3	1	48.8	36	.5	96	1.2	156	2.0
37	1	54.3	1	54.6	1	49.0	37	.5	97	1.2	157	2.0
38	1	54.5	1	54.8	1	49.3	38	.5	98	1.2	158	2.0
39	1	54.8	1	55.1	1	49.5	39	.5	99	1.2	159	2.0
40	1	55.0	1	55.3	1	49.8	40	.5	100	1.3	160	2.0
41	1	55.3	1	55.6	1	50.0	41	.5	101	1.3	161	2.0
42	1	55.5	1	55.8	1	50.2	42	.5	102	1.3	162	2.0
43	1	55.8	1	56.1	1	50.5	43	.5	103	1.3	163	2.0
44	1	56.0	1	56.3	1	50.7	44	.6	104	1.3	164	2.1
45	1	56.3	1	56.6	1	51.0	45	.6	105	1.3	165	2.1
46	1	56.5	1	56.8	1	51.2	46	.6	106	1.3	166	2.1
47	1	56.8	1	57.1	1	51.4	47	.6	107	1.3	167	2.1
48	1	57.0	1	57.3	1	51.7	48	.6	108	1.4	168	2.1
49	1	57.3	1	57.6	1	51.9	49	.6	109	1.4	169	2.1
50	1	57.5	1	57.8	1	52.1	50	.6	110	1.4	170	2.1
51	1	57.8	1	58.1	1	52.4	51	.6	111	1.4	171	2.1
52	1	58.0	1	58.3	1	52.6	52	.7	112	1.4	172	2.2
53	1	58.3	1	58.6	1	52.9	53	.7	113	1.4	173	2.2
54	1	58.5	1	58.8	1	53.1	54	.7	114	1.4	174	2.2
55	1	58.8	1	59.1	1	53.3	55	.7	115	1.4	175	2.2
56	1	59.0	1	59.3	1	53.6	56	.7	11			

0 h 8 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	2	.0	2	.3	1	54.5	0	.0	60	.9	120	1.7
1	2	.3	2	.6	1	54.8	1	.0	61	.9	121	1.7
2	2	.5	2	.8	1	55.0	2	.0	62	.9	122	1.7
3	2	.8	2	1.1	1	55.2	3	.0	63	.9	123	1.7
4	2	1.0	2	1.3	1	55.5	4	.1	64	.9	124	1.8
5	2	1.3	2	1.6	1	55.7	5	.1	65	.9	125	1.8
6	2	1.5	2	1.8	1	56.0	6	.1	66	.9	126	1.8
7	2	1.8	2	2.1	1	56.2	7	.1	67	.9	127	1.8
8	2	2.0	2	2.3	1	56.4	8	.1	68	1.0	128	1.8
9	2	2.3	2	2.6	1	56.7	9	.1	69	1.0	129	1.8
10	2	2.5	2	2.8	1	56.9	10	.1	70	1.0	130	1.8
11	2	2.8	2	3.1	1	57.2	11	.2	71	1.0	131	1.9
12	2	3.0	2	3.3	1	57.4	12	.2	72	1.0	132	1.9
13	2	3.3	2	3.6	1	57.6	13	.2	73	1.0	133	1.9
14	2	3.5	2	3.8	1	57.9	14	.2	74	1.0	134	1.9
15	2	3.8	2	4.1	1	58.1	15	.2	75	1.1	135	1.9
16	2	4.0	2	4.3	1	58.4	16	.2	76	1.1	136	1.9
17	2	4.3	2	4.6	1	58.6	17	.2	77	1.1	137	1.9
18	2	4.5	2	4.8	1	58.8	18	.3	78	1.1	138	2.0
19	2	4.8	2	5.1	1	59.1	19	.3	79	1.1	139	2.0
20	2	5.0	2	5.3	1	59.3	20	.3	80	1.1	140	2.0
21	2	5.3	2	5.6	1	59.5	21	.3	81	1.1	141	2.0
22	2	5.5	2	5.8	1	59.8	22	.3	82	1.2	142	2.0
23	2	5.8	2	6.1	2	.0	23	.3	83	1.2	143	2.0
24	2	6.0	2	6.4	2	.3	24	.3	84	1.2	144	2.0
25	2	6.3	2	6.6	2	.5	25	.4	85	1.2	145	2.1
26	2	6.5	2	6.9	2	.7	26	.4	86	1.2	146	2.1
27	2	6.8	2	7.1	2	1.0	27	.4	87	1.2	147	2.1
28	2	7.0	2	7.4	2	1.2	28	.4	88	1.2	148	2.1
29	2	7.3	2	7.6	2	1.5	29	.4	89	1.3	149	2.1
30	2	7.5	2	7.9	2	1.7	30	.4	90	1.3	150	2.1
31	2	7.8	2	8.1	2	1.9	31	.4	91	1.3	151	2.1
32	2	8.0	2	8.4	2	2.2	32	.5	92	1.3	152	2.2
33	2	8.3	2	8.6	2	2.4	33	.5	93	1.3	153	2.2
34	2	8.5	2	8.9	2	2.6	34	.5	94	1.3	154	2.2
35	2	8.8	2	9.1	2	2.9	35	.5	95	1.3	155	2.2
36	2	9.0	2	9.4	2	3.1	36	.5	96	1.4	156	2.2
37	2	9.3	2	9.6	2	3.4	37	.5	97	1.4	157	2.2
38	2	9.5	2	9.9	2	3.6	38	.5	98	1.4	158	2.2
39	2	9.8	2	10.1	2	3.8	39	.6	99	1.4	159	2.3
40	2	10.0	2	10.4	2	4.1	40	.6	100	1.4	160	2.3
41	2	10.3	2	10.6	2	4.3	41	.6	101	1.4	161	2.3
42	2	10.5	2	10.9	2	4.6	42	.6	102	1.4	162	2.3
43	2	10.8	2	11.1	2	4.8	43	.6	103	1.5	163	2.3
44	2	11.0	2	11.4	2	5.0	44	.6	104	1.5	164	2.3
45	2	11.3	2	11.6	2	5.3	45	.6	105	1.5	165	2.3
46	2	11.5	2	11.9	2	5.5	46	.7	106	1.5	166	2.4
47	2	11.8	2	12.1	2	5.7	47	.7	107	1.5	167	2.4
48	2	12.0	2	12.4	2	6.0	48	.7	108	1.5	168	2.4
49	2	12.3	2	12.6	2	6.2	49	.7	109	1.5	169	2.4
50	2	12.5	2	12.9	2	6.5	50	.7	110	1.6	170	2.4
51	2	12.8	2	13.1	2	6.7	51	.7	111	1.6	171	2.4
52	2	13.0	2	13.4	2	6.9	52	.7	112	1.6	172	2.4
53	2	13.3	2	13.6	2	7.2	53	.8	113	1.6	173	2.5
54	2	13.5	2	13.9	2	7.4	54	.8	114	1.6	174	2.5
55	2	13.8	2	14.1	2	7.7	55	.8	115	1.6	175	2.5
56	2	14.0	2	14.4	2	7.9	56	.8	116	1.6	176	2.5
57	2	14.3	2	14.6	2	8.1	57	.8	117	1.7	177	2.5
58	2	14.5	2	14.9	2	8.4	58	.8	118	1.7	178	2.5
59	2	14.8	2	15.1	2	8.6	59	.8	119	1.7	179	2.5
60	2	15.0	2	15.4	2	8.9	60	.9	120	1.7	180	2.6

0 h 9 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	2	15.0	2	15.4	2	8.9	0	.0	60	1.0	120	1.9
1	2	15.3	2	15.6	2	9.1	1	.0	61	1.0	121	1.9
2	2	15.5	2	15.9	2	9.3	2	.0	62	1.0	122	1.9
3	2	15.8	2	16.1	2	9.6	3	.0	63	1.0	123	1.9
4	2	16.0	2	16.4	2	9.8	4	.1	64	1.0	124	2.0
5	2	16.3	2	16.6	2	10.0	5	.1	65	1.0	125	2.0
6	2	16.5	2	16.9	2	10.3	6	.1	66	1.0	126	2.0
7	2	16.8	2	17.1	2	10.5	7	.1	67	1.1	127	2.0
8	2	17.0	2	17.4	2	10.8	8	.1	68	1.1	128	2.0
9	2	17.3	2	17.6	2	11.0	9	.1	69	1.1	129	2.0
10	2	17.5	2	17.9	2	11.2	10	.2	70	1.1	130	2.1
11	2	17.8	2	18.1	2	11.5	11	.2	71	1.1	131	2.1
12	2	18.0	2	18.4	2	11.7	12	.2	72	1.1	132	2.1
13	2	18.3	2	18.6	2	12.0	13	.2	73	1.2	133	2.1
14	2	18.5	2	18.9	2	12.2	14	.2	74	1.2	134	2.1
15	2	18.8	2	19.1	2	12.4	15	.2	75	1.2	135	2.1
16	2	19.0	2	19.4	2	12.7	16	.3	76	1.2	136	2.2
17	2	19.3	2	19.6	2	12.9	17	.3	77	1.2	137	2.2
18	2	19.5	2	19.9	2	13.1	18	.3	78	1.2	138	2.2
19	2	19.8	2	20.1	2	13.4	19	.3	79	1.3	139	2.2
20	2	20.0	2	20.4	2	13.6	20	.3	80	1.3	140	2.2
21	2	20.3	2	20.6	2	13.9	21	.3	81	1.3	141	2.2
22	2	20.5	2	20.9	2	14.1	22	.3	82	1.3	142	2.2
23	2	20.8	2	21.1	2	14.3	23	.4	83	1.3	143	2.2
24	2	21.0	2	21.4	2	14.6	24	.4	84	1.3	144	2.3
25	2	21.3	2	21.6	2	14.8	25	.4	85	1.3	145	2.3
26	2	21.5	2	21.9	2	15.1	26	.4	86	1.4	146	2.3
27	2	21.8	2	22.1	2	15.3	27	.4	87	1.4	147	2.3
28	2	22.0	2	22.4	2	15.5	28	.4	88	1.4	148	2.3
29	2	22.3	2	22.6	2	15.8	29	.5	89	1.4	149	2.4
30	2	22.5	2	22.9	2	16.0	30	.5	90	1.4	150	2.4
31	2	22.8	2	23.1	2	16.2	31	.5	91	1.4	151	2.4
32	2	23.0	2	23.4	2	16.5	32	.5	92	1.5	152	2.4
33	2	23.3	2	23.6	2	16.7	33	.5	93	1.5	153	2.4
34	2	23.5	2	23.9	2	17.0	34	.5	94	1.5	154	2.4
35	2	23.8	2	24.1	2	17.2	35	.6	95	1.5	155	2.5
36	2	24.0	2	24.4	2	17.4	36	.6	96	1.5	156	2.5
37	2	24.3	2	24.7	2	17.7	37	.6	97	1.5	157	2.5
38	2	24.5	2	24.9	2	17.9	38	.6	98	1.6	158	2.5
39	2	24.8	2	25.2	2	18.2	39	.6	99	1.6	159	2.5
40	2	25.0	2	25.4	2	18.4	40	.6	100	1.6	160	2.5
41	2	25.3	2	25.7	2	18.6	41	.6	101	1.6	161	2.5
42	2	25.5	2	25.9	2	18.9	42	.7	102	1.6	162	2.6
43	2	25.8	2	26.2	2	19.1	43	.7	103	1.6	163	2.6
44	2	26.0	2	26.4	2	19.3	44	.7	104	1.6	164	2.6
45	2	26.3	2	26.7	2	19.6	45	.7	105	1.7	165	2.6
46	2	26.5	2	26.9	2	19.8	46	.7	106	1.7	166	2.6
47	2	26.8	2	27.2	2	20.1	47	.7	107	1.7	167	2.6
48	2	27.0	2	27.4	2	20.3	48	.8	108	1.7	168	2.7
49	2	27.3	2	27.7	2	20.5	49	.8	109	1.7	169	2.7
50	2	27.5	2	27.9	2	20.8	50	.8	110	1.7	170	2.7
51	2	27.8	2	28.2	2	21.0	51	.8	111	1.8	171	2.7
52	2	28.0	2	28.4	2	21.3	52	.8	112	1.8	172	2.7
53	2	28.3	2	28.7	2	21.5	53	.8	113	1.8	173	2.7
54	2	28.5	2	28.9	2	21.7	54	.9	114	1.8	174	2.8
55	2	28.8	2	29.2	2	22.0	55	.9	115	1.8	175	2.8
56	2	29.0	2	29.4	2	22.2	56	.9	11			

0 h 10 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	2 30.0	2 30.4	2 23.2	0 .0	60 1.1	120 2.1	
1	2 30.3	2 30.7	2 23.4	1 .0	61 1.1	121 2.1	
2	2 30.5	2 30.9	2 23.6	2 .0	62 1.1	122 2.1	
3	2 30.8	2 31.2	2 23.9	3 .1	63 1.1	123 2.2	
4	2 31.0	2 31.4	2 24.1	4 .1	64 1.1	124 2.2	
5	2 31.3	2 31.7	2 24.4	5 .1	65 1.1	125 2.2	
6	2 31.5	2 31.9	2 24.6	6 .1	66 1.2	126 2.2	
7	2 31.8	2 32.2	2 24.8	7 .1	67 1.2	127 2.2	
8	2 32.0	2 32.4	2 25.1	8 .1	68 1.2	128 2.2	
9	2 32.3	2 32.7	2 25.3	9 .2	69 1.2	129 2.3	
10	2 32.5	2 32.9	2 25.6	10 .2	70 1.2	130 2.3	
11	2 32.8	2 33.2	2 25.8	11 .2	71 1.2	131 2.3	
12	2 33.0	2 33.4	2 26.0	12 .2	72 1.3	132 2.3	
13	2 33.3	2 33.7	2 26.3	13 .2	73 1.3	133 2.3	
14	2 33.5	2 33.9	2 26.5	14 .2	74 1.3	134 2.3	
15	2 33.8	2 34.2	2 26.7	15 .3	75 1.3	135 2.4	
16	2 34.0	2 34.4	2 27.0	16 .3	76 1.3	136 2.4	
17	2 34.3	2 34.7	2 27.2	17 .3	77 1.3	137 2.4	
18	2 34.5	2 34.9	2 27.5	18 .3	78 1.4	138 2.4	
19	2 34.8	2 35.2	2 27.7	19 .3	79 1.4	139 2.4	
20	2 35.0	2 35.4	2 27.9	20 .4	80 1.4	140 2.5	
21	2 35.3	2 35.7	2 28.2	21 .4	81 1.4	141 2.5	
22	2 35.5	2 35.9	2 28.4	22 .4	82 1.4	142 2.5	
23	2 35.8	2 36.2	2 28.7	23 .4	83 1.5	143 2.5	
24	2 36.0	2 36.4	2 28.9	24 .4	84 1.5	144 2.5	
25	2 36.3	2 36.7	2 29.1	25 .4	85 1.5	145 2.5	
26	2 36.5	2 36.9	2 29.4	26 .5	86 1.5	146 2.6	
27	2 36.8	2 37.2	2 29.6	27 .5	87 1.5	147 2.6	
28	2 37.0	2 37.4	2 29.8	28 .5	88 1.5	148 2.6	
29	2 37.3	2 37.7	2 30.1	29 .5	89 1.6	149 2.6	
30	2 37.5	2 37.9	2 30.3	30 .5	90 1.6	150 2.6	
31	2 37.8	2 38.2	2 30.6	31 .5	91 1.6	151 2.6	
32	2 38.0	2 38.4	2 30.8	32 .6	92 1.6	152 2.7	
33	2 38.3	2 38.7	2 31.0	33 .6	93 1.6	153 2.7	
34	2 38.5	2 38.9	2 31.3	34 .6	94 1.6	154 2.7	
35	2 38.8	2 39.2	2 31.5	35 .6	95 1.7	155 2.7	
36	2 39.0	2 39.4	2 31.8	36 .6	96 1.7	156 2.7	
37	2 39.3	2 39.7	2 32.0	37 .6	97 1.7	157 2.7	
38	2 39.5	2 39.9	2 32.2	38 .7	98 1.7	158 2.8	
39	2 39.8	2 40.2	2 32.5	39 .7	99 1.7	159 2.8	
40	2 40.0	2 40.4	2 32.7	40 .7	100 1.8	160 2.8	
41	2 40.3	2 40.7	2 32.9	41 .7	101 1.8	161 2.8	
42	2 40.5	2 40.9	2 33.2	42 .7	102 1.8	162 2.8	
43	2 40.8	2 41.2	2 33.4	43 .8	103 1.8	163 2.9	
44	2 41.0	2 41.4	2 33.7	44 .8	104 1.8	164 2.9	
45	2 41.3	2 41.7	2 33.9	45 .8	105 1.8	165 2.9	
46	2 41.5	2 41.9	2 34.1	46 .8	106 1.9	166 2.9	
47	2 41.8	2 42.2	2 34.4	47 .8	107 1.9	167 2.9	
48	2 42.0	2 42.5	2 34.6	48 .8	108 1.9	168 2.9	
49	2 42.3	2 42.7	2 34.9	49 .9	109 1.9	169 3.0	
50	2 42.5	2 43.0	2 35.1	50 .9	110 1.9	170 3.0	
51	2 42.8	2 43.2	2 35.3	51 .9	111 1.9	171 3.0	
52	2 43.0	2 43.5	2 35.6	52 .9	112 2.0	172 3.0	
53	2 43.3	2 43.7	2 35.8	53 .9	113 2.0	173 3.0	
54	2 43.5	2 44.0	2 36.1	54 .9	114 2.0	174 3.0	
55	2 43.8	2 44.2	2 36.3	55 1.0	115 2.0	175 3.1	
56	2 44.0	2 44.5	2 36.5	56 1.0	116 2.0	176 3.1	
57	2 44.3	2 44.7	2 36.8	57 1.0	117 2.0	177 3.1	
58	2 44.5	2 45.0	2 37.0	58 1.0	118 2.1	178 3.1	
59	2 44.8	2 45.2	2 37.2	59 1.0	119 2.1	179 3.1	
60	2 45.0	2 45.5	2 37.5	60 1.1	120 2.1	180 3.2	

0 h 11 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	2 45.0	2 45.5	2 37.5	0 .0	60 1.2	120 2.3	
1	2 45.3	2 45.7	2 37.7	1 .0	61 1.2	121 2.3	
2	2 45.5	2 46.0	2 38.0	2 .0	62 1.2	122 2.3	
3	2 45.8	2 46.2	2 38.2	3 .1	63 1.2	123 2.4	
4	2 46.0	2 46.5	2 38.4	4 .1	64 1.2	124 2.4	
5	2 46.3	2 46.7	2 38.7	5 .1	65 1.2	125 2.4	
6	2 46.5	2 47.0	2 38.9	6 .1	66 1.3	126 2.4	
7	2 46.8	2 47.2	2 39.2	7 .1	67 1.3	127 2.4	
8	2 47.0	2 47.5	2 39.4	8 .2	68 1.3	128 2.5	
9	2 47.3	2 47.7	2 39.6	9 .2	69 1.3	129 2.5	
10	2 47.5	2 48.0	2 39.9	10 .2	70 1.3	130 2.5	
11	2 47.8	2 48.2	2 40.1	11 .2	71 1.4	131 2.5	
12	2 48.0	2 48.5	2 40.3	12 .2	72 1.4	132 2.5	
13	2 48.3	2 48.7	2 40.6	13 .2	73 1.4	133 2.5	
14	2 48.5	2 49.0	2 40.8	14 .3	74 1.4	134 2.6	
15	2 48.8	2 49.2	2 41.1	15 .3	75 1.4	135 2.6	
16	2 49.0	2 49.5	2 41.3	16 .3	76 1.5	136 2.6	
17	2 49.3	2 49.7	2 41.5	17 .3	77 1.5	137 2.6	
18	2 49.5	2 50.0	2 41.8	18 .3	78 1.5	138 2.6	
19	2 49.8	2 50.2	2 42.0	19 .4	79 1.5	139 2.7	
20	2 50.0	2 50.5	2 42.3	20 .4	80 1.5	140 2.7	
21	2 50.3	2 50.7	2 42.5	21 .4	81 1.6	141 2.7	
22	2 50.5	2 51.0	2 42.7	22 .4	82 1.6	142 2.7	
23	2 50.8	2 51.2	2 43.0	23 .4	83 1.6	143 2.7	
24	2 51.0	2 51.5	2 43.2	24 .5	84 1.6	144 2.8	
25	2 51.3	2 51.7	2 43.4	25 .5	85 1.6	145 2.8	
26	2 51.5	2 52.0	2 43.7	26 .5	86 1.6	146 2.8	
27	2 51.8	2 52.2	2 43.9	27 .5	87 1.7	147 2.8	
28	2 52.0	2 52.5	2 44.2	28 .5	88 1.7	148 2.8	
29	2 52.3	2 52.7	2 44.4	29 .6	89 1.7	149 2.9	
30	2 52.5	2 53.0	2 44.6	30 .6	90 1.7	150 2.9	
31	2 52.8	2 53.2	2 44.9	31 .6	91 1.7	151 2.9	
32	2 53.0	2 53.5	2 45.1	32 .6	92 1.8	152 2.9	
33	2 53.3	2 53.7	2 45.4	33 .6	93 1.8	153 2.9	
34	2 53.5	2 54.0	2 45.6	34 .7	94 1.8	154 3.0	
35	2 53.8	2 54.2	2 45.8	35 .7	95 1.8	155 3.0	
36	2 54.0	2 54.5	2 46.1	36 .7	96 1.8	156 3.0	
37	2 54.3	2 54.7	2 46.3	37 .7	97 1.9	157 3.0	
38	2 54.5	2 55.0	2 46.6	38 .7	98 1.9	158 3.0	
39	2 54.8	2 55.2	2 46.8	39 .7	99 1.9	159 3.0	
40	2 55.0	2 55.5	2 47.0	40 .8	100 1.9	160 3.1	
41	2 55.3	2 55.7	2 47.3	41 .8	101 1.9	161 3.1	
42	2 55.5	2 56.0	2 47.5	42 .8	102 2.0	162 3.1	
43	2 55.8	2 56.2	2 47.7	43 .8	103 2.0	163 3.1	
44	2 56.0	2 56.5	2 48.0	44 .8	104 2.0	164 3.1	
45	2 56.3	2 56.7	2 48.2	45 .9	105 2.0	165 3.2	
46	2 56.5	2 57.0	2 48.5	46 .9	106 2.0	166 3.2	
47	2 56.8	2 57.2	2 48.7	47 .9	107 2.1	167 3.2	
48	2 57.0	2 57.5	2 48.9	48 .9	108 2.1	168 3.2	
49	2 57.3	2 57.7	2 49.2	49 .9	109 2.1	169 3.2	
50	2 57.5	2 58.0	2 49.4	50 1.0	110 2.1	170 3.3	
51	2 57.8	2 58.2	2 49.7	51 1.0	111 2.1	171 3.3	
52	2 58.0	2 58.5	2 49.9	52 1.0	112 2.1	172 3.3	
53	2 58.3	2 58.7	2 50.1	53 1.0	113 2.2	173 3.3	
54	2 58.5	2 59.0	2 50.4	54 1.0	114 2.2	174 3.3	
55	2 58.8	2 59.2	2 50.6	55 1.1	115 2.2	175 3.4	
56	2 59.0	2 59.5	2 50.8	56 1.1	116 2.2	176 3.4	
57	2 59.3	2 59.7	2 51.1	57 1.1	117 2.2	177 3.4	
58	2 59.5	2 60.0	2 51.3	58 1.1	118 2.3	178 3.4	
59	2 59.8	3 .2	2 51.6	59 1.1	119 2.3	179 3.4	
60	3 .0	3 .5	2 51.8	60 1.2	120 2.3	180 3.5	

0 h 12 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.	
	° /	° /	° /	/	/	/	
0	3 .0	3 .5	2 51.8	0 .0	60 1.3	120 2.5	
1	3 .3	3 .8	2 52.0	1 .0	61 1.3	121 2.5	
2	3 .5	3 1.0	2 52.3	2 .0	62 1.3	122 2.5	
3	3 .8	3 1.3	2 52.5	3 .1	63 1.3	123 2.6	
4	3 1.0	3 1.5	2 52.8	4 .1	64 1.3	124 2.6	
5	3 1.3	3 1.8	2 53.0	5 .1	65 1.4	125 2.6	
6	3 1.5	3 2.0	2 53.2	6 .1	66 1.4	126 2.6	
7	3 1.8	3 2.3	2 53.5	7 .1	67 1.4	127 2.6	
8	3 2.0	3 2.5	2 53.7	8 .2	68 1.4	128 2.7	
9	3 2.3	3 2.8	2 53.9	9 .2	69 1.4	129 2.7	
10	3 2.5	3 3.0	2 54.2	10 .2	70 1.5	130 2.7	
11	3 2.8	3 3.3	2 54.4	11 .2	71 1.5	131 2.7	
12	3 3.0	3 3.5	2 54.7	12 .3	72 1.5	132 2.8	
13	3 3.3	3 3.8	2 54.9	13 .3	73 1.5	133 2.8	
14	3 3.5	3 4.0	2 55.1	14 .3	74 1.5	134 2.8	
15	3 3.8	3 4.3	2 55.4	15 .3	75 1.6	135 2.8	
16	3 4.0	3 4.5	2 55.6	16 .3	76 1.6	136 2.8	
17	3 4.3	3 4.8	2 55.9	17 .4	77 1.6	137 2.9	
18	3 4.5	3 5.0	2 56.1	18 .4	78 1.6	138 2.9	
19	3 4.8	3 5.3	2 56.3	19 .4	79 1.6	139 2.9	
20	3 5.0	3 5.5	2 56.6	20 .4	80 1.7	140 2.9	
21	3 5.3	3 5.8	2 56.8	21 .4	81 1.7	141 2.9	
22	3 5.5	3 6.0	2 57.0	22 .5	82 1.7	142 3.0	
23	3 5.8	3 6.3	2 57.3	23 .5	83 1.7	143 3.0	
24	3 6.0	3 6.5	2 57.5	24 .5	84 1.8	144 3.0	
25	3 6.3	3 6.8	2 57.8	25 .5	85 1.8	145 3.0	
26	3 6.5	3 7.0	2 58.0	26 .5	86 1.8	146 3.0	
27	3 6.8	3 7.3	2 58.2	27 .6	87 1.8	147 3.1	
28	3 7.0	3 7.5	2 58.5	28 .6	88 1.8	148 3.1	
29	3 7.3	3 7.8	2 58.7	29 .6	89 1.9	149 3.1	
30	3 7.5	3 8.0	2 59.0	30 .6	90 1.9	150 3.1	
31	3 7.8	3 8.3	2 59.2	31 .6	91 1.9	151 3.1	
32	3 8.0	3 8.5	2 59.4	32 .7	92 1.9	152 3.2	
33	3 8.3	3 8.8	2 59.7	33 .7	93 1.9	153 3.2	
34	3 8.5	3 9.0	2 59.9	34 .7	94 2.0	154 3.2	
35	3 8.8	3 9.3	3 .2 35	.7 95	2.0 155	3.2 3.2	
36	3 9.0	3 9.5	3 .4 36	.8 96	2.0 156	3.3 3.3	
37	3 9.3	3 9.8	3 .6 37	.8 97	2.0 157	3.3 3.3	
38	3 9.5	3 10.0	3 .9 38	.8 98	2.0 158	3.3 3.3	
39	3 9.8	3 10.3	3 1.1 39	.8 99	2.1 159	3.3 3.3	
40	3 10.0	3 10.5	3 1.3 40	.8 100	2.1 160	3.3 3.3	
41	3 10.3	3 10.8	3 1.6 41	.9 101	2.1 161	3.4 3.4	
42	3 10.5	3 11.0	3 1.8 42	.9 102	2.1 162	3.4 3.4	
43	3 10.8	3 11.3	3 2.1 43	.9 103	2.1 163	3.4 3.4	
44	3 11.0	3 11.5	3 2.3 44	.9 104	2.2 164	3.4 3.4	
45	3 11.3	3 11.8	3 2.5 45	.9 105	2.2 165	3.4 3.4	
46	3 11.5	3 12.0	3 2.8 46	1.0 106	2.2 166	3.5 3.5	
47	3 11.8	3 12.3	3 3.0 47	1.0 107	2.2 167	3.5 3.5	
48	3 12.0	3 12.5	3 3.3 48	1.0 108	2.3 168	3.5 3.5	
49	3 12.3	3 12.8	3 3.5 49	1.0 109	2.3 169	3.5 3.5	
50	3 12.5	3 13.0	3 3.7 50	1.0 110	2.3 170	3.5 3.5	
51	3 12.8	3 13.3	3 4.0 51	1.1 111	2.3 171	3.6 3.6	
52	3 13.0	3 13.5	3 4.2 52	1.1 112	2.3 172	3.6 3.6	
53	3 13.3	3 13.8	3 4.4 53	1.1 113	2.4 173	3.6 3.6	
54	3 13.5	3 14.0	3 4.7 54	1.1 114	2.4 174	3.6 3.6	
55	3 13.8	3 14.3	3 4.9 55	1.1 115	2.4 175	3.6 3.6	
56	3 14.0	3 14.5	3 5.2 56	1.2 116	2.4 176	3.7 3.7	
57	3 14.3	3 14.8	3 5.4 57	1.2 117	2.4 177	3.7 3.7	
58	3 14.5	3 15.0	3 5.6 58	1.2 118	2.5 178	3.7 3.7	
59	3 14.8	3 15.3	3 5.9 59	1.2 119	2.5 179	3.7 3.7	
60	3 15.0	3 15.5	3 6.1 60	1.3 120	2.5 180	3.8 3.8	

0 h 13 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.	
	° /	° /	° /	/	/	/	
0	3 15.0	3 15.5	3 6.1	0 .0	60 1.4	120 2.7	
1	3 15.3	3 15.8	3 6.4	1 .0	61 1.4	121 2.7	
2	3 15.5	3 16.0	3 6.6	2 .0	62 1.4	122 2.7	
3	3 15.8	3 16.3	3 6.8	3 .1	63 1.4	123 2.8	
4	3 16.0	3 16.5	3 7.1	4 .1	64 1.4	124 2.8	
5	3 16.3	3 16.8	3 7.3	5 .1	65 1.5	125 2.8	
6	3 16.5	3 17.0	3 7.5	6 .1	66 1.5	126 2.8	
7	3 16.8	3 17.3	3 7.8	7 .2	67 1.5	127 2.9	
8	3 17.0	3 17.5	3 8.0	8 .2	68 1.5	128 2.9	
9	3 17.3	3 17.8	3 8.3	9 .2	69 1.6	129 2.9	
10	3 17.5	3 18.0	3 8.5	10 .2	70 1.6	130 2.9	
11	3 17.8	3 18.3	3 8.7	11 .2	71 1.6	131 2.9	
12	3 18.0	3 18.6	3 9.0	12 .3	72 1.6	132 3.0	
13	3 18.3	3 18.8	3 9.2	13 .3	73 1.6	133 3.0	
14	3 18.5	3 19.1	3 9.5	14 .3	74 1.7	134 3.0	
15	3 18.8	3 19.3	3 9.7	15 .3	75 1.7	135 3.0	
16	3 19.0	3 19.6	3 9.9	16 .4	76 1.7	136 3.1	
17	3 19.3	3 19.8	3 10.2	17 .4	77 1.7	137 3.1	
18	3 19.5	3 20.1	3 10.4	18 .4	78 1.8	138 3.1	
19	3 19.8	3 20.3	3 10.7	19 .4	79 1.8	139 3.1	
20	3 20.0	3 20.6	3 10.9	20 .5	80 1.8	140 3.2	
21	3 20.3	3 20.8	3 11.1	21 .5	81 1.8	141 3.2	
22	3 20.5	3 21.1	3 11.4	22 .5	82 1.8	142 3.2	
23	3 20.8	3 21.3	3 11.6	23 .5	83 1.9	143 3.2	
24	3 21.0	3 21.6	3 11.8	24 .5	84 1.9	144 3.2	
25	3 21.3	3 21.8	3 12.1	25 .6	85 1.9	145 3.3	
26	3 21.5	3 22.1	3 12.3	26 .6	86 1.9	146 3.3	
27	3 21.8	3 22.3	3 12.6	27 .6	87 2.0	147 3.3	
28	3 22.0	3 22.6	3 12.8	28 .6	88 2.0	148 3.3	
29	3 22.3	3 22.8	3 13.0	29 .7	89 2.0	149 3.4	
30	3 22.5	3 23.1	3 13.3	30 .7	90 2.0	150 3.4	
31	3 22.8	3 23.3	3 13.5	31 .7	91 2.0	151 3.4	
32	3 23.0	3 23.6	3 13.8	32 .7	92 2.1	152 3.4	
33	3 23.3	3 23.8	3 14.0	33 .7	93 2.1	153 3.4	
34	3 23.5	3 24.1	3 14.2	34 .8	94 2.1	154 3.5	
35	3 23.8	3 24.3	3 14.5	35 .8	95 2.1	155 3.5	
36	3 24.0	3 24.6	3 14.7	36 .8	96 2.2	156 3.5	
37	3 24.3	3 24.8	3 14.9	37 .8	97 2.2	157 3.5	
38	3 24.5	3 25.1	3 15.2	38 .9	98 2.2	158 3.6	
39	3 24.8	3 25.3	3 15.4	39 .9	99 2.2	159 3.6	
40	3 25.0	3 25.6	3 15.7	40 .9	100 2.3	160 3.6	
41	3 25.3	3 25.8	3 15.9	41 .9	101 2.3	161 3.6	
42	3 25.5	3 26.1	3 16.1	42 .9	102 2.3	162 3.6	
43	3 25.8	3 26.3	3 16.4	43 1.0	103 2.3	163 3.7	
44	3 26.0	3 26.6	3 16.6	44 1.0	104 2.3	164 3.7	
45	3 26.3	3 26.8	3 16.9	45 1.0	105 2.4	165 3.7	
46	3 26.5	3 27.1	3 17.1	46 1.0	106 2.4	166 3.7	
47	3 26.8	3 27.3	3 17.3	47 1.1	107 2.4	167 3.8	
48	3 27.0	3 27.6	3 17.6	48 1.1	108 2.4	168 3.8	
49	3 27.3	3 27.8	3 17.8	49 1.1	109 2.5	169 3.8	
50	3 27.5	3 28.1	3 18.0	50 1.1	110 2.5	170 3.8	
51	3 27.8	3 28.3	3 18.3	51 1.1	111 2.5	171 3.8	
52	3 28.0	3 28.6	3 18.5	52 1.2	112 2.5	172 3.9	
53	3 28.3	3 28.8	3 18.8	53 1.2	113 2.5	173 3.9	
54	3 28.5	3 29.1	3 19.0	54 1.2	114 2.6	174 3.9	
55	3 28.8	3 29.3	3 19.2	55 1.2	115 2.6	175 3.9	
56	3 29.0	3 29.6	3 19.5	56 1.3	116 2.6	176 4.0	
57	3 29.3	3 29.8	3 19.7	57 1.3	117 2.6	177 4.0	
58	3 29.5	3 30.1	3 20.0	58 1.3	118 2.7	178 4.0	
59	3 29.8	3 30.3	3 20.2	59 1.3	119 2.7	179 4.0	
60	3 30.0	3 30.6	3 20.4	60 1.4	120 2.7	180 4.1	

0 h 14 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	3 30.0	3 30.6	3 20.4	0 .0	60 1.5	120 2.9	
1	3 30.3	3 30.8	3 20.7	1 .0	61 1.5	121 2.9	
2	3 30.5	3 31.1	3 20.9	2 .0	62 1.5	122 2.9	
3	3 30.8	3 31.3	3 21.1	3 .1	63 1.5	123 3.0	
4	3 31.0	3 31.6	3 21.4	4 .1	64 1.5	124 3.0	
5	3 31.3	3 31.8	3 21.6	5 .1	65 1.6	125 3.0	
6	3 31.5	3 32.1	3 21.9	6 .1	66 1.6	126 3.0	
7	3 31.8	3 32.3	3 22.1	7 .2	67 1.6	127 3.1	
8	3 32.0	3 32.6	3 22.3	8 .2	68 1.6	128 3.1	
9	3 32.3	3 32.8	3 22.6	9 .2	69 1.7	129 3.1	
10	3 32.5	3 33.1	3 22.8	10 .2	70 1.7	130 3.1	
11	3 32.8	3 33.3	3 23.1	11 .3	71 1.7	131 3.2	
12	3 33.0	3 33.6	3 23.3	12 .3	72 1.7	132 3.2	
13	3 33.3	3 33.8	3 23.5	13 .3	73 1.8	133 3.2	
14	3 33.5	3 34.1	3 23.8	14 .3	74 1.8	134 3.2	
15	3 33.8	3 34.3	3 24.0	15 .4	75 1.8	135 3.3	
16	3 34.0	3 34.6	3 24.3	16 .4	76 1.8	136 3.3	
17	3 34.3	3 34.8	3 24.5	17 .4	77 1.9	137 3.3	
18	3 34.5	3 35.1	3 24.7	18 .4	78 1.9	138 3.3	
19	3 34.8	3 35.3	3 25.0	19 .5	79 1.9	139 3.4	
20	3 35.0	3 35.6	3 25.2	20 .5	80 1.9	140 3.4	
21	3 35.3	3 35.8	3 25.4	21 .5	81 2.0	141 3.4	
22	3 35.5	3 36.1	3 25.7	22 .5	82 2.0	142 3.4	
23	3 35.8	3 36.3	3 25.9	23 .6	83 2.0	143 3.5	
24	3 36.0	3 36.6	3 26.2	24 .6	84 2.0	144 3.5	
25	3 36.3	3 36.9	3 26.4	25 .6	85 2.1	145 3.5	
26	3 36.5	3 37.1	3 26.6	26 .6	86 2.1	146 3.5	
27	3 36.8	3 37.4	3 26.9	27 .7	87 2.1	147 3.6	
28	3 37.0	3 37.6	3 27.1	28 .7	88 2.1	148 3.6	
29	3 37.3	3 37.9	3 27.4	29 .7	89 2.2	149 3.6	
30	3 37.5	3 38.1	3 27.6	30 .7	90 2.2	150 3.6	
31	3 37.8	3 38.4	3 27.8	31 .7	91 2.2	151 3.6	
32	3 38.0	3 38.6	3 28.1	32 .8	92 2.2	152 3.7	
33	3 38.3	3 38.9	3 28.3	33 .8	93 2.2	153 3.7	
34	3 38.5	3 39.1	3 28.5	34 .8	94 2.3	154 3.7	
35	3 38.8	3 39.4	3 28.8	35 .8	95 2.3	155 3.7	
36	3 39.0	3 39.6	3 29.0	36 .9	96 2.3	156 3.8	
37	3 39.3	3 39.9	3 29.3	37 .9	97 2.3	157 3.8	
38	3 39.5	3 40.1	3 29.5	38 .9	98 2.4	158 3.8	
39	3 39.8	3 40.4	3 29.7	39 .9	99 2.4	159 3.8	
40	3 40.0	3 40.6	3 30.0	40 1.0	100 2.4	160 3.9	
41	3 40.3	3 40.9	3 30.2	41 1.0	101 2.4	161 3.9	
42	3 40.5	3 41.1	3 30.5	42 1.0	102 2.5	162 3.9	
43	3 40.8	3 41.4	3 30.7	43 1.0	103 2.5	163 3.9	
44	3 41.0	3 41.6	3 30.9	44 1.1	104 2.5	164 4.0	
45	3 41.3	3 41.9	3 31.2	45 1.1	105 2.5	165 4.0	
46	3 41.5	3 42.1	3 31.4	46 1.1	106 2.6	166 4.0	
47	3 41.8	3 42.4	3 31.6	47 1.1	107 2.6	167 4.0	
48	3 42.0	3 42.6	3 31.9	48 1.2	108 2.6	168 4.1	
49	3 42.3	3 42.9	3 32.1	49 1.2	109 2.6	169 4.1	
50	3 42.5	3 43.1	3 32.4	50 1.2	110 2.7	170 4.1	
51	3 42.8	3 43.4	3 32.6	51 1.2	111 2.7	171 4.1	
52	3 43.0	3 43.6	3 32.8	52 1.3	112 2.7	172 4.2	
53	3 43.3	3 43.9	3 33.1	53 1.3	113 2.7	173 4.2	
54	3 43.5	3 44.1	3 33.3	54 1.3	114 2.8	174 4.2	
55	3 43.8	3 44.4	3 33.6	55 1.3	115 2.8	175 4.2	
56	3 44.0	3 44.6	3 33.8	56 1.4	116 2.8	176 4.3	
57	3 44.3	3 44.9	3 34.0	57 1.4	117 2.8	177 4.3	
58	3 44.5	3 45.1	3 34.3	58 1.4	118 2.9	178 4.3	
59	3 44.8	3 45.4	3 34.5	59 1.4	119 2.9	179 4.3	
60	3 45.0	3 45.6	3 34.8	60 1.5	120 2.9	180 4.4	

0 h 15 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	3 45.0	3 45.6	3 34.8	0 .0	60 1.6	120 3.1	
1	3 45.3	3 45.9	3 35.0	1 .0	61 1.6	121 3.1	
2	3 45.5	3 46.1	3 35.2	2 .1	62 1.6	122 3.2	
3	3 45.8	3 46.4	3 35.5	3 .1	63 1.6	123 3.2	
4	3 46.0	3 46.6	3 35.7	4 .1	64 1.7	124 3.2	
5	3 46.3	3 46.9	3 35.9	5 .1	65 1.7	125 3.2	
6	3 46.5	3 47.1	3 36.2	6 .2	66 1.7	126 3.3	
7	3 46.8	3 47.4	3 36.4	7 .2	67 1.7	127 3.3	
8	3 47.0	3 47.6	3 36.7	8 .2	68 1.8	128 3.3	
9	3 47.3	3 47.9	3 36.9	9 .2	69 1.8	129 3.3	
10	3 47.5	3 48.1	3 37.1	10 .3	70 1.8	130 3.4	
11	3 47.8	3 48.4	3 37.4	11 .3	71 1.8	131 3.4	
12	3 48.0	3 48.6	3 37.6	12 .3	72 1.9	132 3.4	
13	3 48.3	3 48.9	3 37.9	13 .3	73 1.9	133 3.4	
14	3 48.5	3 49.1	3 38.1	14 .4	74 1.9	134 3.5	
15	3 48.8	3 49.4	3 38.3	15 .4	75 1.9	135 3.5	
16	3 49.0	3 49.6	3 38.6	16 .4	76 2.0	136 3.5	
17	3 49.3	3 49.9	3 38.8	17 .4	77 2.0	137 3.5	
18	3 49.5	3 50.1	3 39.0	18 .5	78 2.0	138 3.6	
19	3 49.8	3 50.4	3 39.3	19 .5	79 2.0	139 3.6	
20	3 50.0	3 50.6	3 39.5	20 .5	80 2.1	140 3.6	
21	3 50.3	3 50.9	3 39.8	21 .5	81 2.1	141 3.6	
22	3 50.5	3 51.1	3 40.0	22 .6	82 2.1	142 3.7	
23	3 50.8	3 51.4	3 40.2	23 .6	83 2.1	143 3.7	
24	3 51.0	3 51.6	3 40.5	24 .6	84 2.2	144 3.7	
25	3 51.3	3 51.9	3 40.7	25 .6	85 2.2	145 3.7	
26	3 51.5	3 52.1	3 41.0	26 .7	86 2.2	146 3.8	
27	3 51.8	3 52.4	3 41.2	27 .7	87 2.2	147 3.8	
28	3 52.0	3 52.6	3 41.4	28 .7	88 2.3	148 3.8	
29	3 52.3	3 52.9	3 41.7	29 .7	89 2.3	149 3.8	
30	3 52.5	3 53.1	3 41.9	30 .8	90 2.3	150 3.9	
31	3 52.8	3 53.4	3 42.1	31 .8	91 2.4	151 3.9	
32	3 53.0	3 53.6	3 42.4	32 .8	92 2.4	152 3.9	
33	3 53.3	3 53.9	3 42.6	33 .9	93 2.4	153 4.0	
34	3 53.5	3 54.1	3 42.9	34 .9	94 2.4	154 4.0	
35	3 53.8	3 54.4	3 43.1	35 .9	95 2.5	155 4.0	
36	3 54.0	3 54.7	3 43.3	36 .9	96 2.5	156 4.0	
37	3 54.3	3 54.9	3 43.6	37 1.0	97 2.5	157 4.1	
38	3 54.5	3 55.2	3 43.8	38 1.0	98 2.5	158 4.1	
39	3 54.8	3 55.4	3 44.1	39 1.0	99 2.6	159 4.1	
40	3 55.0	3 55.7	3 44.3	40 1.0	100 2.6	160 4.1	
41	3 55.3	3 55.9	3 44.5	41 1.1	101 2.6	161 4.2	
42	3 55.5	3 56.2	3 44.8	42 1.1	102 2.6	162 4.2	
43	3 55.8	3 56.4	3 45.0	43 1.1	103 2.7	163 4.2	
44	3 56.0	3 56.7	3 45.2	44 1.1	104 2.7	164 4.2	
45	3 56.3	3 56.9	3 45.5	45 1.2	105 2.7	165 4.3	
46	3 56.5	3 57.2	3 45.7	46 1.2	106 2.7	166 4.3	
47	3 56.8	3 57.4	3 46.0	47 1.2	107 2.8	167 4.3	
48	3 57.0	3 57.7	3 46.2	48 1.2	108 2.8	168 4.3	
49	3 57.3	3 57.9	3 46.4	49 1.3	109 2.8	169 4.4	
50	3 57.5	3 58.2	3 46.7	50 1.3	110 2.8	170 4.4	
51	3 57.8	3 58.4	3 46.9	51 1.3	111 2.9	171 4.4	
52	3 58.0	3 58.7	3 47.2	52 1.3	112 2.9	172 4.4	
53	3 58.3	3 58.9	3 47.4	53 1.4	113 2.9	173 4.5	
54	3 58.5	3 59.2	3 47.6	54 1.4	114 2.9	174 4.5	
55	3 58.8	3 59.4	3 47.9	55 1.4	115 3.0	175 4.5	
56	3 59.0	3 59.7	3 48.1	56 1.4	116 3.0	176 4.5	
57	3 59.3	3 59.9	3 48.4	57 1.5	117 3.0	177 4.6	
58	3 59.5	4 .2	3 48.6	58 1.5	118 3.0	178 4.6	
59	3 59.8	4 .4	3 48.8	59 1.5	119 3.1	179 4.6	
60	4 .0	4 .7	3 49.1	60 1.6	120 3.1	180 4.7	

0 h 16 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.					
	o	'			'	'	'	'				
0	4	.0	4	.7	3	49.1	0	.0	60	1.7	120	3.3
1	4	.3	4	.9	3	49.3	1	.0	61	1.7	121	3.3
2	4	.5	4	1.2	3	49.5	2	.1	62	1.7	122	3.4
3	4	.8	4	1.4	3	49.8	3	.1	63	1.7	123	3.4
4	4	1.0	4	1.7	3	50.0	4	.1	64	1.8	124	3.4
5	4	1.3	4	1.9	3	50.3	5	.1	65	1.8	125	3.4
6	4	1.5	4	2.2	3	50.5	6	.2	66	1.8	126	3.5
7	4	1.8	4	2.4	3	50.7	7	.2	67	1.8	127	3.5
8	4	2.0	4	2.7	3	51.0	8	.2	68	1.9	128	3.5
9	4	2.3	4	2.9	3	51.2	9	.2	69	1.9	129	3.5
10	4	2.5	4	3.2	3	51.5	10	.3	70	1.9	130	3.6
11	4	2.8	4	3.4	3	51.7	11	.3	71	2.0	131	3.6
12	4	3.0	4	3.7	3	51.9	12	.3	72	2.0	132	3.6
13	4	3.3	4	3.9	3	52.2	13	.4	73	2.0	133	3.7
14	4	3.5	4	4.2	3	52.4	14	.4	74	2.0	134	3.7
15	4	3.8	4	4.4	3	52.6	15	.4	75	2.1	135	3.7
16	4	4.0	4	4.7	3	52.9	16	.4	76	2.1	136	3.7
17	4	4.3	4	4.9	3	53.1	17	.5	77	2.1	137	3.8
18	4	4.5	4	5.2	3	53.4	18	.5	78	2.1	138	3.8
19	4	4.8	4	5.4	3	53.6	19	.5	79	2.2	139	3.8
20	4	5.0	4	5.7	3	53.8	20	.6	80	2.2	140	3.9
21	4	5.3	4	5.9	3	54.1	21	.6	81	2.2	141	3.9
22	4	5.5	4	6.2	3	54.3	22	.6	82	2.3	142	3.9
23	4	5.8	4	6.4	3	54.6	23	.6	83	2.3	143	3.9
24	4	6.0	4	6.7	3	54.8	24	.7	84	2.3	144	4.0
25	4	6.3	4	6.9	3	55.0	25	.7	85	2.3	145	4.0
26	4	6.5	4	7.2	3	55.3	26	.7	86	2.4	146	4.0
27	4	6.8	4	7.4	3	55.5	27	.7	87	2.4	147	4.0
28	4	7.0	4	7.7	3	55.7	28	.8	88	2.4	148	4.1
29	4	7.3	4	7.9	3	56.0	29	.8	89	2.4	149	4.1
30	4	7.5	4	8.2	3	56.2	30	.8	90	2.5	150	4.1
31	4	7.8	4	8.4	3	56.5	31	.9	91	2.5	151	4.2
32	4	8.0	4	8.7	3	56.7	32	.9	92	2.5	152	4.2
33	4	8.3	4	8.9	3	56.9	33	.9	93	2.6	153	4.2
34	4	8.5	4	9.2	3	57.2	34	.9	94	2.6	154	4.2
35	4	8.8	4	9.4	3	57.4	35	1.0	95	2.6	155	4.3
36	4	9.0	4	9.7	3	57.7	36	1.0	96	2.6	156	4.3
37	4	9.3	4	9.9	3	57.9	37	1.0	97	2.7	157	4.3
38	4	9.5	4	10.2	3	58.1	38	1.0	98	2.7	158	4.3
39	4	9.8	4	10.4	3	58.4	39	1.1	99	2.7	159	4.4
40	4	10.0	4	10.7	3	58.6	40	1.1	100	2.8	160	4.4
41	4	10.3	4	10.9	3	58.8	41	1.1	101	2.8	161	4.4
42	4	10.5	4	11.2	3	59.1	42	1.2	102	2.8	162	4.5
43	4	10.8	4	11.4	3	59.3	43	1.2	103	2.8	163	4.5
44	4	11.0	4	11.7	3	59.6	44	1.2	104	2.9	164	4.5
45	4	11.3	4	11.9	3	59.8	45	1.2	105	2.9	165	4.5
46	4	11.5	4	12.2	4	.0	46	1.3	106	2.9	166	4.6
47	4	11.8	4	12.4	4	.3	47	1.3	107	2.9	167	4.6
48	4	12.0	4	12.7	4	.5	48	1.3	108	3.0	168	4.6
49	4	12.3	4	13.0	4	.8	49	1.3	109	3.0	169	4.6
50	4	12.5	4	13.2	4	1.0	50	1.4	110	3.0	170	4.7
51	4	12.8	4	13.5	4	1.2	51	1.4	111	3.1	171	4.7
52	4	13.0	4	13.7	4	1.5	52	1.4	112	3.1	172	4.7
53	4	13.3	4	14.0	4	1.7	53	1.5	113	3.1	173	4.8
54	4	13.5	4	14.2	4	2.0	54	1.5	114	3.1	174	4.8
55	4	13.8	4	14.5	4	2.2	55	1.5	115	3.2	175	4.8
56	4	14.0	4	14.7	4	2.4	56	1.5	116	3.2	176	4.8
57	4	14.3	4	15.0	4	2.7	57	1.6	117	3.2	177	4.9
58	4	14.5	4	15.2	4	2.9	58	1.6	118	3.2	178	4.9
59	4	14.8	4	15.5	4	3.1	59	1.6	119	3.3	179	4.9
60	4	15.0	4	15.7	4	3.4	60	1.7	120	3.3	180	5.0

0 h 17 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.					
	o	'			'	'	'	'				
0	4	15.0	4	15.7	4	3.4	0	.0	60	1.8	120	3.5
1	4	15.3	4	16.0	4	3.6	1	.0	61	1.8	121	3.5
2	4	15.5	4	16.2	4	3.9	2	.1	62	1.8	122	3.6
3	4	15.8	4	16.5	4	4.1	3	.1	63	1.8	123	3.6
4	4	16.0	4	16.7	4	4.3	4	.1	64	1.9	124	3.6
5	4	16.3	4	17.0	4	4.6	5	.1	65	1.9	125	3.6
6	4	16.5	4	17.2	4	4.8	6	.2	66	1.9	126	3.7
7	4	16.8	4	17.5	4	5.1	7	.2	67	2.0	127	3.7
8	4	17.0	4	17.7	4	5.3	8	.2	68	2.0	128	3.7
9	4	17.3	4	18.0	4	5.5	9	.3	69	2.0	129	3.8
10	4	17.5	4	18.2	4	5.8	10	.3	70	2.0	130	3.8
11	4	17.8	4	18.5	4	6.0	11	.3	71	2.1	131	3.8
12	4	18.0	4	18.7	4	6.2	12	.4	72	2.1	132	3.9
13	4	18.3	4	19.0	4	6.5	13	.4	73	2.1	133	3.9
14	4	18.5	4	19.2	4	6.7	14	.4	74	2.2	134	3.9
15	4	18.8	4	19.5	4	7.0	15	.4	75	2.2	135	3.9
16	4	19.0	4	19.7	4	7.2	16	.5	76	2.2	136	4.0
17	4	19.3	4	20.0	4	7.4	17	.5	77	2.2	137	4.0
18	4	19.5	4	20.2	4	7.7	18	.5	78	2.3	138	4.0
19	4	19.8	4	20.5	4	7.9	19	.6	79	2.3	139	4.1
20	4	20.0	4	20.7	4	8.2	20	.6	80	2.3	140	4.1
21	4	20.3	4	21.0	4	8.4	21	.6	81	2.4	141	4.1
22	4	20.5	4	21.2	4	8.6	22	.6	82	2.4	142	4.1
23	4	20.8	4	21.5	4	8.9	23	.7	83	2.4	143	4.2
24	4	21.0	4	21.7	4	9.1	24	.7	84	2.5	144	4.2
25	4	21.3	4	22.0	4	9.3	25	.7	85	2.5	145	4.2
26	4	21.5	4	22.2	4	9.6	26	.8	86	2.5	146	4.3
27	4	21.8	4	22.5	4	9.8	27	.8	87	2.5	147	4.3
28	4	22.0	4	22.7	4	10.1	28	.8	88	2.6	148	4.3
29	4	22.3	4	23.0	4	10.3	29	.8	89	2.6	149	4.3
30	4	22.5	4	23.2	4	10.5	30	.9	90	2.6	150	4.4
31	4	22.8	4	23.5	4	10.8	31	.9	91	2.7	151	4.4
32	4	23.0	4	23.7	4	11.0	32	.9	92	2.7	152	4.4
33	4	23.3	4	24.0	4	11.3	33	1.0	93	2.7	153	4.5
34	4	23.5	4	24.2	4	11.5	34	1.0	94	2.7	154	4.5
35	4	23.8	4	24.5	4	11.7	35	1.0	95	2.8	155	4.5
36	4	24.0	4	24.7	4	12.0	36	1.1	96	2.8	156	4.6
37	4	24.3	4	25.0	4	12.2	37	1.1	97	2.8	157	4.6
38	4	24.5	4	25.2	4	12.5	38	1.1	98	2.9	158	4.6
39	4	24.8	4	25.5	4	12.7	39	1.1	99	2.9	159	4.6
40	4	25.0	4	25.7	4	12.9	40	1.2	100	2.9	160	4.7
41	4	25.3	4	26.0	4	13.2	41	1.2	101	2.9	161	4.7
42	4	25.5	4	26.2	4	13.4	42	1.2	102	3.0	162	4.7
43	4	25.8	4	26.5	4	13.6	43	1.3	103	3.0	163	4.8
44	4	26.0	4	26.7	4	13.9	44	1.3	104	3.0	164	4.8
45	4	26.3	4	27.0	4	14.1	45	1.3	105	3.1	165	4.8
46	4	26.5	4	27.2	4	14.4	46	1.3	106	3.1	166	4.8
47	4	26.8	4	27.5	4	14.6	47	1.4	107	3.1	167	4.9
48	4	27.0	4	27.7	4	14.8	48	1.4	108	3.2	168	4.9
49	4	27.3	4	28.0	4	15.1	49	1.4	109	3.2	169	4.9
50	4	27.5	4	28.2	4	15.3	50	1.5	110	3.2	170	5.0
51	4	27.8	4	28.5	4	15.6	51	1.5	111	3.2	171	5.0
52	4	28.0	4	28.7	4	15.8	52	1.5	112	3.3	172	5.0
53	4	28.3	4	29.0	4	16.0	53	1.5	113	3.3	173	5.0
54	4	28.5	4	29.2	4	16.3	54	1.6	114	3.3	174	5.1
55	4	28.8	4	29.5	4	16.5	55	1.6	115	3.4	175	5.1
56	4	29.0	4	29.7	4							

0 h 18 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	4 30.0	4 30.8	4 17.7	0 .0	60 1.9	120 3.7	
1	4 30.3	4 31.0	4 17.9	1 .0	61 1.9	121 3.7	
2	4 30.5	4 31.3	4 18.2	2 .1	62 1.9	122 3.8	
3	4 30.8	4 31.5	4 18.4	3 .1	63 1.9	123 3.8	
4	4 31.0	4 31.8	4 18.7	4 .1	64 2.0	124 3.8	
5	4 31.3	4 32.0	4 18.9	5 .2	65 2.0	125 3.9	
6	4 31.5	4 32.3	4 19.1	6 .2	66 2.0	126 3.9	
7	4 31.8	4 32.5	4 19.4	7 .2	67 2.1	127 3.9	
8	4 32.0	4 32.8	4 19.6	8 .2	68 2.1	128 3.9	
9	4 32.3	4 33.0	4 19.8	9 .3	69 2.1	129 4.0	
10	4 32.5	4 33.3	4 20.1	10 .3	70 2.2	130 4.0	
11	4 32.8	4 33.5	4 20.3	11 .3	71 2.2	131 4.0	
12	4 33.0	4 33.8	4 20.6	12 .4	72 2.2	132 4.1	
13	4 33.3	4 34.0	4 20.8	13 .4	73 2.3	133 4.1	
14	4 33.5	4 34.3	4 21.0	14 .4	74 2.3	134 4.1	
15	4 33.8	4 34.5	4 21.3	15 .5	75 2.3	135 4.2	
16	4 34.0	4 34.8	4 21.5	16 .5	76 2.3	136 4.2	
17	4 34.3	4 35.0	4 21.8	17 .5	77 2.4	137 4.2	
18	4 34.5	4 35.3	4 22.0	18 .6	78 2.4	138 4.3	
19	4 34.8	4 35.5	4 22.2	19 .6	79 2.4	139 4.3	
20	4 35.0	4 35.8	4 22.5	20 .6	80 2.5	140 4.3	
21	4 35.3	4 36.0	4 22.7	21 .6	81 2.5	141 4.3	
22	4 35.5	4 36.3	4 22.9	22 .7	82 2.5	142 4.4	
23	4 35.8	4 36.5	4 23.2	23 .7	83 2.6	143 4.4	
24	4 36.0	4 36.8	4 23.4	24 .7	84 2.6	144 4.4	
25	4 36.3	4 37.0	4 23.7	25 .8	85 2.6	145 4.5	
26	4 36.5	4 37.3	4 23.9	26 .8	86 2.7	146 4.5	
27	4 36.8	4 37.5	4 24.1	27 .8	87 2.7	147 4.5	
28	4 37.0	4 37.8	4 24.4	28 .9	88 2.7	148 4.6	
29	4 37.3	4 38.0	4 24.6	29 .9	89 2.7	149 4.6	
30	4 37.5	4 38.3	4 24.9	30 .9	90 2.8	150 4.6	
31	4 37.8	4 38.5	4 25.1	31 1.0	91 2.8	151 4.7	
32	4 38.0	4 38.8	4 25.3	32 1.0	92 2.8	152 4.7	
33	4 38.3	4 39.0	4 25.6	33 1.0	93 2.9	153 4.7	
34	4 38.5	4 39.3	4 25.8	34 1.0	94 2.9	154 4.7	
35	4 38.8	4 39.5	4 26.1	35 1.1	95 2.9	155 4.8	
36	4 39.0	4 39.8	4 26.3	36 1.1	96 3.0	156 4.8	
37	4 39.3	4 40.0	4 26.5	37 1.1	97 3.0	157 4.8	
38	4 39.5	4 40.3	4 26.8	38 1.2	98 3.0	158 4.9	
39	4 39.8	4 40.5	4 27.0	39 1.2	99 3.1	159 4.9	
40	4 40.0	4 40.8	4 27.2	40 1.2	100 3.1	160 4.9	
41	4 40.3	4 41.0	4 27.5	41 1.3	101 3.1	161 5.0	
42	4 40.5	4 41.3	4 27.7	42 1.3	102 3.1	162 5.0	
43	4 40.8	4 41.5	4 28.0	43 1.3	103 3.2	163 5.0	
44	4 41.0	4 41.8	4 28.2	44 1.4	104 3.2	164 5.1	
45	4 41.3	4 42.0	4 28.4	45 1.4	105 3.2	165 5.1	
46	4 41.5	4 42.3	4 28.7	46 1.4	106 3.3	166 5.1	
47	4 41.8	4 42.5	4 28.9	47 1.4	107 3.3	167 5.1	
48	4 42.0	4 42.8	4 29.2	48 1.5	108 3.3	168 5.2	
49	4 42.3	4 43.0	4 29.4	49 1.5	109 3.4	169 5.2	
50	4 42.5	4 43.3	4 29.6	50 1.5	110 3.4	170 5.2	
51	4 42.8	4 43.5	4 29.9	51 1.6	111 3.4	171 5.3	
52	4 43.0	4 43.8	4 30.1	52 1.6	112 3.5	172 5.3	
53	4 43.3	4 44.0	4 30.3	53 1.6	113 3.5	173 5.3	
54	4 43.5	4 44.3	4 30.6	54 1.7	114 3.5	174 5.4	
55	4 43.8	4 44.5	4 30.8	55 1.7	115 3.5	175 5.4	
56	4 44.0	4 44.8	4 31.1	56 1.7	116 3.6	176 5.4	
57	4 44.3	4 45.0	4 31.3	57 1.8	117 3.6	177 5.5	
58	4 44.5	4 45.3	4 31.5	58 1.8	118 3.6	178 5.5	
59	4 44.8	4 45.5	4 31.8	59 1.8	119 3.7	179 5.5	
60	4 45.0	4 45.8	4 32.0	60 1.9	120 3.7	180 5.6	

0 h 19 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	4 45.0	4 45.8	4 32.0	0 .0	60 2.0	120 3.9	
1	4 45.3	4 46.0	4 32.3	1 .0	61 2.0	121 3.9	
2	4 45.5	4 46.3	4 32.5	2 .1	62 2.0	122 4.0	
3	4 45.8	4 46.5	4 32.7	3 .1	63 2.0	123 4.0	
4	4 46.0	4 46.8	4 33.0	4 .1	64 2.1	124 4.0	
5	4 46.3	4 47.0	4 33.2	5 .2	65 2.1	125 4.1	
6	4 46.5	4 47.3	4 33.4	6 .2	66 2.1	126 4.1	
7	4 46.8	4 47.5	4 33.7	7 .2	67 2.2	127 4.1	
8	4 47.0	4 47.8	4 33.9	8 .3	68 2.2	128 4.2	
9	4 47.3	4 48.0	4 34.2	9 .3	69 2.2	129 4.2	
10	4 47.5	4 48.3	4 34.4	10 .3	70 2.3	130 4.2	
11	4 47.8	4 48.5	4 34.6	11 .4	71 2.3	131 4.3	
12	4 48.0	4 48.8	4 34.9	12 .4	72 2.3	132 4.3	
13	4 48.3	4 49.1	4 35.1	13 .4	73 2.4	133 4.3	
14	4 48.5	4 49.3	4 35.4	14 .5	74 2.4	134 4.4	
15	4 48.8	4 49.6	4 35.6	15 .5	75 2.4	135 4.4	
16	4 49.0	4 49.8	4 35.8	16 .5	76 2.5	136 4.4	
17	4 49.3	4 50.1	4 36.1	17 .6	77 2.5	137 4.5	
18	4 49.5	4 50.3	4 36.3	18 .6	78 2.5	138 4.5	
19	4 49.8	4 50.6	4 36.6	19 .6	79 2.6	139 4.5	
20	4 50.0	4 50.8	4 36.8	20 .7	80 2.6	140 4.6	
21	4 50.3	4 51.1	4 37.0	21 .7	81 2.6	141 4.6	
22	4 50.5	4 51.3	4 37.3	22 .7	82 2.7	142 4.6	
23	4 50.8	4 51.6	4 37.5	23 .7	83 2.7	143 4.6	
24	4 51.0	4 51.8	4 37.7	24 .8	84 2.7	144 4.7	
25	4 51.3	4 52.1	4 38.0	25 .8	85 2.8	145 4.7	
26	4 51.5	4 52.3	4 38.2	26 .8	86 2.8	146 4.7	
27	4 51.8	4 52.6	4 38.5	27 .9	87 2.8	147 4.8	
28	4 52.0	4 52.8	4 38.7	28 .9	88 2.9	148 4.8	
29	4 52.3	4 53.1	4 38.9	29 .9	89 2.9	149 4.8	
30	4 52.5	4 53.3	4 39.2	30 1.0	90 2.9	150 4.9	
31	4 52.8	4 53.6	4 39.4	31 1.0	91 3.0	151 4.9	
32	4 53.0	4 53.8	4 39.7	32 1.0	92 3.0	152 4.9	
33	4 53.3	4 54.1	4 39.9	33 1.1	93 3.0	153 5.0	
34	4 53.5	4 54.3	4 40.1	34 1.1	94 3.1	154 5.0	
35	4 53.8	4 54.6	4 40.4	35 1.1	95 3.1	155 5.0	
36	4 54.0	4 54.8	4 40.6	36 1.2	96 3.1	156 5.1	
37	4 54.3	4 55.1	4 40.8	37 1.2	97 3.2	157 5.1	
38	4 54.5	4 55.3	4 41.1	38 1.2	98 3.2	158 5.1	
39	4 54.8	4 55.6	4 41.3	39 1.3	99 3.2	159 5.2	
40	4 55.0	4 55.8	4 41.6	40 1.3	100 3.3	160 5.2	
41	4 55.3	4 56.1	4 41.8	41 1.3	101 3.3	161 5.2	
42	4 55.5	4 56.3	4 42.0	42 1.4	102 3.3	162 5.3	
43	4 55.8	4 56.6	4 42.3	43 1.4	103 3.3	163 5.3	
44	4 56.0	4 56.8	4 42.5	44 1.4	104 3.4	164 5.3	
45	4 56.3	4 57.1	4 42.8	45 1.5	105 3.4	165 5.4	
46	4 56.5	4 57.3	4 43.0	46 1.5	106 3.4	166 5.4	
47	4 56.8	4 57.6	4 43.2	47 1.5	107 3.5	167 5.4	
48	4 57.0	4 57.8	4 43.5	48 1.6	108 3.5	168 5.5	
49	4 57.3	4 58.1	4 43.7	49 1.6	109 3.5	169 5.5	
50	4 57.5	4 58.3	4 43.9	50 1.6	110 3.6	170 5.5	
51	4 57.8	4 58.6	4 44.2	51 1.7	111 3.6	171 5.6	
52	4 58.0	4 58.8	4 44.4	52 1.7	112 3.6	172 5.6	
53	4 58.3	4 59.1	4 44.7	53 1.7	113 3.7	173 5.6	
54	4 58.5	4 59.3	4 44.9	54 1.8	114 3.7	174 5.7	
55	4 58.8	4 59.6	4 45.1	55 1.8	115 3.7	175 5.7	
56	4 59.0	4 59.8	4 45.4	56 1.8	116 3.8	176 5.7	
57	4 59.3	5 .1	4 45.6	57 1.9	117 3.8	177 5.8	
58	4 59.5	5 .3	4 45.9	58 1.9	118 3.8	178 5.8	
59	4 59.8	5 .6	4 46.1	59 1.9	119 3.9	179 5.8	
60	5 .0	5 .8	4 46.3	60 2.0	120 3.9	180 5.9	

0 h 20 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	5	.0	5	.8	4	46.3	0	.0	60	2.1	120	4.1
1	5	.3	5	1.1	4	46.6	1	.0	61	2.1	121	4.1
2	5	.5	5	1.3	4	46.8	2	.1	62	2.1	122	4.2
3	5	.8	5	1.6	4	47.0	3	.1	63	2.2	123	4.2
4	5	1.0	5	1.8	4	47.3	4	.1	64	2.2	124	4.2
5	5	1.3	5	2.1	4	47.5	5	.2	65	2.2	125	4.3
6	5	1.5	5	2.3	4	47.8	6	.2	66	2.3	126	4.3
7	5	1.8	5	2.6	4	48.0	7	.2	67	2.3	127	4.3
8	5	2.0	5	2.8	4	48.2	8	.3	68	2.3	128	4.4
9	5	2.3	5	3.1	4	48.5	9	.3	69	2.4	129	4.4
10	5	2.5	5	3.3	4	48.7	10	.3	70	2.4	130	4.4
11	5	2.8	5	3.6	4	49.0	11	.4	71	2.4	131	4.5
12	5	3.0	5	3.8	4	49.2	12	.4	72	2.5	132	4.5
13	5	3.3	5	4.1	4	49.4	13	.4	73	2.5	133	4.5
14	5	3.5	5	4.3	4	49.7	14	.5	74	2.5	134	4.6
15	5	3.8	5	4.6	4	49.9	15	.5	75	2.6	135	4.6
16	5	4.0	5	4.8	4	50.2	16	.5	76	2.6	136	4.6
17	5	4.3	5	5.1	4	50.4	17	.6	77	2.6	137	4.7
18	5	4.5	5	5.3	4	50.6	18	.6	78	2.7	138	4.7
19	5	4.8	5	5.6	4	50.9	19	.6	79	2.7	139	4.7
20	5	5.0	5	5.8	4	51.1	20	.7	80	2.7	140	4.8
21	5	5.3	5	6.1	4	51.3	21	.7	81	2.8	141	4.8
22	5	5.5	5	6.3	4	51.6	22	.8	82	2.8	142	4.9
23	5	5.8	5	6.6	4	51.8	23	.8	83	2.8	143	4.9
24	5	6.0	5	6.9	4	52.1	24	.8	84	2.9	144	4.9
25	5	6.3	5	7.1	4	52.3	25	.9	85	2.9	145	5.0
26	5	6.5	5	7.4	4	52.5	26	.9	86	2.9	146	5.0
27	5	6.8	5	7.6	4	52.8	27	.9	87	3.0	147	5.0
28	5	7.0	5	7.9	4	53.0	28	1.0	88	3.0	148	5.1
29	5	7.3	5	8.1	4	53.3	29	1.0	89	3.0	149	5.1
30	5	7.5	5	8.4	4	53.5	30	1.0	90	3.1	150	5.1
31	5	7.8	5	8.6	4	53.7	31	1.1	91	3.1	151	5.2
32	5	8.0	5	8.9	4	54.0	32	1.1	92	3.1	152	5.2
33	5	8.3	5	9.1	4	54.2	33	1.1	93	3.2	153	5.2
34	5	8.5	5	9.4	4	54.4	34	1.2	94	3.2	154	5.3
35	5	8.8	5	9.6	4	54.7	35	1.2	95	3.2	155	5.3
36	5	9.0	5	9.9	4	54.9	36	1.2	96	3.3	156	5.3
37	5	9.3	5	10.1	4	55.2	37	1.3	97	3.3	157	5.4
38	5	9.5	5	10.4	4	55.4	38	1.3	98	3.3	158	5.4
39	5	9.8	5	10.6	4	55.6	39	1.3	99	3.4	159	5.4
40	5	10.0	5	10.9	4	55.9	40	1.4	100	3.4	160	5.5
41	5	10.3	5	11.1	4	56.1	41	1.4	101	3.5	161	5.5
42	5	10.5	5	11.4	4	56.4	42	1.4	102	3.5	162	5.5
43	5	10.8	5	11.6	4	56.6	43	1.5	103	3.5	163	5.6
44	5	11.0	5	11.9	4	56.8	44	1.5	104	3.6	164	5.6
45	5	11.3	5	12.1	4	57.1	45	1.5	105	3.6	165	5.6
46	5	11.5	5	12.4	4	57.3	46	1.6	106	3.6	166	5.7
47	5	11.8	5	12.6	4	57.5	47	1.6	107	3.7	167	5.7
48	5	12.0	5	12.9	4	57.8	48	1.6	108	3.7	168	5.7
49	5	12.3	5	13.1	4	58.0	49	1.7	109	3.7	169	5.8
50	5	12.5	5	13.4	4	58.3	50	1.7	110	3.8	170	5.8
51	5	12.8	5	13.6	4	58.5	51	1.7	111	3.8	171	5.8
52	5	13.0	5	13.9	4	58.7	52	1.8	112	3.8	172	5.9
53	5	13.3	5	14.1	4	59.0	53	1.8	113	3.9	173	5.9
54	5	13.5	5	14.4	4	59.2	54	1.8	114	3.9	174	5.9
55	5	13.8	5	14.6	4	59.5	55	1.9	115	3.9	175	6.0
56	5	14.0	5	14.9	4	59.7	56	1.9	116	4.0	176	6.0
57	5	14.3	5	15.1	4	59.9	57	1.9	117	4.0	177	6.0
58	5	14.5	5	15.4	5	.2	58	2.0	118	4.0	178	6.1
59	5	14.8	5	15.6	5	.4	59	2.0	119	4.1	179	6.1
60	5	15.0	5	15.9	5	.7	60	2.1	120	4.1	180	6.2

0 h 21 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	5	15.0	5	15.9	5	.7	0	.0	60	2.2	120	4.3
1	5	15.3	5	16.1	5	.9	1	.0	61	2.2	121	4.3
2	5	15.5	5	16.4	5	1.1	2	.1	62	2.2	122	4.4
3	5	15.8	5	16.6	5	1.4	3	.1	63	2.3	123	4.4
4	5	16.0	5	16.9	5	1.6	4	.1	64	2.3	124	4.4
5	5	16.3	5	17.1	5	1.8	5	.2	65	2.3	125	4.5
6	5	16.5	5	17.4	5	2.1	6	.2	66	2.4	126	4.5
7	5	16.8	5	17.6	5	2.3	7	.3	67	2.4	127	4.6
8	5	17.0	5	17.9	5	2.6	8	.3	68	2.4	128	4.6
9	5	17.3	5	18.1	5	2.8	9	.3	69	2.5	129	4.6
10	5	17.5	5	18.4	5	3.0	10	.4	70	2.5	130	4.7
11	5	17.8	5	18.6	5	3.3	11	.4	71	2.5	131	4.7
12	5	18.0	5	18.9	5	3.5	12	.4	72	2.6	132	4.7
13	5	18.3	5	19.1	5	3.8	13	.5	73	2.6	133	4.8
14	5	18.5	5	19.4	5	4.0	14	.5	74	2.7	134	4.8
15	5	18.8	5	19.6	5	4.2	15	.5	75	2.7	135	4.8
16	5	19.0	5	19.9	5	4.5	16	.6	76	2.7	136	4.9
17	5	19.3	5	20.1	5	4.7	17	.6	77	2.8	137	4.9
18	5	19.5	5	20.4	5	4.9	18	.6	78	2.8	138	4.9
19	5	19.8	5	20.6	5	5.2	19	.7	79	2.8	139	5.0
20	5	20.0	5	20.9	5	5.4	20	.7	80	2.9	140	5.0
21	5	20.3	5	21.1	5	5.7	21	.8	81	2.9	141	5.1
22	5	20.5	5	21.4	5	5.9	22	.8	82	2.9	142	5.1
23	5	20.8	5	21.6	5	6.1	23	.8	83	3.0	143	5.1
24	5	21.0	5	21.9	5	6.4	24	.9	84	3.0	144	5.2
25	5	21.3	5	22.1	5	6.6	25	.9	85	3.0	145	5.2
26	5	21.5	5	22.4	5	6.9	26	.9	86	3.1	146	5.2
27	5	21.8	5	22.6	5	7.1	27	1.0	87	3.1	147	5.3
28	5	22.0	5	22.9	5	7.3	28	1.0	88	3.2	148	5.3
29	5	22.3	5	23.1	5	7.6	29	1.0	89	3.2	149	5.3
30	5	22.5	5	23.4	5	7.8	30	1.1	90	3.2	150	5.4
31	5	22.8	5	23.6	5	8.0	31	1.1	91	3.3	151	5.4
32	5	23.0	5	23.9	5	8.3	32	1.1	92	3.3	152	5.4
33	5	23.3	5	24.1	5	8.5	33	1.2	93	3.3	153	5.5
34	5	23.5	5	24.4	5	8.8	34	1.2	94	3.4	154	5.5
35	5	23.8	5	24.6	5	9.0	35	1.3	95	3.4	155	5.6
36	5	24.0	5	24.9	5	9.2	36	1.3	96	3.4	156	5.6
37	5	24.3	5	25.2	5	9.5	37	1.3	97	3.5	157	5.6
38	5	24.5	5	25.4	5	9.7	38	1.4	98	3.5	158	5.7
39	5	24.8	5	25.7	5	10.0	39	1.4	99	3.5	159	5.7
40	5	25.0	5	25.9	5	10.2	40	1.4	100	3.6	160	5.7
41	5	25.3	5	26.2	5	10.4	41	1.5	101	3.6	161	5.8
42	5	25.5	5	26.4	5	10.7	42	1.5	102	3.7	162	5.8
43	5	25.8	5	26.7	5	10.9	43	1.5	103	3.7	163	5.8
44	5	26.0	5	26.9	5	11.1	44	1.6	104	3.7	164	5.9
45	5	26.3	5	27.2	5	11.4	45	1.6	105	3.8	165	5.9
46	5	26.5	5	27.4	5	11.6	46	1.6	106	3.8	166	5.9
47	5	26.8	5	27.7	5	11.9	47	1.7	107	3.8	167	6.0
48	5	27.0	5	27.9	5	12.1	48	1.7	108	3.9	168	6.0
49	5	27.3	5	28.2	5	12.3	49	1.8	109	3.9	169	6.1
50	5	27.5	5	28.4	5	12.6	50	1.8	110	3.9	170	6.1
51	5	27.8	5	28.7	5	12.8	51	1.8	111	4.0	171	6.1
52	5	28.0	5	28.9	5	13.1	52	1.9	112	4.0	172	6.2
53	5	28.3	5	29.2	5	13.3	53	1.9	113	4.0	173	6.2
54	5	28.5	5	29.4	5	13.5	54	1.9	114	4.1	174	6.2
55	5	28.8										

0 h 22 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	5 30.0	5 30.9	5 15.0	0 .0	60 2.3	120 4.5
1	5 30.3	5 31.2	5 15.2	1 .0	61 2.3	121 4.5
2	5 30.5	5 31.4	5 15.4	2 .1	62 2.3	122 4.6
3	5 30.8	5 31.7	5 15.7	3 .1	63 2.4	123 4.6
4	5 31.0	5 31.9	5 15.9	4 .2	64 2.4	124 4.7
5	5 31.3	5 32.2	5 16.2	5 .2	65 2.4	125 4.7
6	5 31.5	5 32.4	5 16.4	6 .2	66 2.5	126 4.7
7	5 31.8	5 32.7	5 16.6	7 .3	67 2.5	127 4.8
8	5 32.0	5 32.9	5 16.9	8 .3	68 2.6	128 4.8
9	5 32.3	5 33.2	5 17.1	9 .3	69 2.6	129 4.8
10	5 32.5	5 33.4	5 17.4	10 .4	70 2.6	130 4.9
11	5 32.8	5 33.7	5 17.6	11 .4	71 2.7	131 4.9
12	5 33.0	5 33.9	5 17.8	12 .5	72 2.7	132 5.0
13	5 33.3	5 34.2	5 18.1	13 .5	73 2.7	133 5.0
14	5 33.5	5 34.4	5 18.3	14 .5	74 2.8	134 5.0
15	5 33.8	5 34.7	5 18.5	15 .6	75 2.8	135 5.1
16	5 34.0	5 34.9	5 18.8	16 .6	76 2.9	136 5.1
17	5 34.3	5 35.2	5 19.0	17 .6	77 2.9	137 5.1
18	5 34.5	5 35.4	5 19.3	18 .7	78 2.9	138 5.2
19	5 34.8	5 35.7	5 19.5	19 .7	79 3.0	139 5.2
20	5 35.0	5 35.9	5 19.7	20 .8	80 3.0	140 5.3
21	5 35.3	5 36.2	5 20.0	21 .8	81 3.0	141 5.3
22	5 35.5	5 36.4	5 20.2	22 .8	82 3.1	142 5.3
23	5 35.8	5 36.7	5 20.5	23 .9	83 3.1	143 5.4
24	5 36.0	5 36.9	5 20.7	24 .9	84 3.2	144 5.4
25	5 36.3	5 37.2	5 20.9	25 .9	85 3.2	145 5.4
26	5 36.5	5 37.4	5 21.2	26 1.0	86 3.2	146 5.5
27	5 36.8	5 37.7	5 21.4	27 1.0	87 3.3	147 5.5
28	5 37.0	5 37.9	5 21.6	28 1.1	88 3.3	148 5.6
29	5 37.3	5 38.2	5 21.9	29 1.1	89 3.3	149 5.6
30	5 37.5	5 38.4	5 22.1	30 1.1	90 3.4	150 5.6
31	5 37.8	5 38.7	5 22.4	31 1.2	91 3.4	151 5.7
32	5 38.0	5 38.9	5 22.6	32 1.2	92 3.5	152 5.7
33	5 38.3	5 39.2	5 22.8	33 1.2	93 3.5	153 5.7
34	5 38.5	5 39.4	5 23.1	34 1.3	94 3.5	154 5.8
35	5 38.8	5 39.7	5 23.3	35 1.3	95 3.6	155 5.8
36	5 39.0	5 39.9	5 23.6	36 1.4	96 3.6	156 5.9
37	5 39.3	5 40.2	5 23.8	37 1.4	97 3.6	157 5.9
38	5 39.5	5 40.4	5 24.0	38 1.4	98 3.7	158 5.9
39	5 39.8	5 40.7	5 24.3	39 1.5	99 3.7	159 6.0
40	5 40.0	5 40.9	5 24.5	40 1.5	100 3.8	160 6.0
41	5 40.3	5 41.2	5 24.7	41 1.5	101 3.8	161 6.0
42	5 40.5	5 41.4	5 25.0	42 1.6	102 3.8	162 6.1
43	5 40.8	5 41.7	5 25.2	43 1.6	103 3.9	163 6.1
44	5 41.0	5 41.9	5 25.5	44 1.7	104 3.9	164 6.2
45	5 41.3	5 42.2	5 25.7	45 1.7	105 3.9	165 6.2
46	5 41.5	5 42.4	5 25.9	46 1.7	106 4.0	166 6.2
47	5 41.8	5 42.7	5 26.2	47 1.8	107 4.0	167 6.3
48	5 42.0	5 43.0	5 26.4	48 1.8	108 4.1	168 6.3
49	5 42.3	5 43.2	5 26.7	49 1.8	109 4.1	169 6.3
50	5 42.5	5 43.5	5 26.9	50 1.9	110 4.1	170 6.4
51	5 42.8	5 43.7	5 27.1	51 1.9	111 4.2	171 6.4
52	5 43.0	5 44.0	5 27.4	52 2.0	112 4.2	172 6.5
53	5 43.3	5 44.2	5 27.6	53 2.0	113 4.2	173 6.5
54	5 43.5	5 44.5	5 27.9	54 2.0	114 4.3	174 6.5
55	5 43.8	5 44.7	5 28.1	55 2.1	115 4.3	175 6.6
56	5 44.0	5 45.0	5 28.3	56 2.1	116 4.4	176 6.6
57	5 44.3	5 45.2	5 28.6	57 2.1	117 4.4	177 6.6
58	5 44.5	5 45.5	5 28.8	58 2.2	118 4.4	178 6.7
59	5 44.8	5 45.7	5 29.0	59 2.2	119 4.5	179 6.7
60	5 45.0	5 46.0	5 29.3	60 2.3	120 4.5	180 6.8

0 h 23 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	5 45.0	5 46.0	5 29.3	0 .0	60 2.4	120 4.7
1	5 45.3	5 46.2	5 29.5	1 .0	61 2.4	121 4.7
2	5 45.5	5 46.5	5 29.8	2 .1	62 2.4	122 4.8
3	5 45.8	5 46.7	5 30.0	3 .1	63 2.5	123 4.8
4	5 46.0	5 47.0	5 30.2	4 .2	64 2.5	124 4.9
5	5 46.3	5 47.2	5 30.5	5 .2	65 2.5	125 4.9
6	5 46.5	5 47.5	5 30.7	6 .2	66 2.6	126 4.9
7	5 46.8	5 47.7	5 31.0	7 .3	67 2.6	127 5.0
8	5 47.0	5 48.0	5 31.2	8 .3	68 2.7	128 5.0
9	5 47.3	5 48.2	5 31.4	9 .4	69 2.7	129 5.1
10	5 47.5	5 48.5	5 31.7	10 .4	70 2.7	130 5.1
11	5 47.8	5 48.7	5 31.9	11 .4	71 2.8	131 5.1
12	5 48.0	5 49.0	5 32.1	12 .5	72 2.8	132 5.2
13	5 48.3	5 49.2	5 32.4	13 .5	73 2.9	133 5.2
14	5 48.5	5 49.5	5 32.6	14 .5	74 2.9	134 5.2
15	5 48.8	5 49.7	5 32.9	15 .6	75 2.9	135 5.3
16	5 49.0	5 50.0	5 33.1	16 .6	76 3.0	136 5.3
17	5 49.3	5 50.2	5 33.3	17 .7	77 3.0	137 5.4
18	5 49.5	5 50.5	5 33.6	18 .7	78 3.1	138 5.4
19	5 49.8	5 50.7	5 33.8	19 .7	79 3.1	139 5.4
20	5 50.0	5 51.0	5 34.1	20 .8	80 3.1	140 5.5
21	5 50.3	5 51.2	5 34.3	21 .8	81 3.2	141 5.5
22	5 50.5	5 51.5	5 34.5	22 .9	82 3.2	142 5.6
23	5 50.8	5 51.7	5 34.8	23 .9	83 3.3	143 5.6
24	5 51.0	5 52.0	5 35.0	24 .9	84 3.3	144 5.6
25	5 51.3	5 52.2	5 35.2	25 1.0	85 3.3	145 5.7
26	5 51.5	5 52.5	5 35.5	26 1.0	86 3.4	146 5.7
27	5 51.8	5 52.7	5 35.7	27 1.1	87 3.4	147 5.8
28	5 52.0	5 53.0	5 36.0	28 1.1	88 3.4	148 5.8
29	5 52.3	5 53.2	5 36.2	29 1.1	89 3.5	149 5.8
30	5 52.5	5 53.5	5 36.4	30 1.2	90 3.5	150 5.9
31	5 52.8	5 53.7	5 36.7	31 1.2	91 3.6	151 5.9
32	5 53.0	5 54.0	5 36.9	32 1.3	92 3.6	152 6.0
33	5 53.3	5 54.2	5 37.2	33 1.3	93 3.6	153 6.0
34	5 53.5	5 54.5	5 37.4	34 1.3	94 3.7	154 6.0
35	5 53.8	5 54.7	5 37.6	35 1.4	95 3.7	155 6.1
36	5 54.0	5 55.0	5 37.9	36 1.4	96 3.8	156 6.1
37	5 54.3	5 55.2	5 38.1	37 1.4	97 3.8	157 6.1
38	5 54.5	5 55.5	5 38.4	38 1.5	98 3.8	158 6.2
39	5 54.8	5 55.7	5 38.6	39 1.5	99 3.9	159 6.2
40	5 55.0	5 56.0	5 38.8	40 1.6	100 3.9	160 6.3
41	5 55.3	5 56.2	5 39.1	41 1.6	101 4.0	161 6.3
42	5 55.5	5 56.5	5 39.3	42 1.6	102 4.0	162 6.3
43	5 55.8	5 56.7	5 39.5	43 1.7	103 4.0	163 6.4
44	5 56.0	5 57.0	5 39.8	44 1.7	104 4.1	164 6.4
45	5 56.3	5 57.2	5 40.0	45 1.8	105 4.1	165 6.5
46	5 56.5	5 57.5	5 40.3	46 1.8	106 4.2	166 6.5
47	5 56.8	5 57.7	5 40.5	47 1.8	107 4.2	167 6.5
48	5 57.0	5 58.0	5 40.7	48 1.9	108 4.2	168 6.6
49	5 57.3	5 58.2	5 41.0	49 1.9	109 4.3	169 6.6
50	5 57.5	5 58.5	5 41.2	50 2.0	110 4.3	170 6.7
51	5 57.8	5 58.7	5 41.5	51 2.0	111 4.3	171 6.7
52	5 58.0	5 59.0	5 41.7	52 2.0	112 4.4	172 6.7
53	5 58.3	5 59.2	5 41.9	53 2.1	113 4.4	173 6.8
54	5 58.5	5 59.5	5 42.2	54 2.1	114 4.5	174 6.8
55	5 58.8	5 59.7	5 42.4	55 2.2	115 4.5	175 6.9
56	5 59.0	5 60.0	5 42.6	56 2.2	116 4.5	176 6.9
57	5 59.3	6 .2	5 42.9	57 2.2	117 4.6	177 6.9
58	5 59.5	6 .5	5 43.1	58 2.3	118 4.6	178 7.0
59	5 59.8	6 .7	5 43.4	59 2.3	119 4.7	179 7.0
60	6 .0	6 1.0	5 43.6	60 2.4	120 4.7	180 7.1

0 h 24 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.					
	o	'			'	'	'	'				
0	6	.0	6	1.0	5	43.6	0	.0	60	2.5	120	4.9
1	6	.3	6	1.3	5	43.8	1	.0	61	2.5	121	4.9
2	6	.5	6	1.5	5	44.1	2	.1	62	2.5	122	5.0
3	6	.8	6	1.8	5	44.3	3	.1	63	2.6	123	5.0
4	6	1.0	6	2.0	5	44.6	4	.2	64	2.6	124	5.1
5	6	1.3	6	2.3	5	44.8	5	.2	65	2.7	125	5.1
6	6	1.5	6	2.5	5	45.0	6	.2	66	2.7	126	5.1
7	6	1.8	6	2.8	5	45.3	7	.3	67	2.7	127	5.2
8	6	2.0	6	3.0	5	45.5	8	.3	68	2.8	128	5.2
9	6	2.3	6	3.3	5	45.7	9	.4	69	2.8	129	5.3
10	6	2.5	6	3.5	5	46.0	10	.4	70	2.9	130	5.3
11	6	2.8	6	3.8	5	46.2	11	.4	71	2.9	131	5.3
12	6	3.0	6	4.0	5	46.5	12	.5	72	2.9	132	5.4
13	6	3.3	6	4.3	5	46.7	13	.5	73	3.0	133	5.4
14	6	3.5	6	4.5	5	46.9	14	.6	74	3.0	134	5.5
15	6	3.8	6	4.8	5	47.2	15	.6	75	3.1	135	5.5
16	6	4.0	6	5.0	5	47.4	16	.7	76	3.1	136	5.6
17	6	4.3	6	5.3	5	47.7	17	.7	77	3.1	137	5.6
18	6	4.5	6	5.5	5	47.9	18	.7	78	3.2	138	5.6
19	6	4.8	6	5.8	5	48.1	19	.8	79	3.2	139	5.7
20	6	5.0	6	6.0	5	48.4	20	.8	80	3.3	140	5.7
21	6	5.3	6	6.3	5	48.6	21	.9	81	3.3	141	5.8
22	6	5.5	6	6.5	5	48.8	22	.9	82	3.3	142	5.8
23	6	5.8	6	6.8	5	49.1	23	.9	83	3.4	143	5.8
24	6	6.0	6	7.0	5	49.3	24	1.0	84	3.4	144	5.9
25	6	6.3	6	7.3	5	49.6	25	1.0	85	3.5	145	5.9
26	6	6.5	6	7.5	5	49.8	26	1.1	86	3.5	146	6.0
27	6	6.8	6	7.8	5	50.0	27	1.1	87	3.6	147	6.0
28	6	7.0	6	8.0	5	50.3	28	1.1	88	3.6	148	6.0
29	6	7.3	6	8.3	5	50.5	29	1.2	89	3.6	149	6.1
30	6	7.5	6	8.5	5	50.8	30	1.2	90	3.7	150	6.1
31	6	7.8	6	8.8	5	51.0	31	1.3	91	3.7	151	6.2
32	6	8.0	6	9.0	5	51.2	32	1.3	92	3.8	152	6.2
33	6	8.3	6	9.3	5	51.5	33	1.3	93	3.8	153	6.2
34	6	8.5	6	9.5	5	51.7	34	1.4	94	3.8	154	6.3
35	6	8.8	6	9.8	5	52.0	35	1.4	95	3.9	155	6.3
36	6	9.0	6	10.0	5	52.2	36	1.5	96	3.9	156	6.4
37	6	9.3	6	10.3	5	52.4	37	1.5	97	4.0	157	6.4
38	6	9.5	6	10.5	5	52.7	38	1.6	98	4.0	158	6.5
39	6	9.8	6	10.8	5	52.9	39	1.6	99	4.0	159	6.5
40	6	10.0	6	11.0	5	53.1	40	1.6	100	4.1	160	6.5
41	6	10.3	6	11.3	5	53.4	41	1.7	101	4.1	161	6.6
42	6	10.5	6	11.5	5	53.6	42	1.7	102	4.2	162	6.6
43	6	10.8	6	11.8	5	53.9	43	1.8	103	4.2	163	6.7
44	6	11.0	6	12.0	5	54.1	44	1.8	104	4.2	164	6.7
45	6	11.3	6	12.3	5	54.3	45	1.8	105	4.3	165	6.7
46	6	11.5	6	12.5	5	54.6	46	1.9	106	4.3	166	6.8
47	6	11.8	6	12.8	5	54.8	47	1.9	107	4.4	167	6.8
48	6	12.0	6	13.0	5	55.1	48	2.0	108	4.4	168	6.9
49	6	12.3	6	13.3	5	55.3	49	2.0	109	4.5	169	6.9
50	6	12.5	6	13.5	5	55.5	50	2.0	110	4.5	170	6.9
51	6	12.8	6	13.8	5	55.8	51	2.1	111	4.5	171	7.0
52	6	13.0	6	14.0	5	56.0	52	2.1	112	4.6	172	7.0
53	6	13.3	6	14.3	5	56.2	53	2.2	113	4.6	173	7.1
54	6	13.5	6	14.5	5	56.5	54	2.2	114	4.7	174	7.1
55	6	13.8	6	14.8	5	56.7	55	2.2	115	4.7	175	7.1
56	6	14.0	6	15.0	5	57.0	56	2.3	116	4.7	176	7.2
57	6	14.3	6	15.3	5	57.2	57	2.3	117	4.8	177	7.2
58	6	14.5	6	15.5	5	57.4	58	2.4	118	4.8	178	7.3
59	6	14.8	6	15.8	5	57.7	59	2.4	119	4.9	179	7.3
60	6	15.0	6	16.0	5	57.9	60	2.5	120	4.9	180	7.4

0 h 25 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.					
	o	'			'	'	'	'				
0	6	15.0	6	16.0	5	57.9	0	.0	60	2.6	120	5.1
1	6	15.3	6	16.3	5	58.2	1	.0	61	2.6	121	5.1
2	6	15.5	6	16.5	5	58.4	2	.1	62	2.6	122	5.2
3	6	15.8	6	16.8	5	58.6	3	.1	63	2.7	123	5.2
4	6	16.0	6	17.0	5	58.9	4	.2	64	2.7	124	5.3
5	6	16.3	6	17.3	5	59.1	5	.2	65	2.8	125	5.3
6	6	16.5	6	17.5	5	59.3	6	.3	66	2.8	126	5.4
7	6	16.8	6	17.8	5	59.6	7	.3	67	2.8	127	5.4
8	6	17.0	6	18.0	5	59.8	8	.3	68	2.9	128	5.4
9	6	17.3	6	18.3	6	.1	9	.4	69	2.9	129	5.5
10	6	17.5	6	18.5	6	.3	10	.4	70	3.0	130	5.5
11	6	17.8	6	18.8	6	.5	11	.5	71	3.0	131	5.6
12	6	18.0	6	19.1	6	.8	12	.5	72	3.1	132	5.6
13	6	18.3	6	19.3	6	1.0	13	.6	73	3.1	133	5.7
14	6	18.5	6	19.6	6	1.3	14	.6	74	3.1	134	5.7
15	6	18.8	6	19.8	6	1.5	15	.6	75	3.2	135	5.7
16	6	19.0	6	20.1	6	1.7	16	.7	76	3.2	136	5.8
17	6	19.3	6	20.3	6	2.0	17	.7	77	3.3	137	5.8
18	6	19.5	6	20.6	6	2.2	18	.8	78	3.3	138	5.9
19	6	19.8	6	20.8	6	2.5	19	.8	79	3.4	139	5.9
20	6	20.0	6	21.1	6	2.7	20	.9	80	3.4	140	6.0
21	6	20.3	6	21.3	6	2.9	21	.9	81	3.4	141	6.0
22	6	20.5	6	21.6	6	3.2	22	.9	82	3.5	142	6.0
23	6	20.8	6	21.8	6	3.4	23	1.0	83	3.5	143	6.1
24	6	21.0	6	22.1	6	3.6	24	1.0	84	3.6	144	6.1
25	6	21.3	6	22.3	6	3.9	25	1.1	85	3.6	145	6.2
26	6	21.5	6	22.6	6	4.1	26	1.1	86	3.7	146	6.2
27	6	21.8	6	22.8	6	4.4	27	1.1	87	3.7	147	6.2
28	6	22.0	6	23.1	6	4.6	28	1.2	88	3.7	148	6.3
29	6	22.3	6	23.3	6	4.8	29	1.2	89	3.8	149	6.3
30	6	22.5	6	23.6	6	5.1	30	1.3	90	3.8	150	6.4
31	6	22.8	6	23.8	6	5.3	31	1.3	91	3.9	151	6.4
32	6	23.0	6	24.1	6	5.6	32	1.4	92	3.9	152	6.5
33	6	23.3	6	24.3	6	5.8	33	1.4	93	4.0	153	6.5
34	6	23.5	6	24.6	6	6.0	34	1.4	94	4.0	154	6.5
35	6	23.8	6	24.8	6	6.3	35	1.5	95	4.0	155	6.6
36	6	24.0	6	25.1	6	6.5	36	1.5	96	4.1	156	6.6
37	6	24.3	6	25.3	6	6.7	37	1.6	97	4.1	157	6.7
38	6	24.5	6	25.6	6	7.0	38	1.6	98	4.2	158	6.7
39	6	24.8	6	25.8	6	7.2	39	1.7	99	4.2	159	6.8
40	6	25.0	6	26.1	6	7.5	40	1.7	100	4.3	160	6.8
41	6	25.3	6	26.3	6	7.7	41	1.7	101	4.3	161	6.8
42	6	25.5	6	26.6	6	7.9	42	1.8	102	4.3	162	6.9
43	6	25.8	6	26.8	6	8.2	43	1.8	103	4.4	163	6.9
44	6	26.0	6	27.1	6	8.4	44	1.9	104	4.4	164	7.0
45	6	26.3	6	27.3	6	8.7	45	1.9	105	4.5	165	7.0
46	6	26.5	6	27.6	6	8.9	46	2.0	106	4.5	166	7.1
47	6	26.8	6	27.8	6	9.1	47	2.0	107	4.5	167	7.1
48	6	27.0	6	28.1	6	9.4	48	2.0	108	4.6	168	7.1
49	6	27.3	6	28.3	6	9.6	49	2.1	109	4.6	169	7.2
50	6	27.5	6	28.6	6	9.8	50	2.1	110	4.7	170	7.2
51	6	27.8	6	28.8	6	10.1	51	2.2	111	4.7	171	7.3
52	6	28.0	6	29.1	6	10.3	52	2.2	112	4.8	172	7.3
53	6	28.3	6	29.3	6	10.6	53	2.3	113	4.8	173	7.4
54	6	28.5	6	29.6	6	10.8	54	2.3	114	4.8	174	7.4
55	6	28.8	6	29.8	6	11.0	55	2.3	115	4.9	175	

0 h 26 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	6 30.0	6 31.1	6 12.2	0 .0	60 2.7	120 5.3
1	6 30.3	6 31.3	6 12.5	1 .0	61 2.7	121 5.3
2	6 30.5	6 31.6	6 12.7	2 .1	62 2.7	122 5.4
3	6 30.8	6 31.8	6 12.9	3 .1	63 2.8	123 5.4
4	6 31.0	6 32.1	6 13.2	4 .2	64 2.8	124 5.5
5	6 31.3	6 32.3	6 13.4	5 .2	65 2.9	125 5.5
6	6 31.5	6 32.6	6 13.7	6 .3	66 2.9	126 5.6
7	6 31.8	6 32.8	6 13.9	7 .3	67 3.0	127 5.6
8	6 32.0	6 33.1	6 14.1	8 .4	68 3.0	128 5.7
9	6 32.3	6 33.3	6 14.4	9 .4	69 3.0	129 5.7
10	6 32.5	6 33.6	6 14.6	10 .4	70 3.1	130 5.7
11	6 32.8	6 33.8	6 14.9	11 .5	71 3.1	131 5.8
12	6 33.0	6 34.1	6 15.1	12 .5	72 3.2	132 5.8
13	6 33.3	6 34.3	6 15.3	13 .6	73 3.2	133 5.9
14	6 33.5	6 34.6	6 15.6	14 .6	74 3.3	134 5.9
15	6 33.8	6 34.8	6 15.8	15 .7	75 3.3	135 6.0
16	6 34.0	6 35.1	6 16.1	16 .7	76 3.4	136 6.0
17	6 34.3	6 35.3	6 16.3	17 .8	77 3.4	137 6.1
18	6 34.5	6 35.6	6 16.5	18 .8	78 3.4	138 6.1
19	6 34.8	6 35.8	6 16.8	19 .8	79 3.5	139 6.1
20	6 35.0	6 36.1	6 17.0	20 .9	80 3.5	140 6.2
21	6 35.3	6 36.3	6 17.2	21 .9	81 3.6	141 6.2
22	6 35.5	6 36.6	6 17.5	22 1.0	82 3.6	142 6.3
23	6 35.8	6 36.8	6 17.7	23 1.0	83 3.7	143 6.3
24	6 36.0	6 37.1	6 18.0	24 1.1	84 3.7	144 6.4
25	6 36.3	6 37.4	6 18.2	25 1.1	85 3.8	145 6.4
26	6 36.5	6 37.6	6 18.4	26 1.1	86 3.8	146 6.4
27	6 36.8	6 37.9	6 18.7	27 1.2	87 3.8	147 6.5
28	6 37.0	6 38.1	6 18.9	28 1.2	88 3.9	148 6.5
29	6 37.3	6 38.4	6 19.2	29 1.3	89 3.9	149 6.6
30	6 37.5	6 38.6	6 19.4	30 1.3	90 4.0	150 6.6
31	6 37.8	6 38.9	6 19.6	31 1.4	91 4.0	151 6.7
32	6 38.0	6 39.1	6 19.9	32 1.4	92 4.1	152 6.7
33	6 38.3	6 39.4	6 20.1	33 1.5	93 4.1	153 6.8
34	6 38.5	6 39.6	6 20.3	34 1.5	94 4.2	154 6.8
35	6 38.8	6 39.9	6 20.6	35 1.5	95 4.2	155 6.8
36	6 39.0	6 40.1	6 20.8	36 1.6	96 4.2	156 6.9
37	6 39.3	6 40.4	6 21.1	37 1.6	97 4.3	157 6.9
38	6 39.5	6 40.6	6 21.3	38 1.7	98 4.3	158 7.0
39	6 39.8	6 40.9	6 21.5	39 1.7	99 4.4	159 7.0
40	6 40.0	6 41.1	6 21.8	40 1.8	100 4.4	160 7.1
41	6 40.3	6 41.4	6 22.0	41 1.8	101 4.5	161 7.1
42	6 40.5	6 41.6	6 22.3	42 1.9	102 4.5	162 7.2
43	6 40.8	6 41.9	6 22.5	43 1.9	103 4.5	163 7.2
44	6 41.0	6 42.1	6 22.7	44 1.9	104 4.6	164 7.2
45	6 41.3	6 42.4	6 23.0	45 2.0	105 4.6	165 7.3
46	6 41.5	6 42.6	6 23.2	46 2.0	106 4.7	166 7.3
47	6 41.8	6 42.9	6 23.4	47 2.1	107 4.7	167 7.4
48	6 42.0	6 43.1	6 23.7	48 2.1	108 4.8	168 7.4
49	6 42.3	6 43.4	6 23.9	49 2.2	109 4.8	169 7.5
50	6 42.5	6 43.6	6 24.2	50 2.2	110 4.9	170 7.5
51	6 42.8	6 43.9	6 24.4	51 2.3	111 4.9	171 7.6
52	6 43.0	6 44.1	6 24.6	52 2.3	112 4.9	172 7.6
53	6 43.3	6 44.4	6 24.9	53 2.3	113 5.0	173 7.6
54	6 43.5	6 44.6	6 25.1	54 2.4	114 5.0	174 7.7
55	6 43.8	6 44.9	6 25.4	55 2.4	115 5.1	175 7.7
56	6 44.0	6 45.1	6 25.6	56 2.5	116 5.1	176 7.8
57	6 44.3	6 45.4	6 25.8	57 2.5	117 5.2	177 7.8
58	6 44.5	6 45.6	6 26.1	58 2.6	118 5.2	178 7.9
59	6 44.8	6 45.9	6 26.3	59 2.6	119 5.3	179 7.9
60	6 45.0	6 46.1	6 26.6	60 2.7	120 5.3	180 8.0

0 h 27 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	6 45.0	6 46.1	6 26.6	0 .0	60 2.8	120 5.5
1	6 45.3	6 46.4	6 26.8	1 .0	61 2.8	121 5.5
2	6 45.5	6 46.6	6 27.0	2 .1	62 2.8	122 5.6
3	6 45.8	6 46.9	6 27.3	3 .1	63 2.9	123 5.6
4	6 46.0	6 47.1	6 27.5	4 .2	64 2.9	124 5.7
5	6 46.3	6 47.4	6 27.7	5 .2	65 3.0	125 5.7
6	6 46.5	6 47.6	6 28.0	6 .3	66 3.0	126 5.8
7	6 46.8	6 47.9	6 28.2	7 .3	67 3.1	127 5.8
8	6 47.0	6 48.1	6 28.5	8 .4	68 3.1	128 5.9
9	6 47.3	6 48.4	6 28.7	9 .4	69 3.2	129 5.9
10	6 47.5	6 48.6	6 28.9	10 .5	70 3.2	130 6.0
11	6 47.8	6 48.9	6 29.2	11 .5	71 3.3	131 6.0
12	6 48.0	6 49.1	6 29.4	12 .6	72 3.3	132 6.1
13	6 48.3	6 49.4	6 29.7	13 .6	73 3.3	133 6.1
14	6 48.5	6 49.6	6 29.9	14 .6	74 3.4	134 6.1
15	6 48.8	6 49.9	6 30.1	15 .7	75 3.4	135 6.2
16	6 49.0	6 50.1	6 30.4	16 .7	76 3.5	136 6.2
17	6 49.3	6 50.4	6 30.6	17 .8	77 3.5	137 6.3
18	6 49.5	6 50.6	6 30.8	18 .8	78 3.6	138 6.3
19	6 49.8	6 50.9	6 31.1	19 .9	79 3.6	139 6.4
20	6 50.0	6 51.1	6 31.3	20 .9	80 3.7	140 6.4
21	6 50.3	6 51.4	6 31.6	21 1.0	81 3.7	141 6.5
22	6 50.5	6 51.6	6 31.8	22 1.0	82 3.8	142 6.5
23	6 50.8	6 51.9	6 32.0	23 1.1	83 3.8	143 6.6
24	6 51.0	6 52.1	6 32.3	24 1.1	84 3.9	144 6.6
25	6 51.3	6 52.4	6 32.5	25 1.1	85 3.9	145 6.6
26	6 51.5	6 52.6	6 32.8	26 1.2	86 3.9	146 6.7
27	6 51.8	6 52.9	6 33.0	27 1.2	87 4.0	147 6.7
28	6 52.0	6 53.1	6 33.2	28 1.3	88 4.0	148 6.8
29	6 52.3	6 53.4	6 33.5	29 1.3	89 4.1	149 6.8
30	6 52.5	6 53.6	6 33.7	30 1.4	90 4.1	150 6.9
31	6 52.8	6 53.9	6 33.9	31 1.4	91 4.2	151 6.9
32	6 53.0	6 54.1	6 34.2	32 1.5	92 4.2	152 7.0
33	6 53.3	6 54.4	6 34.4	33 1.5	93 4.3	153 7.0
34	6 53.5	6 54.6	6 34.7	34 1.6	94 4.3	154 7.1
35	6 53.8	6 54.9	6 34.9	35 1.6	95 4.4	155 7.1
36	6 54.0	6 55.2	6 35.1	36 1.7	96 4.4	156 7.2
37	6 54.3	6 55.4	6 35.4	37 1.7	97 4.4	157 7.2
38	6 54.5	6 55.7	6 35.6	38 1.7	98 4.5	158 7.2
39	6 54.8	6 55.9	6 35.9	39 1.8	99 4.5	159 7.3
40	6 55.0	6 56.2	6 36.1	40 1.8	100 4.6	160 7.3
41	6 55.3	6 56.4	6 36.3	41 1.9	101 4.6	161 7.4
42	6 55.5	6 56.7	6 36.6	42 1.9	102 4.7	162 7.4
43	6 55.8	6 56.9	6 36.8	43 2.0	103 4.7	163 7.5
44	6 56.0	6 57.2	6 37.0	44 2.0	104 4.8	164 7.5
45	6 56.3	6 57.4	6 37.3	45 2.1	105 4.8	165 7.6
46	6 56.5	6 57.7	6 37.5	46 2.1	106 4.9	166 7.6
47	6 56.8	6 57.9	6 37.8	47 2.2	107 4.9	167 7.7
48	6 57.0	6 58.2	6 38.0	48 2.2	108 5.0	168 7.7
49	6 57.3	6 58.4	6 38.2	49 2.2	109 5.0	169 7.7
50	6 57.5	6 58.7	6 38.5	50 2.3	110 5.0	170 7.8
51	6 57.8	6 58.9	6 38.7	51 2.3	111 5.1	171 7.8
52	6 58.0	6 59.2	6 39.0	52 2.4	112 5.1	172 7.9
53	6 58.3	6 59.4	6 39.2	53 2.4	113 5.2	173 7.9
54	6 58.5	6 59.7	6 39.4	54 2.5	114 5.2	174 8.0
55	6 58.8	6 59.9	6 39.7	55 2.5	115 5.3	175 8.0
56	6 59.0	7 .2	6 39.9	56 2.6	116 5.3	176 8.1
57	6 59.3	7 .4	6 40.2	57 2.6	117 5.4	177 8.1
58	6 59.5	7 .7	6 40.4	58 2.7	118 5.4	178 8.2
59	6 59.8	7 .9	6 40.6	59 2.7	119 5.5	179 8.2
60	7 .0	7 1.2	6 40.9	60 2.8	120 5.5	180 8.3

0 h 28 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.					
	o	'	o	'	'	'	'					
0	7	.0	7	1.2	6	40.9	0	.0	60	2.9	120	5.7
1	7	.3	7	1.4	6	41.1	1	.0	61	2.9	121	5.7
2	7	.5	7	1.7	6	41.3	2	.1	62	2.9	122	5.8
3	7	.8	7	1.9	6	41.6	3	.1	63	3.0	123	5.8
4	7	1.0	7	2.2	6	41.8	4	.2	64	3.0	124	5.9
5	7	1.3	7	2.4	6	42.1	5	.2	65	3.1	125	5.9
6	7	1.5	7	2.7	6	42.3	6	.3	66	3.1	126	6.0
7	7	1.8	7	2.9	6	42.5	7	.3	67	3.2	127	6.0
8	7	2.0	7	3.2	6	42.8	8	.4	68	3.2	128	6.1
9	7	2.3	7	3.4	6	43.0	9	.4	69	3.3	129	6.1
10	7	2.5	7	3.7	6	43.3	10	.5	70	3.3	130	6.2
11	7	2.8	7	3.9	6	43.5	11	.5	71	3.4	131	6.2
12	7	3.0	7	4.2	6	43.7	12	.6	72	3.4	132	6.3
13	7	3.3	7	4.4	6	44.0	13	.6	73	3.5	133	6.3
14	7	3.5	7	4.7	6	44.2	14	.7	74	3.5	134	6.4
15	7	3.8	7	4.9	6	44.4	15	.7	75	3.6	135	6.4
16	7	4.0	7	5.2	6	44.7	16	.8	76	3.6	136	6.5
17	7	4.3	7	5.4	6	44.9	17	.8	77	3.7	137	6.5
18	7	4.5	7	5.7	6	45.2	18	.9	78	3.7	138	6.6
19	7	4.8	7	5.9	6	45.4	19	.9	79	3.8	139	6.6
20	7	5.0	7	6.2	6	45.6	20	1.0	80	3.8	140	6.7
21	7	5.3	7	6.4	6	45.9	21	1.0	81	3.8	141	6.7
22	7	5.5	7	6.7	6	46.1	22	1.0	82	3.9	142	6.7
23	7	5.8	7	6.9	6	46.4	23	1.1	83	3.9	143	6.8
24	7	6.0	7	7.2	6	46.6	24	1.1	84	4.0	144	6.8
25	7	6.3	7	7.4	6	46.8	25	1.2	85	4.0	145	6.9
26	7	6.5	7	7.7	6	47.1	26	1.2	86	4.1	146	6.9
27	7	6.8	7	7.9	6	47.3	27	1.3	87	4.1	147	7.0
28	7	7.0	7	8.2	6	47.5	28	1.3	88	4.2	148	7.0
29	7	7.3	7	8.4	6	47.8	29	1.4	89	4.2	149	7.1
30	7	7.5	7	8.7	6	48.0	30	1.4	90	4.3	150	7.1
31	7	7.8	7	8.9	6	48.3	31	1.5	91	4.3	151	7.2
32	7	8.0	7	9.2	6	48.5	32	1.5	92	4.4	152	7.2
33	7	8.3	7	9.4	6	48.7	33	1.6	93	4.4	153	7.3
34	7	8.5	7	9.7	6	49.0	34	1.6	94	4.5	154	7.3
35	7	8.8	7	9.9	6	49.2	35	1.7	95	4.5	155	7.4
36	7	9.0	7	10.2	6	49.5	36	1.7	96	4.6	156	7.4
37	7	9.3	7	10.4	6	49.7	37	1.8	97	4.6	157	7.5
38	7	9.5	7	10.7	6	49.9	38	1.8	98	4.7	158	7.5
39	7	9.8	7	10.9	6	50.2	39	1.9	99	4.7	159	7.6
40	7	10.0	7	11.2	6	50.4	40	1.9	100	4.8	160	7.6
41	7	10.3	7	11.4	6	50.6	41	1.9	101	4.8	161	7.6
42	7	10.5	7	11.7	6	50.9	42	2.0	102	4.8	162	7.7
43	7	10.8	7	11.9	6	51.1	43	2.0	103	4.9	163	7.7
44	7	11.0	7	12.2	6	51.4	44	2.1	104	4.9	164	7.8
45	7	11.3	7	12.4	6	51.6	45	2.1	105	5.0	165	7.8
46	7	11.5	7	12.7	6	51.8	46	2.2	106	5.0	166	7.9
47	7	11.8	7	12.9	6	52.1	47	2.2	107	5.1	167	7.9
48	7	12.0	7	13.2	6	52.3	48	2.3	108	5.1	168	8.0
49	7	12.3	7	13.5	6	52.6	49	2.3	109	5.2	169	8.0
50	7	12.5	7	13.7	6	52.8	50	2.4	110	5.2	170	8.1
51	7	12.8	7	14.0	6	53.0	51	2.4	111	5.3	171	8.1
52	7	13.0	7	14.2	6	53.3	52	2.5	112	5.3	172	8.2
53	7	13.3	7	14.5	6	53.5	53	2.5	113	5.4	173	8.2
54	7	13.5	7	14.7	6	53.8	54	2.6	114	5.4	174	8.3
55	7	13.8	7	15.0	6	54.0	55	2.6	115	5.5	175	8.3
56	7	14.0	7	15.2	6	54.2	56	2.7	116	5.5	176	8.4
57	7	14.3	7	15.5	6	54.5	57	2.7	117	5.6	177	8.4
58	7	14.5	7	15.7	6	54.7	58	2.8	118	5.6	178	8.5
59	7	14.8	7	16.0	6	54.9	59	2.8	119	5.7	179	8.5
60	7	15.0	7	16.2	6	55.2	60	2.9	120	5.7	180	8.6

0 h 29 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.					
	o	'	o	'	'	'	'					
0	7	15.0	7	16.2	6	55.2	0	.0	60	3.0	120	5.9
1	7	15.3	7	16.5	6	55.4	1	.0	61	3.0	121	5.9
2	7	15.5	7	16.7	6	55.7	2	.1	62	3.0	122	6.0
3	7	15.8	7	17.0	6	55.9	3	.1	63	3.1	123	6.0
4	7	16.0	7	17.2	6	56.1	4	.2	64	3.1	124	6.1
5	7	16.3	7	17.5	6	56.4	5	.2	65	3.2	125	6.1
6	7	16.5	7	17.7	6	56.6	6	.3	66	3.2	126	6.2
7	7	16.8	7	18.0	6	56.9	7	.3	67	3.3	127	6.2
8	7	17.0	7	18.2	6	57.1	8	.4	68	3.3	128	6.3
9	7	17.3	7	18.5	6	57.3	9	.4	69	3.4	129	6.3
10	7	17.5	7	18.7	6	57.6	10	.5	70	3.4	130	6.4
11	7	17.8	7	19.0	6	57.8	11	.5	71	3.5	131	6.4
12	7	18.0	7	19.2	6	58.0	12	.6	72	3.5	132	6.5
13	7	18.3	7	19.5	6	58.3	13	.6	73	3.6	133	6.5
14	7	18.5	7	19.7	6	58.5	14	.7	74	3.6	134	6.6
15	7	18.8	7	20.0	6	58.8	15	.7	75	3.7	135	6.6
16	7	19.0	7	20.2	6	59.0	16	.8	76	3.7	136	6.7
17	7	19.3	7	20.5	6	59.2	17	.8	77	3.8	137	6.7
18	7	19.5	7	20.7	6	59.5	18	.9	78	3.8	138	6.8
19	7	19.8	7	21.0	6	59.7	19	.9	79	3.9	139	6.8
20	7	20.0	7	21.2	6	60.0	20	1.0	80	3.9	140	6.9
21	7	20.3	7	21.5	7	.2	21	1.0	81	4.0	141	6.9
22	7	20.5	7	21.7	7	.4	22	1.1	82	4.0	142	7.0
23	7	20.8	7	22.0	7	.7	23	1.1	83	4.1	143	7.0
24	7	21.0	7	22.2	7	.9	24	1.2	84	4.1	144	7.1
25	7	21.3	7	22.5	7	1.1	25	1.2	85	4.2	145	7.1
26	7	21.5	7	22.7	7	1.4	26	1.3	86	4.2	146	7.2
27	7	21.8	7	23.0	7	1.6	27	1.3	87	4.3	147	7.2
28	7	22.0	7	23.2	7	1.9	28	1.4	88	4.3	148	7.3
29	7	22.3	7	23.5	7	2.1	29	1.4	89	4.4	149	7.3
30	7	22.5	7	23.7	7	2.3	30	1.5	90	4.4	150	7.4
31	7	22.8	7	24.0	7	2.6	31	1.5	91	4.5	151	7.4
32	7	23.0	7	24.2	7	2.8	32	1.6	92	4.5	152	7.5
33	7	23.3	7	24.5	7	3.1	33	1.6	93	4.6	153	7.5
34	7	23.5	7	24.7	7	3.3	34	1.7	94	4.6	154	7.6
35	7	23.8	7	25.0	7	3.5	35	1.7	95	4.7	155	7.6
36	7	24.0	7	25.2	7	3.8	36	1.8	96	4.7	156	7.7
37	7	24.3	7	25.5	7	4.0	37	1.8	97	4.8	157	7.7
38	7	24.5	7	25.7	7	4.3	38	1.9	98	4.8	158	7.8
39	7	24.8	7	26.0	7	4.5	39	1.9	99	4.9	159	7.8
40	7	25.0	7	26.2	7	4.7	40	2.0	100	4.9	160	7.9
41	7	25.3	7	26.5	7	5.0	41	2.0	101	5.0	161	7.9
42	7	25.5	7	26.7	7	5.2	42	2.1	102	5.0	162	8.0
43	7	25.8	7	27.0	7	5.4	43	2.1	103	5.1	163	8.0
44	7	26.0	7	27.2	7	5.7	44	2.2	104	5.1	164	8.1
45	7	26.3	7	27.5	7	5.9	45	2.2	105	5.2	165	8.1
46	7	26.5	7	27.7	7	6.2	46	2.3	106	5.2	166	8.2
47	7	26.8	7	28.0	7	6.4	47	2.3	107	5.3	167	8.2
48	7	27.0	7	28.2	7	6.6	48	2.4	108	5.3	168	8.3
49	7	27.3	7	28.5	7	6.9	49	2.4	109	5.4	169	8.3
50	7	27.5	7	28.7	7	7.1	50	2.5	110	5.4	170	8.4
51	7	27.8	7	29.0	7	7.4	51	2.5	111	5.5	171	8.4
52	7	28.0	7	29.2	7	7.6	52	2.6	112	5.5	172	8.5
53	7	28.3	7	29.5	7	7.8	53	2.6	113	5.6	173	8.5
54	7	28.5	7	29.7	7	8.1	54	2.7	114	5.6	174	8.6
55	7	28.8	7	30.0	7	8.3	55	2.7				

0 h 30 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.
	o /	o /	o /	/	/	/	/	/	/
0	7 30.0	7 31.3	7 9.5	0	.0	60	3.1	120	6.1
1	7 30.3	7 31.5	7 9.7	1	.1	61	3.1	121	6.2
2	7 30.5	7 31.8	7 10.0	2	.1	62	3.2	122	6.2
3	7 30.8	7 32.0	7 10.2	3	.2	63	3.2	123	6.3
4	7 31.0	7 32.3	7 10.5	4	.2	64	3.3	124	6.3
5	7 31.3	7 32.5	7 10.7	5	.3	65	3.3	125	6.4
6	7 31.5	7 32.8	7 10.9	6	.3	66	3.4	126	6.4
7	7 31.8	7 33.0	7 11.2	7	.4	67	3.4	127	6.5
8	7 32.0	7 33.3	7 11.4	8	.4	68	3.5	128	6.5
9	7 32.3	7 33.5	7 11.6	9	.5	69	3.5	129	6.6
10	7 32.5	7 33.8	7 11.9	10	.5	70	3.6	130	6.6
11	7 32.8	7 34.0	7 12.1	11	.6	71	3.6	131	6.7
12	7 33.0	7 34.3	7 12.4	12	.6	72	3.7	132	6.7
13	7 33.3	7 34.5	7 12.6	13	.7	73	3.7	133	6.8
14	7 33.5	7 34.8	7 12.8	14	.7	74	3.8	134	6.8
15	7 33.8	7 35.0	7 13.1	15	.8	75	3.8	135	6.9
16	7 34.0	7 35.3	7 13.3	16	.8	76	3.9	136	6.9
17	7 34.3	7 35.5	7 13.6	17	.9	77	3.9	137	7.0
18	7 34.5	7 35.8	7 13.8	18	.9	78	4.0	138	7.0
19	7 34.8	7 36.0	7 14.0	19	1.0	79	4.0	139	7.1
20	7 35.0	7 36.3	7 14.3	20	1.0	80	4.1	140	7.1
21	7 35.3	7 36.5	7 14.5	21	1.1	81	4.1	141	7.2
22	7 35.5	7 36.8	7 14.7	22	1.1	82	4.2	142	7.2
23	7 35.8	7 37.0	7 15.0	23	1.2	83	4.2	143	7.3
24	7 36.0	7 37.3	7 15.2	24	1.2	84	4.3	144	7.3
25	7 36.3	7 37.5	7 15.5	25	1.3	85	4.3	145	7.4
26	7 36.5	7 37.8	7 15.7	26	1.3	86	4.4	146	7.4
27	7 36.8	7 38.0	7 15.9	27	1.4	87	4.4	147	7.5
28	7 37.0	7 38.3	7 16.2	28	1.4	88	4.5	148	7.5
29	7 37.3	7 38.5	7 16.4	29	1.5	89	4.5	149	7.6
30	7 37.5	7 38.8	7 16.7	30	1.5	90	4.6	150	7.6
31	7 37.8	7 39.0	7 16.9	31	1.6	91	4.6	151	7.7
32	7 38.0	7 39.3	7 17.1	32	1.6	92	4.7	152	7.7
33	7 38.3	7 39.5	7 17.4	33	1.7	93	4.7	153	7.8
34	7 38.5	7 39.8	7 17.6	34	1.7	94	4.8	154	7.8
35	7 38.8	7 40.0	7 17.9	35	1.8	95	4.8	155	7.9
36	7 39.0	7 40.3	7 18.1	36	1.8	96	4.9	156	7.9
37	7 39.3	7 40.5	7 18.3	37	1.9	97	4.9	157	8.0
38	7 39.5	7 40.8	7 18.6	38	1.9	98	5.0	158	8.0
39	7 39.8	7 41.0	7 18.8	39	2.0	99	5.0	159	8.1
40	7 40.0	7 41.3	7 19.0	40	2.0	100	5.1	160	8.1
41	7 40.3	7 41.5	7 19.3	41	2.1	101	5.1	161	8.2
42	7 40.5	7 41.8	7 19.5	42	2.1	102	5.2	162	8.2
43	7 40.8	7 42.0	7 19.8	43	2.2	103	5.2	163	8.3
44	7 41.0	7 42.3	7 20.0	44	2.2	104	5.3	164	8.3
45	7 41.3	7 42.5	7 20.2	45	2.3	105	5.3	165	8.4
46	7 41.5	7 42.8	7 20.5	46	2.3	106	5.4	166	8.4
47	7 41.8	7 43.0	7 20.7	47	2.4	107	5.4	167	8.5
48	7 42.0	7 43.3	7 21.0	48	2.4	108	5.5	168	8.5
49	7 42.3	7 43.5	7 21.2	49	2.5	109	5.5	169	8.6
50	7 42.5	7 43.8	7 21.4	50	2.5	110	5.6	170	8.6
51	7 42.8	7 44.0	7 21.7	51	2.6	111	5.6	171	8.7
52	7 43.0	7 44.3	7 21.9	52	2.6	112	5.7	172	8.7
53	7 43.3	7 44.5	7 22.1	53	2.7	113	5.7	173	8.8
54	7 43.5	7 44.8	7 22.4	54	2.7	114	5.8	174	8.8
55	7 43.8	7 45.0	7 22.6	55	2.8	115	5.8	175	8.9
56	7 44.0	7 45.3	7 22.9	56	2.8	116	5.9	176	8.9
57	7 44.3	7 45.5	7 23.1	57	2.9	117	5.9	177	9.0
58	7 44.5	7 45.8	7 23.3	58	2.9	118	6.0	178	9.0
59	7 44.8	7 46.0	7 23.6	59	3.0	119	6.0	179	9.1
60	7 45.0	7 46.3	7 23.8	60	3.1	120	6.1	180	9.2

0 h 31 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.
	o /	o /	o /	/	/	/	/	/	/
0	7 45.0	7 46.3	7 23.8	0	.0	60	3.2	120	6.3
1	7 45.3	7 46.5	7 24.1	1	.1	61	3.2	121	6.4
2	7 45.5	7 46.8	7 24.3	2	.1	62	3.3	122	6.4
3	7 45.8	7 47.0	7 24.5	3	.2	63	3.3	123	6.5
4	7 46.0	7 47.3	7 24.8	4	.2	64	3.4	124	6.5
5	7 46.3	7 47.5	7 25.0	5	.3	65	3.4	125	6.6
6	7 46.5	7 47.8	7 25.2	6	.3	66	3.5	126	6.6
7	7 46.8	7 48.0	7 25.5	7	.4	67	3.5	127	6.7
8	7 47.0	7 48.3	7 25.7	8	.4	68	3.6	128	6.7
9	7 47.3	7 48.5	7 26.0	9	.5	69	3.6	129	6.8
10	7 47.5	7 48.8	7 26.2	10	.5	70	3.7	130	6.8
11	7 47.8	7 49.0	7 26.4	11	.6	71	3.7	131	6.9
12	7 48.0	7 49.3	7 26.7	12	.6	72	3.8	132	6.9
13	7 48.3	7 49.6	7 26.9	13	.7	73	3.8	133	7.0
14	7 48.5	7 49.8	7 27.2	14	.7	74	3.9	134	7.0
15	7 48.8	7 50.1	7 27.4	15	.8	75	3.9	135	7.1
16	7 49.0	7 50.3	7 27.6	16	.8	76	4.0	136	7.1
17	7 49.3	7 50.6	7 27.9	17	.9	77	4.0	137	7.2
18	7 49.5	7 50.8	7 28.1	18	.9	78	4.1	138	7.2
19	7 49.8	7 51.1	7 28.4	19	1.0	79	4.1	139	7.3
20	7 50.0	7 51.3	7 28.6	20	1.1	80	4.2	140	7.4
21	7 50.3	7 51.6	7 28.8	21	1.1	81	4.3	141	7.4
22	7 50.5	7 51.8	7 29.1	22	1.2	82	4.3	142	7.5
23	7 50.8	7 52.1	7 29.3	23	1.2	83	4.4	143	7.5
24	7 51.0	7 52.3	7 29.5	24	1.3	84	4.4	144	7.6
25	7 51.3	7 52.6	7 29.8	25	1.3	85	4.5	145	7.6
26	7 51.5	7 52.8	7 30.0	26	1.4	86	4.5	146	7.7
27	7 51.8	7 53.1	7 30.3	27	1.4	87	4.6	147	7.7
28	7 52.0	7 53.3	7 30.5	28	1.5	88	4.6	148	7.8
29	7 52.3	7 53.6	7 30.7	29	1.5	89	4.7	149	7.8
30	7 52.5	7 53.8	7 31.0	30	1.6	90	4.7	150	7.9
31	7 52.8	7 54.1	7 31.2	31	1.6	91	4.8	151	7.9
32	7 53.0	7 54.3	7 31.5	32	1.7	92	4.8	152	8.0
33	7 53.3	7 54.6	7 31.7	33	1.7	93	4.9	153	8.0
34	7 53.5	7 54.8	7 31.9	34	1.8	94	4.9	154	8.1
35	7 53.8	7 55.1	7 32.2	35	1.8	95	5.0	155	8.1
36	7 54.0	7 55.3	7 32.4	36	1.9	96	5.0	156	8.2
37	7 54.3	7 55.6	7 32.6	37	1.9	97	5.1	157	8.2
38	7 54.5	7 55.8	7 32.9	38	2.0	98	5.1	158	8.3
39	7 54.8	7 56.1	7 33.1	39	2.0	99	5.2	159	8.3
40	7 55.0	7 56.3	7 33.4	40	2.1	100	5.3	160	8.4
41	7 55.3	7 56.6	7 33.6	41	2.2	101	5.3	161	8.5
42	7 55.5	7 56.8	7 33.8	42	2.2	102	5.4	162	8.5
43	7 55.8	7 57.1	7 34.1	43	2.3	103	5.4	163	8.6
44	7 56.0	7 57.3	7 34.3	44	2.3	104	5.5	164	8.6
45	7 56.3	7 57.6	7 34.6	45	2.4	105	5.5	165	8.7
46	7 56.5	7 57.8	7 34.8	46	2.4	106	5.6	166	8.7
47	7 56.8	7 58.1	7 35.0	47	2.5	107	5.6	167	8.8
48	7 57.0	7 58.3	7 35.3	48	2.5	108	5.7	168	8.8
49	7 57.3	7 58.6	7 35.5	49	2.6	109	5.7	169	8.9
50	7 57.5	7 58.8	7 35.7	50	2.6	110	5.8	170	8.9
51	7 57.8	7 59.1	7 36.0	51	2.7	111	5.8	171	9.0
52	7 58.0	7 59.3	7 36.2	52	2.7	112	5.9	172	9.0
53	7 58.3	7 59.6	7 36.5	53	2.8	113	5.9	173	9.1
54	7 58.5	7 59.8	7 36.7	54	2.8	114	6.0	174	9.1
55	7 58.8	8 .1	7 36.9	55	2.9	115	6.0	175	9.2
56	7 59.0	8 .3	7 37.2	56	2.9	116	6.1	176	9.2
57	7 59.3	8 .6	7 37.4	57	3.0	117	6.1	177	9.3
58	7 59.5	8 .8	7 37.7	58	3.0	118	6.2	178	9.3
59	7 59.8	8 1.1	7 37.9	59	3.1	119	6.2	179	9.4
60	8 .0	8 1.3	7 38.1	60	3.2	120	6.3	180	9.5

0 h 32 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	8	.0	8	1.3	7	38.1	0	.0	60	3.3	120	6.5
1	8	.3	8	1.6	7	38.4	1	.1	61	3.3	121	6.6
2	8	.5	8	1.8	7	38.6	2	.1	62	3.4	122	6.6
3	8	.8	8	2.1	7	38.8	3	.2	63	3.4	123	6.7
4	8	1.0	8	2.3	7	39.1	4	.2	64	3.5	124	6.7
5	8	1.3	8	2.6	7	39.3	5	.3	65	3.5	125	6.8
6	8	1.5	8	2.8	7	39.6	6	.3	66	3.6	126	6.8
7	8	1.8	8	3.1	7	39.8	7	.4	67	3.6	127	6.9
8	8	2.0	8	3.3	7	40.0	8	.4	68	3.7	128	6.9
9	8	2.3	8	3.6	7	40.3	9	.5	69	3.7	129	7.0
10	8	2.5	8	3.8	7	40.5	10	.5	70	3.8	130	7.0
11	8	2.8	8	4.1	7	40.8	11	.6	71	3.8	131	7.1
12	8	3.0	8	4.3	7	41.0	12	.7	72	3.9	132	7.2
13	8	3.3	8	4.6	7	41.2	13	.7	73	4.0	133	7.2
14	8	3.5	8	4.8	7	41.5	14	.8	74	4.0	134	7.3
15	8	3.8	8	5.1	7	41.7	15	.8	75	4.1	135	7.3
16	8	4.0	8	5.3	7	42.0	16	.9	76	4.1	136	7.4
17	8	4.3	8	5.6	7	42.2	17	.9	77	4.2	137	7.4
18	8	4.5	8	5.8	7	42.4	18	1.0	78	4.2	138	7.5
19	8	4.8	8	6.1	7	42.7	19	1.0	79	4.3	139	7.5
20	8	5.0	8	6.3	7	42.9	20	1.1	80	4.3	140	7.6
21	8	5.3	8	6.6	7	43.1	21	1.1	81	4.4	141	7.6
22	8	5.5	8	6.8	7	43.4	22	1.2	82	4.4	142	7.7
23	8	5.8	8	7.1	7	43.6	23	1.2	83	4.5	143	7.7
24	8	6.0	8	7.4	7	43.9	24	1.3	84	4.6	144	7.8
25	8	6.3	8	7.6	7	44.1	25	1.4	85	4.6	145	7.9
26	8	6.5	8	7.9	7	44.3	26	1.4	86	4.7	146	7.9
27	8	6.8	8	8.1	7	44.6	27	1.5	87	4.7	147	8.0
28	8	7.0	8	8.4	7	44.8	28	1.5	88	4.8	148	8.0
29	8	7.3	8	8.6	7	45.1	29	1.6	89	4.8	149	8.1
30	8	7.5	8	8.9	7	45.3	30	1.6	90	4.9	150	8.1
31	8	7.8	8	9.1	7	45.5	31	1.7	91	4.9	151	8.2
32	8	8.0	8	9.4	7	45.8	32	1.7	92	5.0	152	8.2
33	8	8.3	8	9.6	7	46.0	33	1.8	93	5.0	153	8.3
34	8	8.5	8	9.9	7	46.2	34	1.8	94	5.1	154	8.3
35	8	8.8	8	10.1	7	46.5	35	1.9	95	5.1	155	8.4
36	8	9.0	8	10.4	7	46.7	36	2.0	96	5.2	156	8.5
37	8	9.3	8	10.6	7	47.0	37	2.0	97	5.3	157	8.5
38	8	9.5	8	10.9	7	47.2	38	2.1	98	5.3	158	8.6
39	8	9.8	8	11.1	7	47.4	39	2.1	99	5.4	159	8.6
40	8	10.0	8	11.4	7	47.7	40	2.2	100	5.4	160	8.7
41	8	10.3	8	11.6	7	47.9	41	2.2	101	5.5	161	8.7
42	8	10.5	8	11.9	7	48.2	42	2.3	102	5.5	162	8.8
43	8	10.8	8	12.1	7	48.4	43	2.3	103	5.6	163	8.8
44	8	11.0	8	12.4	7	48.6	44	2.4	104	5.6	164	8.9
45	8	11.3	8	12.6	7	48.9	45	2.4	105	5.7	165	8.9
46	8	11.5	8	12.9	7	49.1	46	2.5	106	5.7	166	9.0
47	8	11.8	8	13.1	7	49.3	47	2.5	107	5.8	167	9.0
48	8	12.0	8	13.4	7	49.6	48	2.6	108	5.9	168	9.1
49	8	12.3	8	13.6	7	49.8	49	2.7	109	5.9	169	9.2
50	8	12.5	8	13.9	7	50.1	50	2.7	110	6.0	170	9.2
51	8	12.8	8	14.1	7	50.3	51	2.8	111	6.0	171	9.3
52	8	13.0	8	14.4	7	50.5	52	2.8	112	6.1	172	9.3
53	8	13.3	8	14.6	7	50.8	53	2.9	113	6.1	173	9.4
54	8	13.5	8	14.9	7	51.0	54	2.9	114	6.2	174	9.4
55	8	13.8	8	15.1	7	51.3	55	3.0	115	6.2	175	9.5
56	8	14.0	8	15.4	7	51.5	56	3.0	116	6.3	176	9.5
57	8	14.3	8	15.6	7	51.7	57	3.1	117	6.3	177	9.6
58	8	14.5	8	15.9	7	52.0	58	3.1	118	6.4	178	9.6
59	8	14.8	8	16.1	7	52.2	59	3.2	119	6.4	179	9.7
60	8	15.0	8	16.4	7	52.5	60	3.3	120	6.5	180	9.8

0 h 33 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	8	15.0	8	16.4	7	52.5	0	.0	60	3.4	120	6.7
1	8	15.3	8	16.6	7	52.7	1	.1	61	3.4	121	6.8
2	8	15.5	8	16.9	7	52.9	2	.1	62	3.5	122	6.8
3	8	15.8	8	17.1	7	53.2	3	.2	63	3.5	123	6.9
4	8	16.0	8	17.4	7	53.4	4	.2	64	3.6	124	6.9
5	8	16.3	8	17.6	7	53.6	5	.3	65	3.6	125	7.0
6	8	16.5	8	17.9	7	53.9	6	.3	66	3.7	126	7.0
7	8	16.8	8	18.1	7	54.1	7	.4	67	3.7	127	7.1
8	8	17.0	8	18.4	7	54.4	8	.4	68	3.8	128	7.1
9	8	17.3	8	18.6	7	54.6	9	.5	69	3.9	129	7.2
10	8	17.5	8	18.9	7	54.8	10	.6	70	3.9	130	7.3
11	8	17.8	8	19.1	7	55.1	11	.6	71	4.0	131	7.3
12	8	18.0	8	19.4	7	55.3	12	.7	72	4.0	132	7.4
13	8	18.3	8	19.6	7	55.6	13	.7	73	4.1	133	7.4
14	8	18.5	8	19.9	7	55.8	14	.8	74	4.1	134	7.5
15	8	18.8	8	20.1	7	56.0	15	.8	75	4.2	135	7.5
16	8	19.0	8	20.4	7	56.3	16	.9	76	4.2	136	7.6
17	8	19.3	8	20.6	7	56.5	17	.9	77	4.3	137	7.6
18	8	19.5	8	20.9	7	56.7	18	1.0	78	4.4	138	7.7
19	8	19.8	8	21.1	7	57.0	19	1.1	79	4.4	139	7.8
20	8	20.0	8	21.4	7	57.2	20	1.1	80	4.5	140	7.8
21	8	20.3	8	21.6	7	57.5	21	1.2	81	4.5	141	7.9
22	8	20.5	8	21.9	7	57.7	22	1.2	82	4.6	142	7.9
23	8	20.8	8	22.1	7	57.9	23	1.3	83	4.6	143	8.0
24	8	21.0	8	22.4	7	58.2	24	1.3	84	4.7	144	8.0
25	8	21.3	8	22.6	7	58.4	25	1.4	85	4.7	145	8.1
26	8	21.5	8	22.9	7	58.7	26	1.5	86	4.8	146	8.2
27	8	21.8	8	23.1	7	58.9	27	1.5	87	4.9	147	8.2
28	8	22.0	8	23.4	7	59.1	28	1.6	88	4.9	148	8.3
29	8	22.3	8	23.6	7	59.4	29	1.6	89	5.0	149	8.3
30	8	22.5	8	23.9	7	59.6	30	1.7	90	5.0	150	8.4
31	8	22.8	8	24.1	7	59.8	31	1.7	91	5.1	151	8.4
32	8	23.0	8	24.4	8	.1	32	1.8	92	5.1	152	8.5
33	8	23.3	8	24.6	8	.3	33	1.8	93	5.2	153	8.5
34	8	23.5	8	24.9	8	.6	34	1.9	94	5.2	154	8.6
35	8	23.8	8	25.1	8	.8	35	2.0	95	5.3	155	8.7
36	8	24.0	8	25.4	8	1.0	36	2.0	96	5.4	156	8.7
37	8	24.3	8	25.7	8	1.3	37	2.1	97	5.4	157	8.8
38	8	24.5	8	25.9	8	1.5	38	2.1	98	5.5	158	8.8
39	8	24.8	8	26.2	8	1.8	39	2.2	99	5.5	159	8.9
40	8	25.0	8	26.4	8	2.0	40	2.2	100	5.6	160	8.9
41	8	25.3	8	26.7	8	2.2	41	2.3	101	5.6	161	9.0
42	8	25.5	8	26.9	8	2.5	42	2.3	102	5.7	162	9.0
43	8	25.8	8	27.2	8	2.7	43	2.4	103	5.8	163	9.1
44	8	26.0	8	27.4	8	2.9	44	2.5	104	5.8	164	9.2
45	8	26.3	8	27.7	8	3.2	45	2.5	105	5.9	165	9.2
46	8	26.5	8	27.9	8	3.4	46	2.6	106	5.9	166	9.3
47	8	26.8	8	28.2	8	3.7	47	2.6	107	6.0	167	9.3
48	8	27.0	8	28.4	8	3.9	48	2.7	108	6.0	168	9.4
49	8	27.3	8	28.7	8	4.1	49	2.7	109	6.1	169	9.4
50	8	27.5	8	28.9	8	4.4	50	2.8	110	6.1	170	9.5
51	8	27.8	8	29.2	8	4.6	51	2.8	111	6.2	171	9.5
52	8	28.0	8	29.4	8	4.9	52	2.9	112	6.3	172	9.6
53	8	28.3	8	29.7	8	5.1	53	3.0	113	6.3	173	9.7
54	8	28.5	8	29.9	8	5.3	54	3.0				

0 h 34 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	8 30.0	8 31.4	8 6.8	0	.0	60	3.5
1	8 30.3	8 31.7	8 7.0	1	.1	61	3.5
2	8 30.5	8 31.9	8 7.2	2	.1	62	3.6
3	8 30.8	8 32.2	8 7.5	3	.2	63	3.6
4	8 31.0	8 32.4	8 7.7	4	.2	64	3.7
5	8 31.3	8 32.7	8 8.0	5	.3	65	3.7
6	8 31.5	8 32.9	8 8.2	6	.3	66	3.8
7	8 31.8	8 33.2	8 8.4	7	.4	67	3.9
8	8 32.0	8 33.4	8 8.7	8	.5	68	3.9
9	8 32.3	8 33.7	8 8.9	9	.5	69	4.0
10	8 32.5	8 33.9	8 9.2	10	.6	70	4.0
11	8 32.8	8 34.2	8 9.4	11	.6	71	4.1
12	8 33.0	8 34.4	8 9.6	12	.7	72	4.1
13	8 33.3	8 34.7	8 9.9	13	.7	73	4.2
14	8 33.5	8 34.9	8 10.1	14	.8	74	4.3
15	8 33.8	8 35.2	8 10.3	15	.9	75	4.3
16	8 34.0	8 35.4	8 10.6	16	.9	76	4.4
17	8 34.3	8 35.7	8 10.8	17	1.0	77	4.4
18	8 34.5	8 35.9	8 11.1	18	1.0	78	4.5
19	8 34.8	8 36.2	8 11.3	19	1.1	79	4.5
20	8 35.0	8 36.4	8 11.5	20	1.2	80	4.6
21	8 35.3	8 36.7	8 11.8	21	1.2	81	4.7
22	8 35.5	8 36.9	8 12.0	22	1.3	82	4.7
23	8 35.8	8 37.2	8 12.3	23	1.3	83	4.8
24	8 36.0	8 37.4	8 12.5	24	1.4	84	4.8
25	8 36.3	8 37.7	8 12.7	25	1.4	85	4.9
26	8 36.5	8 37.9	8 13.0	26	1.5	86	4.9
27	8 36.8	8 38.2	8 13.2	27	1.6	87	5.0
28	8 37.0	8 38.4	8 13.4	28	1.6	88	5.1
29	8 37.3	8 38.7	8 13.7	29	1.7	89	5.1
30	8 37.5	8 38.9	8 13.9	30	1.7	90	5.2
31	8 37.8	8 39.2	8 14.2	31	1.8	91	5.2
32	8 38.0	8 39.4	8 14.4	32	1.8	92	5.3
33	8 38.3	8 39.7	8 14.6	33	1.9	93	5.3
34	8 38.5	8 39.9	8 14.9	34	2.0	94	5.4
35	8 38.8	8 40.2	8 15.1	35	2.0	95	5.5
36	8 39.0	8 40.4	8 15.4	36	2.1	96	5.5
37	8 39.3	8 40.7	8 15.6	37	2.1	97	5.6
38	8 39.5	8 40.9	8 15.8	38	2.2	98	5.6
39	8 39.8	8 41.2	8 16.1	39	2.2	99	5.7
40	8 40.0	8 41.4	8 16.3	40	2.3	100	5.8
41	8 40.3	8 41.7	8 16.5	41	2.4	101	5.8
42	8 40.5	8 41.9	8 16.8	42	2.4	102	5.9
43	8 40.8	8 42.2	8 17.0	43	2.5	103	5.9
44	8 41.0	8 42.4	8 17.3	44	2.5	104	6.0
45	8 41.3	8 42.7	8 17.5	45	2.6	105	6.0
46	8 41.5	8 42.9	8 17.7	46	2.6	106	6.1
47	8 41.8	8 43.2	8 18.0	47	2.7	107	6.2
48	8 42.0	8 43.5	8 18.2	48	2.8	108	6.2
49	8 42.3	8 43.7	8 18.5	49	2.8	109	6.3
50	8 42.5	8 44.0	8 18.7	50	2.9	110	6.3
51	8 42.8	8 44.2	8 18.9	51	2.9	111	6.4
52	8 43.0	8 44.5	8 19.2	52	3.0	112	6.4
53	8 43.3	8 44.7	8 19.4	53	3.0	113	6.5
54	8 43.5	8 45.0	8 19.7	54	3.1	114	6.6
55	8 43.8	8 45.2	8 19.9	55	3.2	115	6.6
56	8 44.0	8 45.5	8 20.1	56	3.2	116	6.7
57	8 44.3	8 45.7	8 20.4	57	3.3	117	6.7
58	8 44.5	8 46.0	8 20.6	58	3.3	118	6.8
59	8 44.8	8 46.2	8 20.8	59	3.4	119	6.8
60	8 45.0	8 46.5	8 21.1	60	3.5	120	6.9

0 h 35 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	8 45.0	8 46.5	8 21.1	0	.0	60	3.6
1	8 45.3	8 46.7	8 21.3	1	.1	61	3.6
2	8 45.5	8 47.0	8 21.6	2	.1	62	3.7
3	8 45.8	8 47.2	8 21.8	3	.2	63	3.7
4	8 46.0	8 47.5	8 22.0	4	.2	64	3.8
5	8 46.3	8 47.7	8 22.3	5	.3	65	3.8
6	8 46.5	8 48.0	8 22.5	6	.4	66	3.9
7	8 46.8	8 48.2	8 22.8	7	.4	67	4.0
8	8 47.0	8 48.5	8 23.0	8	.5	68	4.0
9	8 47.3	8 48.7	8 23.2	9	.5	69	4.1
10	8 47.5	8 49.0	8 23.5	10	.6	70	4.1
11	8 47.8	8 49.2	8 23.7	11	.7	71	4.2
12	8 48.0	8 49.5	8 23.9	12	.7	72	4.3
13	8 48.3	8 49.7	8 24.2	13	.8	73	4.3
14	8 48.5	8 50.0	8 24.4	14	.8	74	4.4
15	8 48.8	8 50.2	8 24.7	15	.9	75	4.4
16	8 49.0	8 50.5	8 24.9	16	.9	76	4.5
17	8 49.3	8 50.7	8 25.1	17	1.0	77	4.6
18	8 49.5	8 51.0	8 25.4	18	1.1	78	4.6
19	8 49.8	8 51.2	8 25.6	19	1.1	79	4.7
20	8 50.0	8 51.5	8 25.9	20	1.2	80	4.7
21	8 50.3	8 51.7	8 26.1	21	1.2	81	4.8
22	8 50.5	8 52.0	8 26.3	22	1.3	82	4.9
23	8 50.8	8 52.2	8 26.6	23	1.4	83	4.9
24	8 51.0	8 52.5	8 26.8	24	1.4	84	5.0
25	8 51.3	8 52.7	8 27.0	25	1.5	85	5.0
26	8 51.5	8 53.0	8 27.3	26	1.5	86	5.1
27	8 51.8	8 53.2	8 27.5	27	1.6	87	5.1
28	8 52.0	8 53.5	8 27.8	28	1.7	88	5.2
29	8 52.3	8 53.7	8 28.0	29	1.7	89	5.3
30	8 52.5	8 54.0	8 28.2	30	1.8	90	5.3
31	8 52.8	8 54.2	8 28.5	31	1.8	91	5.4
32	8 53.0	8 54.5	8 28.7	32	1.9	92	5.4
33	8 53.3	8 54.7	8 29.0	33	2.0	93	5.5
34	8 53.5	8 55.0	8 29.2	34	2.0	94	5.6
35	8 53.8	8 55.2	8 29.4	35	2.1	95	5.6
36	8 54.0	8 55.5	8 29.7	36	2.1	96	5.7
37	8 54.3	8 55.7	8 29.9	37	2.2	97	5.7
38	8 54.5	8 56.0	8 30.2	38	2.2	98	5.8
39	8 54.8	8 56.2	8 30.4	39	2.3	99	5.9
40	8 55.0	8 56.5	8 30.6	40	2.4	100	5.9
41	8 55.3	8 56.7	8 30.9	41	2.4	101	6.0
42	8 55.5	8 57.0	8 31.1	42	2.5	102	6.0
43	8 55.8	8 57.2	8 31.3	43	2.5	103	6.1
44	8 56.0	8 57.5	8 31.6	44	2.6	104	6.2
45	8 56.3	8 57.7	8 31.8	45	2.7	105	6.2
46	8 56.5	8 58.0	8 32.1	46	2.7	106	6.3
47	8 56.8	8 58.2	8 32.3	47	2.8	107	6.3
48	8 57.0	8 58.5	8 32.5	48	2.8	108	6.4
49	8 57.3	8 58.7	8 32.8	49	2.9	109	6.4
50	8 57.5	8 59.0	8 33.0	50	3.0	110	6.5
51	8 57.8	8 59.2	8 33.3	51	3.0	111	6.6
52	8 58.0	8 59.5	8 33.5	52	3.1	112	6.6
53	8 58.3	8 59.7	8 33.7	53	3.1	113	6.7
54	8 58.5	8 60.0	8 34.0	54	3.2	114	6.7
55	8 58.8	9 .2	8 34.2	55	3.3	115	6.8
56	8 59.0	9 .5	8 34.4	56	3.3	116	6.9
57	8 59.3	9 .7	8 34.7	57	3.4	117	6.9
58	8 59.5	9 1.0	8 34.9	58	3.4	118	7.0
59	8 59.8	9 1.2	8 35.2	59	3.5	119	7.0
60	9 .0	9 1.5	8 35.4	60	3.6	120	7.1

0 h 36 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.					
	o	'	o	'	'	'	'					
0	9	.0	9	1.5	8	35.4	0	.0	60	3.7	120	7.3
1	9	.3	9	1.8	8	35.6	1	.1	61	3.7	121	7.4
2	9	.5	9	2.0	8	35.9	2	.1	62	3.8	122	7.4
3	9	.8	9	2.3	8	36.1	3	.2	63	3.8	123	7.5
4	9	1.0	9	2.5	8	36.4	4	.2	64	3.9	124	7.5
5	9	1.3	9	2.8	8	36.6	5	.3	65	4.0	125	7.6
6	9	1.5	9	3.0	8	36.8	6	.4	66	4.0	126	7.7
7	9	1.8	9	3.3	8	37.1	7	.4	67	4.1	127	7.7
8	9	2.0	9	3.5	8	37.3	8	.5	68	4.1	128	7.8
9	9	2.3	9	3.8	8	37.5	9	.5	69	4.2	129	7.8
10	9	2.5	9	4.0	8	37.8	10	.6	70	4.3	130	7.9
11	9	2.8	9	4.3	8	38.0	11	.7	71	4.3	131	8.0
12	9	3.0	9	4.5	8	38.3	12	.7	72	4.4	132	8.0
13	9	3.3	9	4.8	8	38.5	13	.8	73	4.4	133	8.1
14	9	3.5	9	5.0	8	38.7	14	.9	74	4.5	134	8.2
15	9	3.8	9	5.3	8	39.0	15	.9	75	4.6	135	8.2
16	9	4.0	9	5.5	8	39.2	16	1.0	76	4.6	136	8.3
17	9	4.3	9	5.8	8	39.5	17	1.0	77	4.7	137	8.3
18	9	4.5	9	6.0	8	39.7	18	1.1	78	4.7	138	8.4
19	9	4.8	9	6.3	8	39.9	19	1.2	79	4.8	139	8.5
20	9	5.0	9	6.5	8	40.2	20	1.2	80	4.9	140	8.5
21	9	5.3	9	6.8	8	40.4	21	1.3	81	4.9	141	8.6
22	9	5.5	9	7.0	8	40.6	22	1.3	82	5.0	142	8.6
23	9	5.8	9	7.3	8	40.9	23	1.4	83	5.0	143	8.7
24	9	6.0	9	7.5	8	41.1	24	1.5	84	5.1	144	8.8
25	9	6.3	9	7.8	8	41.4	25	1.5	85	5.2	145	8.8
26	9	6.5	9	8.0	8	41.6	26	1.6	86	5.2	146	8.9
27	9	6.8	9	8.3	8	41.8	27	1.6	87	5.3	147	8.9
28	9	7.0	9	8.5	8	42.1	28	1.7	88	5.4	148	9.0
29	9	7.3	9	8.8	8	42.3	29	1.8	89	5.4	149	9.1
30	9	7.5	9	9.0	8	42.6	30	1.8	90	5.5	150	9.1
31	9	7.8	9	9.3	8	42.8	31	1.9	91	5.5	151	9.2
32	9	8.0	9	9.5	8	43.0	32	1.9	92	5.6	152	9.2
33	9	8.3	9	9.8	8	43.3	33	2.0	93	5.7	153	9.3
34	9	8.5	9	10.0	8	43.5	34	2.1	94	5.7	154	9.4
35	9	8.8	9	10.3	8	43.8	35	2.1	95	5.8	155	9.4
36	9	9.0	9	10.5	8	44.0	36	2.2	96	5.8	156	9.5
37	9	9.3	9	10.8	8	44.2	37	2.3	97	5.9	157	9.6
38	9	9.5	9	11.0	8	44.5	38	2.3	98	6.0	158	9.6
39	9	9.8	9	11.3	8	44.7	39	2.4	99	6.0	159	9.7
40	9	10.0	9	11.5	8	44.9	40	2.4	100	6.1	160	9.7
41	9	10.3	9	11.8	8	45.2	41	2.5	101	6.1	161	9.8
42	9	10.5	9	12.0	8	45.4	42	2.6	102	6.2	162	9.9
43	9	10.8	9	12.3	8	45.7	43	2.6	103	6.3	163	9.9
44	9	11.0	9	12.5	8	45.9	44	2.7	104	6.3	164	10.0
45	9	11.3	9	12.8	8	46.1	45	2.7	105	6.4	165	10.0
46	9	11.5	9	13.0	8	46.4	46	2.8	106	6.4	166	10.1
47	9	11.8	9	13.3	8	46.6	47	2.9	107	6.5	167	10.2
48	9	12.0	9	13.5	8	46.9	48	2.9	108	6.6	168	10.2
49	9	12.3	9	13.8	8	47.1	49	3.0	109	6.6	169	10.3
50	9	12.5	9	14.0	8	47.3	50	3.0	110	6.7	170	10.3
51	9	12.8	9	14.3	8	47.6	51	3.1	111	6.8	171	10.4
52	9	13.0	9	14.5	8	47.8	52	3.2	112	6.8	172	10.5
53	9	13.3	9	14.8	8	48.0	53	3.2	113	6.9	173	10.5
54	9	13.5	9	15.0	8	48.3	54	3.3	114	6.9	174	10.6
55	9	13.8	9	15.3	8	48.5	55	3.3	115	7.0	175	10.6
56	9	14.0	9	15.5	8	48.8	56	3.4	116	7.1	176	10.7
57	9	14.3	9	15.8	8	49.0	57	3.5	117	7.1	177	10.8
58	9	14.5	9	16.0	8	49.2	58	3.5	118	7.2	178	10.8
59	9	14.8	9	16.3	8	49.5	59	3.6	119	7.2	179	10.9
60	9	15.0	9	16.5	8	49.7	60	3.7	120	7.3	180	11.0

0 h 37 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.					
	o	'	o	'	'	'	'					
0	9	15.0	9	16.5	8	49.7	0	.0	60	3.8	120	7.5
1	9	15.3	9	16.8	8	50.0	1	.1	61	3.8	121	7.6
2	9	15.5	9	17.0	8	50.2	2	.1	62	3.9	122	7.6
3	9	15.8	9	17.3	8	50.4	3	.2	63	3.9	123	7.7
4	9	16.0	9	17.5	8	50.7	4	.3	64	4.0	124	7.8
5	9	16.3	9	17.8	8	50.9	5	.3	65	4.1	125	7.8
6	9	16.5	9	18.0	8	51.1	6	.4	66	4.1	126	7.9
7	9	16.8	9	18.3	8	51.4	7	.4	67	4.2	127	7.9
8	9	17.0	9	18.5	8	51.6	8	.5	68	4.3	128	8.0
9	9	17.3	9	18.8	8	51.9	9	.6	69	4.3	129	8.1
10	9	17.5	9	19.0	8	52.1	10	.6	70	4.4	130	8.1
11	9	17.8	9	19.3	8	52.3	11	.7	71	4.4	131	8.2
12	9	18.0	9	19.6	8	52.6	12	.8	72	4.5	132	8.3
13	9	18.3	9	19.8	8	52.8	13	.8	73	4.6	133	8.3
14	9	18.5	9	20.1	8	53.1	14	.9	74	4.6	134	8.4
15	9	18.8	9	20.3	8	53.3	15	.9	75	4.7	135	8.4
16	9	19.0	9	20.6	8	53.5	16	1.0	76	4.8	136	8.5
17	9	19.3	9	20.8	8	53.8	17	1.1	77	4.8	137	8.6
18	9	19.5	9	21.1	8	54.0	18	1.1	78	4.9	138	8.6
19	9	19.8	9	21.3	8	54.3	19	1.2	79	4.9	139	8.7
20	9	20.0	9	21.6	8	54.5	20	1.3	80	5.0	140	8.8
21	9	20.3	9	21.8	8	54.7	21	1.3	81	5.1	141	8.8
22	9	20.5	9	22.1	8	55.0	22	1.4	82	5.1	142	8.9
23	9	20.8	9	22.3	8	55.2	23	1.4	83	5.2	143	8.9
24	9	21.0	9	22.6	8	55.4	24	1.5	84	5.3	144	9.0
25	9	21.3	9	22.8	8	55.7	25	1.6	85	5.3	145	9.1
26	9	21.5	9	23.1	8	55.9	26	1.6	86	5.4	146	9.1
27	9	21.8	9	23.3	8	56.2	27	1.7	87	5.4	147	9.2
28	9	22.0	9	23.6	8	56.4	28	1.8	88	5.5	148	9.3
29	9	22.3	9	23.8	8	56.6	29	1.8	89	5.6	149	9.3
30	9	22.5	9	24.1	8	56.9	30	1.9	90	5.6	150	9.4
31	9	22.8	9	24.3	8	57.1	31	1.9	91	5.7	151	9.4
32	9	23.0	9	24.6	8	57.4	32	2.0	92	5.8	152	9.5
33	9	23.3	9	24.8	8	57.6	33	2.1	93	5.8	153	9.6
34	9	23.5	9	25.1	8	57.8	34	2.1	94	5.9	154	9.6
35	9	23.8	9	25.3	8	58.1	35	2.2	95	5.9	155	9.7
36	9	24.0	9	25.6	8	58.3	36	2.3	96	6.0	156	9.8
37	9	24.3	9	25.8	8	58.5	37	2.3	97	6.1	157	9.8
38	9	24.5	9	26.1	8	58.8	38	2.4	98	6.1	158	9.9
39	9	24.8	9	26.3	8	59.0	39	2.4	99	6.2	159	9.9
40	9	25.0	9	26.6	8	59.3	40	2.5	100	6.3	160	10.0
41	9	25.3	9	26.8	8	59.5	41	2.6	101	6.3	161	10.1
42	9	25.5	9	27.1	8	59.7	42	2.6	102	6.4	162	10.1
43	9	25.8	9	27.3	8	60.0	43	2.7	103	6.4	163	10.2
44	9	26.0	9	27.6	9	.2	44	2.8	104	6.5	164	10.3
45	9	26.3	9	27.8	9	.5	45	2.8	105	6.6	165	10.3
46	9	26.5	9	28.1	9	.7	46	2.9	106	6.6	166	10.4
47	9	26.8	9	28.3	9	.9	47	2.9	107	6.7	167	10.4
48	9	27.0	9	28.6	9	1.2	48	3.0	108	6.8	168	10.5
49	9	27.3	9	28.8	9	1.4	49	3.1	109	6.8	169	10.6
50	9	27.5	9	29.1	9	1.6	50	3.1	110	6.9	170	10.6
51	9	27.8	9	29.3	9	1.9	51	3.2	111	6.9	171	10.7
52	9	28.0	9	29.6	9	2.1	52	3.3	112	7.0	172	10.8
53	9	28.3	9	29.8	9	2.4	53	3.3	113	7.1	173	10.8
54	9	28.5	9	30.1	9	2.6	54	3.4	114	7.1	174	10.9

0 h 38 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		
				Δ	popr.	Δ popr.
	° /	° /	° /	° /	° /	° /
0	9 30.0	9 31.6	9 4.0	0 .0	60 3.9	120 7.7
1	9 30.3	9 31.8	9 4.3	1 .1	61 3.9	121 7.8
2	9 30.5	9 32.1	9 4.5	2 .1	62 4.0	122 7.8
3	9 30.8	9 32.3	9 4.7	3 .2	63 4.0	123 7.9
4	9 31.0	9 32.6	9 5.0	4 .3	64 4.1	124 8.0
5	9 31.3	9 32.8	9 5.2	5 .3	65 4.2	125 8.0
6	9 31.5	9 33.1	9 5.5	6 .4	66 4.2	126 8.1
7	9 31.8	9 33.3	9 5.7	7 .4	67 4.3	127 8.1
8	9 32.0	9 33.6	9 5.9	8 .5	68 4.4	128 8.2
9	9 32.3	9 33.8	9 6.2	9 .6	69 4.4	129 8.3
10	9 32.5	9 34.1	9 6.4	10 .6	70 4.5	130 8.3
11	9 32.8	9 34.3	9 6.7	11 .7	71 4.6	131 8.4
12	9 33.0	9 34.6	9 6.9	12 .8	72 4.6	132 8.5
13	9 33.3	9 34.8	9 7.1	13 .8	73 4.7	133 8.5
14	9 33.5	9 35.1	9 7.4	14 .9	74 4.7	134 8.6
15	9 33.8	9 35.3	9 7.6	15 1.0	75 4.8	135 8.7
16	9 34.0	9 35.6	9 7.9	16 1.0	76 4.9	136 8.7
17	9 34.3	9 35.8	9 8.1	17 1.1	77 4.9	137 8.8
18	9 34.5	9 36.1	9 8.3	18 1.2	78 5.0	138 8.9
19	9 34.8	9 36.3	9 8.6	19 1.2	79 5.1	139 8.9
20	9 35.0	9 36.6	9 8.8	20 1.3	80 5.1	140 9.0
21	9 35.3	9 36.8	9 9.0	21 1.3	81 5.2	141 9.0
22	9 35.5	9 37.1	9 9.3	22 1.4	82 5.3	142 9.1
23	9 35.8	9 37.3	9 9.5	23 1.5	83 5.3	143 9.2
24	9 36.0	9 37.6	9 9.8	24 1.5	84 5.4	144 9.2
25	9 36.3	9 37.9	9 10.0	25 1.6	85 5.5	145 9.3
26	9 36.5	9 38.1	9 10.2	26 1.7	86 5.5	146 9.4
27	9 36.8	9 38.4	9 10.5	27 1.7	87 5.6	147 9.4
28	9 37.0	9 38.6	9 10.7	28 1.8	88 5.6	148 9.5
29	9 37.3	9 38.9	9 11.0	29 1.9	89 5.7	149 9.6
30	9 37.5	9 39.1	9 11.2	30 1.9	90 5.8	150 9.6
31	9 37.8	9 39.4	9 11.4	31 2.0	91 5.8	151 9.7
32	9 38.0	9 39.6	9 11.7	32 2.1	92 5.9	152 9.8
33	9 38.3	9 39.9	9 11.9	33 2.1	93 6.0	153 9.8
34	9 38.5	9 40.1	9 12.1	34 2.2	94 6.0	154 9.9
35	9 38.8	9 40.4	9 12.4	35 2.2	95 6.1	155 9.9
36	9 39.0	9 40.6	9 12.6	36 2.3	96 6.2	156 10.0
37	9 39.3	9 40.9	9 12.9	37 2.4	97 6.2	157 10.1
38	9 39.5	9 41.1	9 13.1	38 2.4	98 6.3	158 10.1
39	9 39.8	9 41.4	9 13.3	39 2.5	99 6.4	159 10.2
40	9 40.0	9 41.6	9 13.6	40 2.6	100 6.4	160 10.3
41	9 40.3	9 41.9	9 13.8	41 2.6	101 6.5	161 10.3
42	9 40.5	9 42.1	9 14.1	42 2.7	102 6.5	162 10.4
43	9 40.8	9 42.4	9 14.3	43 2.8	103 6.6	163 10.5
44	9 41.0	9 42.6	9 14.5	44 2.8	104 6.7	164 10.5
45	9 41.3	9 42.9	9 14.8	45 2.9	105 6.7	165 10.6
46	9 41.5	9 43.1	9 15.0	46 3.0	106 6.8	166 10.7
47	9 41.8	9 43.4	9 15.2	47 3.0	107 6.9	167 10.7
48	9 42.0	9 43.6	9 15.5	48 3.1	108 6.9	168 10.8
49	9 42.3	9 43.9	9 15.7	49 3.1	109 7.0	169 10.8
50	9 42.5	9 44.1	9 16.0	50 3.2	110 7.1	170 10.9
51	9 42.8	9 44.4	9 16.2	51 3.3	111 7.1	171 11.0
52	9 43.0	9 44.6	9 16.4	52 3.3	112 7.2	172 11.0
53	9 43.3	9 44.9	9 16.7	53 3.4	113 7.3	173 11.1
54	9 43.5	9 45.1	9 16.9	54 3.5	114 7.3	174 11.2
55	9 43.8	9 45.4	9 17.2	55 3.5	115 7.4	175 11.2
56	9 44.0	9 45.6	9 17.4	56 3.6	116 7.4	176 11.3
57	9 44.3	9 45.9	9 17.6	57 3.7	117 7.5	177 11.4
58	9 44.5	9 46.1	9 17.9	58 3.7	118 7.6	178 11.4
59	9 44.8	9 46.4	9 18.1	59 3.8	119 7.6	179 11.5
60	9 45.0	9 46.6	9 18.4	60 3.9	120 7.7	180 11.6

0 h 39 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		
				Δ	popr.	Δ popr.
	° /	° /	° /	° /	° /	° /
0	9 45.0	9 46.6	9 18.4	0 .0	60 4.0	120 7.9
1	9 45.3	9 46.9	9 18.6	1 .1	61 4.0	121 8.0
2	9 45.5	9 47.1	9 18.8	2 .1	62 4.1	122 8.0
3	9 45.8	9 47.4	9 19.1	3 .2	63 4.1	123 8.1
4	9 46.0	9 47.6	9 19.3	4 .3	64 4.2	124 8.2
5	9 46.3	9 47.9	9 19.5	5 .3	65 4.3	125 8.2
6	9 46.5	9 48.1	9 19.8	6 .4	66 4.3	126 8.3
7	9 46.8	9 48.4	9 20.0	7 .5	67 4.4	127 8.4
8	9 47.0	9 48.6	9 20.3	8 .5	68 4.5	128 8.4
9	9 47.3	9 48.9	9 20.5	9 .6	69 4.5	129 8.5
10	9 47.5	9 49.1	9 20.7	10 .7	70 4.6	130 8.6
11	9 47.8	9 49.4	9 21.0	11 .7	71 4.7	131 8.6
12	9 48.0	9 49.6	9 21.2	12 .8	72 4.7	132 8.7
13	9 48.3	9 49.9	9 21.5	13 .9	73 4.8	133 8.8
14	9 48.5	9 50.1	9 21.7	14 .9	74 4.9	134 8.8
15	9 48.8	9 50.4	9 21.9	15 1.0	75 4.9	135 8.9
16	9 49.0	9 50.6	9 22.2	16 1.1	76 5.0	136 9.0
17	9 49.3	9 50.9	9 22.4	17 1.1	77 5.1	137 9.0
18	9 49.5	9 51.1	9 22.6	18 1.2	78 5.1	138 9.1
19	9 49.8	9 51.4	9 22.9	19 1.3	79 5.2	139 9.2
20	9 50.0	9 51.6	9 23.1	20 1.3	80 5.3	140 9.2
21	9 50.3	9 51.9	9 23.4	21 1.4	81 5.3	141 9.3
22	9 50.5	9 52.1	9 23.6	22 1.4	82 5.4	142 9.3
23	9 50.8	9 52.4	9 23.8	23 1.5	83 5.5	143 9.4
24	9 51.0	9 52.6	9 24.1	24 1.6	84 5.5	144 9.5
25	9 51.3	9 52.9	9 24.3	25 1.6	85 5.6	145 9.5
26	9 51.5	9 53.1	9 24.6	26 1.7	86 5.7	146 9.6
27	9 51.8	9 53.4	9 24.8	27 1.8	87 5.7	147 9.7
28	9 52.0	9 53.6	9 25.0	28 1.8	88 5.8	148 9.7
29	9 52.3	9 53.9	9 25.3	29 1.9	89 5.9	149 9.8
30	9 52.5	9 54.1	9 25.5	30 2.0	90 5.9	150 9.9
31	9 52.8	9 54.4	9 25.7	31 2.0	91 6.0	151 9.9
32	9 53.0	9 54.6	9 26.0	32 2.1	92 6.1	152 10.0
33	9 53.3	9 54.9	9 26.2	33 2.2	93 6.1	153 10.1
34	9 53.5	9 55.1	9 26.5	34 2.2	94 6.2	154 10.1
35	9 53.8	9 55.4	9 26.7	35 2.3	95 6.3	155 10.2
36	9 54.0	9 55.7	9 26.9	36 2.4	96 6.3	156 10.3
37	9 54.3	9 55.9	9 27.2	37 2.4	97 6.4	157 10.3
38	9 54.5	9 56.2	9 27.4	38 2.5	98 6.5	158 10.4
39	9 54.8	9 56.4	9 27.7	39 2.6	99 6.5	159 10.5
40	9 55.0	9 56.7	9 27.9	40 2.6	100 6.6	160 10.5
41	9 55.3	9 56.9	9 28.1	41 2.7	101 6.6	161 10.6
42	9 55.5	9 57.2	9 28.4	42 2.8	102 6.7	162 10.7
43	9 55.8	9 57.4	9 28.6	43 2.8	103 6.8	163 10.7
44	9 56.0	9 57.7	9 28.8	44 2.9	104 6.8	164 10.8
45	9 56.3	9 57.9	9 29.1	45 3.0	105 6.9	165 10.9
46	9 56.5	9 58.2	9 29.3	46 3.0	106 7.0	166 10.9
47	9 56.8	9 58.4	9 29.6	47 3.1	107 7.0	167 11.0
48	9 57.0	9 58.7	9 29.8	48 3.2	108 7.1	168 11.1
49	9 57.3	9 58.9	9 30.0	49 3.2	109 7.2	169 11.1
50	9 57.5	9 59.2	9 30.3	50 3.3	110 7.2	170 11.2
51	9 57.8	9 59.4	9 30.5	51 3.4	111 7.3	171 11.3
52	9 58.0	9 59.7	9 30.8	52 3.4	112 7.4	172 11.3
53	9 58.3	9 59.9	9 31.0	53 3.5	113 7.4	173 11.4
54	9 58.5	10 .2	9 31.2	54 3.6	114 7.5	174 11.5
55	9 58.8	10 .4	9 31.5	55 3.6	115 7.6	175 11.5
56	9 59.0	10 .7	9 31.7	56 3.7	116 7.6	176 11.6
57	9 59.3	10 .9	9 32.0	57 3.8	117 7.7	177 11.7
58	9 59.5	10 1.2	9 32.2	58 3.8	118 7.8	178 11.7
59	9 59.8	10 1.4	9 32.4	59 3.9	119 7.8	179 11.8
60	10 .0	10 1.7	9 32.7	60 4.0	120 7.9	180 11.9

0 h 40 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.		Δ popr.					
	o	'			'	'	'	'				
0	10	.0	10	1.7	9	32.7	0	.0	60	4.1	120	8.1
1	10	.3	10	1.9	9	32.9	1	.1	61	4.1	121	8.2
2	10	.5	10	2.2	9	33.1	2	.1	62	4.2	122	8.2
3	10	.8	10	2.4	9	33.4	3	.2	63	4.3	123	8.3
4	10	1.0	10	2.7	9	33.6	4	.3	64	4.3	124	8.4
5	10	1.3	10	2.9	9	33.9	5	.3	65	4.4	125	8.4
6	10	1.5	10	3.2	9	34.1	6	.4	66	4.5	126	8.5
7	10	1.8	10	3.4	9	34.3	7	.5	67	4.5	127	8.6
8	10	2.0	10	3.7	9	34.6	8	.5	68	4.6	128	8.6
9	10	2.3	10	3.9	9	34.8	9	.6	69	4.7	129	8.7
10	10	2.5	10	4.2	9	35.1	10	.7	70	4.7	130	8.8
11	10	2.8	10	4.4	9	35.3	11	.7	71	4.8	131	8.8
12	10	3.0	10	4.7	9	35.5	12	.8	72	4.9	132	8.9
13	10	3.3	10	4.9	9	35.8	13	.9	73	4.9	133	9.0
14	10	3.5	10	5.2	9	36.0	14	.9	74	5.0	134	9.0
15	10	3.8	10	5.4	9	36.2	15	1.0	75	5.1	135	9.1
16	10	4.0	10	5.7	9	36.5	16	1.1	76	5.1	136	9.2
17	10	4.3	10	5.9	9	36.7	17	1.1	77	5.2	137	9.2
18	10	4.5	10	6.2	9	37.0	18	1.2	78	5.3	138	9.3
19	10	4.8	10	6.4	9	37.2	19	1.3	79	5.3	139	9.4
20	10	5.0	10	6.7	9	37.4	20	1.4	80	5.4	140	9.5
21	10	5.3	10	6.9	9	37.7	21	1.4	81	5.5	141	9.5
22	10	5.5	10	7.2	9	37.9	22	1.5	82	5.5	142	9.6
23	10	5.8	10	7.4	9	38.2	23	1.6	83	5.6	143	9.7
24	10	6.0	10	7.7	9	38.4	24	1.6	84	5.7	144	9.7
25	10	6.3	10	7.9	9	38.6	25	1.7	85	5.7	145	9.8
26	10	6.5	10	8.2	9	38.9	26	1.8	86	5.8	146	9.9
27	10	6.8	10	8.4	9	39.1	27	1.8	87	5.9	147	9.9
28	10	7.0	10	8.7	9	39.3	28	1.9	88	5.9	148	10.0
29	10	7.3	10	8.9	9	39.6	29	2.0	89	6.0	149	10.1
30	10	7.5	10	9.2	9	39.8	30	2.0	90	6.1	150	10.1
31	10	7.8	10	9.4	9	40.1	31	2.1	91	6.1	151	10.2
32	10	8.0	10	9.7	9	40.3	32	2.2	92	6.2	152	10.3
33	10	8.3	10	9.9	9	40.5	33	2.2	93	6.3	153	10.3
34	10	8.5	10	10.2	9	40.8	34	2.3	94	6.3	154	10.4
35	10	8.8	10	10.4	9	41.0	35	2.4	95	6.4	155	10.5
36	10	9.0	10	10.7	9	41.3	36	2.4	96	6.5	156	10.5
37	10	9.3	10	10.9	9	41.5	37	2.5	97	6.5	157	10.6
38	10	9.5	10	11.2	9	41.7	38	2.6	98	6.6	158	10.7
39	10	9.8	10	11.4	9	42.0	39	2.6	99	6.7	159	10.7
40	10	10.0	10	11.7	9	42.2	40	2.7	100	6.8	160	10.8
41	10	10.3	10	11.9	9	42.4	41	2.8	101	6.8	161	10.9
42	10	10.5	10	12.2	9	42.7	42	2.8	102	6.9	162	10.9
43	10	10.8	10	12.4	9	42.9	43	2.9	103	7.0	163	11.0
44	10	11.0	10	12.7	9	43.2	44	3.0	104	7.0	164	11.1
45	10	11.3	10	12.9	9	43.4	45	3.0	105	7.1	165	11.1
46	10	11.5	10	13.2	9	43.6	46	3.1	106	7.2	166	11.2
47	10	11.8	10	13.4	9	43.9	47	3.2	107	7.2	167	11.3
48	10	12.0	10	13.7	9	44.1	48	3.2	108	7.3	168	11.3
49	10	12.3	10	14.0	9	44.4	49	3.3	109	7.4	169	11.4
50	10	12.5	10	14.2	9	44.6	50	3.4	110	7.4	170	11.5
51	10	12.8	10	14.5	9	44.8	51	3.4	111	7.5	171	11.5
52	10	13.0	10	14.7	9	45.1	52	3.5	112	7.6	172	11.6
53	10	13.3	10	15.0	9	45.3	53	3.6	113	7.6	173	11.7
54	10	13.5	10	15.2	9	45.6	54	3.6	114	7.7	174	11.7
55	10	13.8	10	15.5	9	45.8	55	3.7	115	7.8	175	11.8
56	10	14.0	10	15.7	9	46.0	56	3.8	116	7.8	176	11.9
57	10	14.3	10	16.0	9	46.3	57	3.8	117	7.9	177	11.9
58	10	14.5	10	16.2	9	46.5	58	3.9	118	8.0	178	12.0
59	10	14.8	10	16.5	9	46.7	59	4.0	119	8.0	179	12.1
60	10	15.0	10	16.7	9	47.0	60	4.1	120	8.1	180	12.2

0 h 41 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.		Δ popr.					
	o	'			'	'	'	'				
0	10	15.0	10	16.7	9	47.0	0	.0	60	4.2	120	8.3
1	10	15.3	10	17.0	9	47.2	1	.1	61	4.2	121	8.4
2	10	15.5	10	17.2	9	47.5	2	.1	62	4.3	122	8.4
3	10	15.8	10	17.5	9	47.7	3	.2	63	4.4	123	8.5
4	10	16.0	10	17.7	9	47.9	4	.3	64	4.4	124	8.6
5	10	16.3	10	18.0	9	48.2	5	.3	65	4.5	125	8.6
6	10	16.5	10	18.2	9	48.4	6	.4	66	4.6	126	8.7
7	10	16.8	10	18.5	9	48.7	7	.5	67	4.6	127	8.8
8	10	17.0	10	18.7	9	48.9	8	.5	68	4.7	128	8.9
9	10	17.3	10	19.0	9	49.1	9	.6	69	4.8	129	8.9
10	10	17.5	10	19.2	9	49.4	10	.7	70	4.8	130	9.0
11	10	17.8	10	19.5	9	49.6	11	.8	71	4.9	131	9.1
12	10	18.0	10	19.7	9	49.8	12	.8	72	5.0	132	9.1
13	10	18.3	10	20.0	9	50.1	13	.9	73	5.0	133	9.2
14	10	18.5	10	20.2	9	50.3	14	1.0	74	5.1	134	9.3
15	10	18.8	10	20.5	9	50.6	15	1.0	75	5.2	135	9.3
16	10	19.0	10	20.7	9	50.8	16	1.1	76	5.3	136	9.4
17	10	19.3	10	21.0	9	51.0	17	1.2	77	5.3	137	9.5
18	10	19.5	10	21.2	9	51.3	18	1.2	78	5.4	138	9.5
19	10	19.8	10	21.5	9	51.5	19	1.3	79	5.5	139	9.6
20	10	20.0	10	21.7	9	51.8	20	1.4	80	5.5	140	9.7
21	10	20.3	10	22.0	9	52.0	21	1.5	81	5.6	141	9.8
22	10	20.5	10	22.2	9	52.2	22	1.5	82	5.7	142	9.8
23	10	20.8	10	22.5	9	52.5	23	1.6	83	5.7	143	9.9
24	10	21.0	10	22.7	9	52.7	24	1.7	84	5.8	144	10.0
25	10	21.3	10	23.0	9	52.9	25	1.7	85	5.9	145	10.0
26	10	21.5	10	23.2	9	53.2	26	1.8	86	5.9	146	10.1
27	10	21.8	10	23.5	9	53.4	27	1.9	87	6.0	147	10.2
28	10	22.0	10	23.7	9	53.7	28	1.9	88	6.1	148	10.2
29	10	22.3	10	24.0	9	53.9	29	2.0	89	6.2	149	10.3
30	10	22.5	10	24.2	9	54.1	30	2.1	90	6.2	150	10.4
31	10	22.8	10	24.5	9	54.4	31	2.1	91	6.3	151	10.4
32	10	23.0	10	24.7	9	54.6	32	2.2	92	6.4	152	10.5
33	10	23.3	10	25.0	9	54.9	33	2.3	93	6.4	153	10.6
34	10	23.5	10	25.2	9	55.1	34	2.4	94	6.5	154	10.7
35	10	23.8	10	25.5	9	55.3	35	2.4	95	6.6	155	10.7
36	10	24.0	10	25.7	9	55.6	36	2.5	96	6.6	156	10.8
37	10	24.3	10	26.0	9	55.8	37	2.6	97	6.7	157	10.9
38	10	24.5	10	26.2	9	56.1	38	2.6	98	6.8	158	10.9
39	10	24.8	10	26.5	9	56.3	39	2.7	99	6.8	159	11.0
40	10	25.0	10	26.7	9	56.5	40	2.8	100	6.9	160	11.1
41	10	25.3	10	27.0	9	56.8	41	2.8	101	7.0	161	11.1
42	10	25.5	10	27.2	9	57.0	42	2.9	102	7.1	162	11.2
43	10	25.8	10	27.5	9	57.2	43	3.0	103	7.1	163	11.3
44	10	26.0	10	27.7	9	57.5	44	3.0	104	7.2	164	11.3
45	10	26.3	10	28.0	9	57.7	45	3.1	105	7.3	165	11.4
46	10	26.5	10	28.2	9	58.0	46	3.2	106	7.3	166	11.5
47	10	26.8	10	28.5	9	58.2	47	3.3	107	7.4	167	11.6
48	10	27.0	10	28.7	9	58.4	48	3.3	108	7.5	168	11.6
49	10	27.3	10	29.0	9	58.7	49	3.4	109	7.5	169	11.7
50	10	27.5	10	29.2	9	58.9	50	3.5	110	7.6	170	11.8
51	10	27.8	10	29.5	9	59.2	51	3.5	111	7.7	171	11.8
52	10	28.0	10									

0 h 42 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	°	'	°	'	'	'	'		
0	10	30.0	10	31.8	10	1.3	0 .0	60 4.3	120 8.5
1	10	30.3	10	32.0	10	1.5	1 .1	61 4.3	121 8.6
2	10	30.5	10	32.3	10	1.8	2 .1	62 4.4	122 8.6
3	10	30.8	10	32.5	10	2.0	3 .2	63 4.5	123 8.7
4	10	31.0	10	32.8	10	2.3	4 .3	64 4.5	124 8.8
5	10	31.3	10	33.0	10	2.5	5 .4	65 4.6	125 8.9
6	10	31.5	10	33.3	10	2.7	6 .4	66 4.7	126 8.9
7	10	31.8	10	33.5	10	3.0	7 .5	67 4.7	127 9.0
8	10	32.0	10	33.8	10	3.2	8 .6	68 4.8	128 9.1
9	10	32.3	10	34.0	10	3.4	9 .6	69 4.9	129 9.1
10	10	32.5	10	34.3	10	3.7	10 .7	70 5.0	130 9.2
11	10	32.8	10	34.5	10	3.9	11 .8	71 5.0	131 9.3
12	10	33.0	10	34.8	10	4.2	12 .9	72 5.1	132 9.4
13	10	33.3	10	35.0	10	4.4	13 .9	73 5.2	133 9.4
14	10	33.5	10	35.3	10	4.6	14 1.0	74 5.2	134 9.5
15	10	33.8	10	35.5	10	4.9	15 1.1	75 5.3	135 9.6
16	10	34.0	10	35.8	10	5.1	16 1.1	76 5.4	136 9.6
17	10	34.3	10	36.0	10	5.4	17 1.2	77 5.5	137 9.7
18	10	34.5	10	36.3	10	5.6	18 1.3	78 5.5	138 9.8
19	10	34.8	10	36.5	10	5.8	19 1.3	79 5.6	139 9.8
20	10	35.0	10	36.8	10	6.1	20 1.4	80 5.7	140 9.9
21	10	35.3	10	37.0	10	6.3	21 1.5	81 5.7	141 10.0
22	10	35.5	10	37.3	10	6.5	22 1.6	82 5.8	142 10.1
23	10	35.8	10	37.5	10	6.8	23 1.6	83 5.9	143 10.1
24	10	36.0	10	37.8	10	7.0	24 1.7	84 6.0	144 10.2
25	10	36.3	10	38.0	10	7.3	25 1.8	85 6.0	145 10.3
26	10	36.5	10	38.3	10	7.5	26 1.8	86 6.1	146 10.3
27	10	36.8	10	38.5	10	7.7	27 1.9	87 6.2	147 10.4
28	10	37.0	10	38.8	10	8.0	28 2.0	88 6.2	148 10.5
29	10	37.3	10	39.0	10	8.2	29 2.1	89 6.3	149 10.6
30	10	37.5	10	39.3	10	8.5	30 2.1	90 6.4	150 10.6
31	10	37.8	10	39.5	10	8.7	31 2.2	91 6.4	151 10.7
32	10	38.0	10	39.8	10	8.9	32 2.3	92 6.5	152 10.8
33	10	38.3	10	40.0	10	9.2	33 2.3	93 6.6	153 10.8
34	10	38.5	10	40.3	10	9.4	34 2.4	94 6.7	154 10.9
35	10	38.8	10	40.5	10	9.7	35 2.5	95 6.7	155 11.0
36	10	39.0	10	40.8	10	9.9	36 2.6	96 6.8	156 11.1
37	10	39.3	10	41.0	10	10.1	37 2.6	97 6.9	157 11.1
38	10	39.5	10	41.3	10	10.4	38 2.7	98 6.9	158 11.2
39	10	39.8	10	41.5	10	10.6	39 2.8	99 7.0	159 11.3
40	10	40.0	10	41.8	10	10.8	40 2.8	100 7.1	160 11.3
41	10	40.3	10	42.0	10	11.1	41 2.9	101 7.2	161 11.4
42	10	40.5	10	42.3	10	11.3	42 3.0	102 7.2	162 11.5
43	10	40.8	10	42.5	10	11.6	43 3.0	103 7.3	163 11.5
44	10	41.0	10	42.8	10	11.8	44 3.1	104 7.4	164 11.6
45	10	41.3	10	43.0	10	12.0	45 3.2	105 7.4	165 11.7
46	10	41.5	10	43.3	10	12.3	46 3.3	106 7.5	166 11.8
47	10	41.8	10	43.5	10	12.5	47 3.3	107 7.6	167 11.8
48	10	42.0	10	43.8	10	12.8	48 3.4	108 7.7	168 11.9
49	10	42.3	10	44.0	10	13.0	49 3.5	109 7.7	169 12.0
50	10	42.5	10	44.3	10	13.2	50 3.5	110 7.8	170 12.0
51	10	42.8	10	44.5	10	13.5	51 3.6	111 7.9	171 12.1
52	10	43.0	10	44.8	10	13.7	52 3.7	112 7.9	172 12.2
53	10	43.3	10	45.0	10	13.9	53 3.8	113 8.0	173 12.3
54	10	43.5	10	45.3	10	14.2	54 3.8	114 8.1	174 12.3
55	10	43.8	10	45.5	10	14.4	55 3.9	115 8.1	175 12.4
56	10	44.0	10	45.8	10	14.7	56 4.0	116 8.2	176 12.5
57	10	44.3	10	46.0	10	14.9	57 4.0	117 8.3	177 12.5
58	10	44.5	10	46.3	10	15.1	58 4.1	118 8.4	178 12.6
59	10	44.8	10	46.5	10	15.4	59 4.2	119 8.4	179 12.7
60	10	45.0	10	46.8	10	15.6	60 4.3	120 8.5	180 12.8

0 h 43 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	°	'	°	'	'	'	'		
0	10	45.0	10	46.8	10	15.6	0 .0	60 4.4	120 8.7
1	10	45.3	10	47.0	10	15.9	1 .1	61 4.4	121 8.8
2	10	45.5	10	47.3	10	16.1	2 .1	62 4.5	122 8.8
3	10	45.8	10	47.5	10	16.3	3 .2	63 4.6	123 8.9
4	10	46.0	10	47.8	10	16.6	4 .3	64 4.6	124 9.0
5	10	46.3	10	48.0	10	16.8	5 .4	65 4.7	125 9.1
6	10	46.5	10	48.3	10	17.0	6 .4	66 4.8	126 9.1
7	10	46.8	10	48.5	10	17.3	7 .5	67 4.9	127 9.2
8	10	47.0	10	48.8	10	17.5	8 .6	68 4.9	128 9.3
9	10	47.3	10	49.0	10	17.8	9 .7	69 5.0	129 9.4
10	10	47.5	10	49.3	10	18.0	10 .7	70 5.1	130 9.4
11	10	47.8	10	49.5	10	18.2	11 .8	71 5.1	131 9.5
12	10	48.0	10	49.8	10	18.5	12 .9	72 5.2	132 9.6
13	10	48.3	10	50.1	10	18.7	13 .9	73 5.3	133 9.6
14	10	48.5	10	50.3	10	19.0	14 1.0	74 5.4	134 9.7
15	10	48.8	10	50.6	10	19.2	15 1.1	75 5.4	135 9.8
16	10	49.0	10	50.8	10	19.4	16 1.2	76 5.5	136 9.9
17	10	49.3	10	51.1	10	19.7	17 1.2	77 5.6	137 9.9
18	10	49.5	10	51.3	10	19.9	18 1.3	78 5.7	138 10.0
19	10	49.8	10	51.6	10	20.2	19 1.4	79 5.7	139 10.1
20	10	50.0	10	51.8	10	20.4	20 1.5	80 5.8	140 10.2
21	10	50.3	10	52.1	10	20.6	21 1.5	81 5.9	141 10.2
22	10	50.5	10	52.3	10	20.9	22 1.6	82 5.9	142 10.3
23	10	50.8	10	52.6	10	21.1	23 1.7	83 6.0	143 10.4
24	10	51.0	10	52.8	10	21.3	24 1.7	84 6.1	144 10.4
25	10	51.3	10	53.1	10	21.6	25 1.8	85 6.2	145 10.5
26	10	51.5	10	53.3	10	21.8	26 1.9	86 6.2	146 10.6
27	10	51.8	10	53.6	10	22.1	27 2.0	87 6.3	147 10.7
28	10	52.0	10	53.8	10	22.3	28 2.0	88 6.4	148 10.7
29	10	52.3	10	54.1	10	22.5	29 2.1	89 6.5	149 10.8
30	10	52.5	10	54.3	10	22.8	30 2.2	90 6.5	150 10.9
31	10	52.8	10	54.6	10	23.0	31 2.2	91 6.6	151 10.9
32	10	53.0	10	54.8	10	23.3	32 2.3	92 6.7	152 11.0
33	10	53.3	10	55.1	10	23.5	33 2.4	93 6.7	153 11.1
34	10	53.5	10	55.3	10	23.7	34 2.5	94 6.8	154 11.2
35	10	53.8	10	55.6	10	24.0	35 2.5	95 6.9	155 11.2
36	10	54.0	10	55.8	10	24.2	36 2.6	96 7.0	156 11.3
37	10	54.3	10	56.1	10	24.4	37 2.7	97 7.0	157 11.4
38	10	54.5	10	56.3	10	24.7	38 2.8	98 7.1	158 11.5
39	10	54.8	10	56.6	10	24.9	39 2.8	99 7.2	159 11.5
40	10	55.0	10	56.8	10	25.2	40 2.9	100 7.3	160 11.6
41	10	55.3	10	57.1	10	25.4	41 3.0	101 7.3	161 11.7
42	10	55.5	10	57.3	10	25.6	42 3.0	102 7.4	162 11.7
43	10	55.8	10	57.6	10	25.9	43 3.1	103 7.5	163 11.8
44	10	56.0	10	57.8	10	26.1	44 3.2	104 7.5	164 11.9
45	10	56.3	10	58.1	10	26.4	45 3.3	105 7.6	165 12.0
46	10	56.5	10	58.3	10	26.6	46 3.3	106 7.7	166 12.0
47	10	56.8	10	58.6	10	26.8	47 3.4	107 7.8	167 12.1
48	10	57.0	10	58.8	10	27.1	48 3.5	108 7.8	168 12.2
49	10	57.3	10	59.1	10	27.3	49 3.6	109 7.9	169 12.3
50	10	57.5	10	59.3	10	27.5	50 3.6	110 8.0	170 12.3
51	10	57.8	10	59.6	10	27.8	51 3.7	111 8.0	171 12.4
52	10	58.0	10	59.8	10	28.0	52 3.8	112 8.1	172 12.5
53	10	58.3	11	.1	10	28.3	53 3.8	113 8.2	173 12.5
54	10	58.5	11	.3	10	28.5	54 3.9	114 8.3	174 12.6
55	10	58.8	11	.6	10	28.7	55 4.0	115 8.3	175 12.7
56	10	59.0	11	.8	10	29.0	56 4.1	116 8.4	176 12.8
57	10	59.3	11	1.1	10	29.2	57 4.1	117 8.5	177 12.8
58	10	59.5	11	1.3	10	29.5	58 4.2	118 8.6	178 12.9
59	10	59.8	11	1.6	10	29.7	59 4.3	119 8.6	179 13.0
60	11	.0	11	1.8	10	29.9	60 4.4	120 8.7	180 13.1

0 h 44 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	11	.0	11	1.8	10	29.9	0	.0	60	4.5	120	8.9
1	11	.3	11	2.1	10	30.2	1	.1	61	4.5	121	9.0
2	11	.5	11	2.3	10	30.4	2	.1	62	4.6	122	9.0
3	11	.8	11	2.6	10	30.6	3	.2	63	4.7	123	9.1
4	11	1.0	11	2.8	10	30.9	4	.3	64	4.7	124	9.2
5	11	1.3	11	3.1	10	31.1	5	.4	65	4.8	125	9.3
6	11	1.5	11	3.3	10	31.4	6	.4	66	4.9	126	9.3
7	11	1.8	11	3.6	10	31.6	7	.5	67	5.0	127	9.4
8	11	2.0	11	3.8	10	31.8	8	.6	68	5.0	128	9.5
9	11	2.3	11	4.1	10	32.1	9	.7	69	5.1	129	9.6
10	11	2.5	11	4.3	10	32.3	10	.7	70	5.2	130	9.6
11	11	2.8	11	4.6	10	32.6	11	.8	71	5.3	131	9.7
12	11	3.0	11	4.8	10	32.8	12	.9	72	5.3	132	9.8
13	11	3.3	11	5.1	10	33.0	13	1.0	73	5.4	133	9.9
14	11	3.5	11	5.3	10	33.3	14	1.0	74	5.5	134	9.9
15	11	3.8	11	5.6	10	33.5	15	1.1	75	5.6	135	10.0
16	11	4.0	11	5.8	10	33.8	16	1.2	76	5.6	136	10.1
17	11	4.3	11	6.1	10	34.0	17	1.3	77	5.7	137	10.2
18	11	4.5	11	6.3	10	34.2	18	1.3	78	5.8	138	10.2
19	11	4.8	11	6.6	10	34.5	19	1.4	79	5.9	139	10.3
20	11	5.0	11	6.8	10	34.7	20	1.5	80	5.9	140	10.4
21	11	5.3	11	7.1	10	34.9	21	1.6	81	6.0	141	10.5
22	11	5.5	11	7.3	10	35.2	22	1.6	82	6.1	142	10.5
23	11	5.8	11	7.6	10	35.4	23	1.7	83	6.2	143	10.6
24	11	6.0	11	7.9	10	35.7	24	1.8	84	6.2	144	10.7
25	11	6.3	11	8.1	10	35.9	25	1.9	85	6.3	145	10.8
26	11	6.5	11	8.4	10	36.1	26	1.9	86	6.4	146	10.8
27	11	6.8	11	8.6	10	36.4	27	2.0	87	6.5	147	10.9
28	11	7.0	11	8.9	10	36.6	28	2.1	88	6.5	148	11.0
29	11	7.3	11	9.1	10	36.9	29	2.2	89	6.6	149	11.1
30	11	7.5	11	9.4	10	37.1	30	2.2	90	6.7	150	11.1
31	11	7.8	11	9.6	10	37.3	31	2.3	91	6.7	151	11.2
32	11	8.0	11	9.9	10	37.6	32	2.4	92	6.8	152	11.3
33	11	8.3	11	10.1	10	37.8	33	2.4	93	6.9	153	11.3
34	11	8.5	11	10.4	10	38.0	34	2.5	94	7.0	154	11.4
35	11	8.8	11	10.6	10	38.3	35	2.6	95	7.0	155	11.5
36	11	9.0	11	10.9	10	38.5	36	2.7	96	7.1	156	11.6
37	11	9.3	11	11.1	10	38.8	37	2.7	97	7.2	157	11.6
38	11	9.5	11	11.4	10	39.0	38	2.8	98	7.3	158	11.7
39	11	9.8	11	11.6	10	39.2	39	2.9	99	7.3	159	11.8
40	11	10.0	11	11.9	10	39.5	40	3.0	100	7.4	160	11.9
41	11	10.3	11	12.1	10	39.7	41	3.0	101	7.5	161	11.9
42	11	10.5	11	12.4	10	40.0	42	3.1	102	7.6	162	12.0
43	11	10.8	11	12.6	10	40.2	43	3.2	103	7.6	163	12.1
44	11	11.0	11	12.9	10	40.4	44	3.3	104	7.7	164	12.2
45	11	11.3	11	13.1	10	40.7	45	3.3	105	7.8	165	12.2
46	11	11.5	11	13.4	10	40.9	46	3.4	106	7.9	166	12.3
47	11	11.8	11	13.6	10	41.1	47	3.5	107	7.9	167	12.4
48	11	12.0	11	13.9	10	41.4	48	3.6	108	8.0	168	12.5
49	11	12.3	11	14.1	10	41.6	49	3.6	109	8.1	169	12.5
50	11	12.5	11	14.4	10	41.9	50	3.7	110	8.2	170	12.6
51	11	12.8	11	14.6	10	42.1	51	3.8	111	8.2	171	12.7
52	11	13.0	11	14.9	10	42.3	52	3.9	112	8.3	172	12.8
53	11	13.3	11	15.1	10	42.6	53	3.9	113	8.4	173	12.8
54	11	13.5	11	15.4	10	42.8	54	4.0	114	8.5	174	12.9
55	11	13.8	11	15.6	10	43.1	55	4.1	115	8.5	175	13.0
56	11	14.0	11	15.9	10	43.3	56	4.2	116	8.6	176	13.1
57	11	14.3	11	16.1	10	43.5	57	4.2	117	8.7	177	13.1
58	11	14.5	11	16.4	10	43.8	58	4.3	118	8.8	178	13.2
59	11	14.8	11	16.6	10	44.0	59	4.4	119	8.8	179	13.3
60	11	15.0	11	16.9	10	44.3	60	4.5	120	8.9	180	13.4

0 h 45 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	11	15.0	11	16.9	10	44.3	0	.0	60	4.6	120	9.1
1	11	15.3	11	17.1	10	44.5	1	.1	61	4.6	121	9.2
2	11	15.5	11	17.4	10	44.7	2	.2	62	4.7	122	9.3
3	11	15.8	11	17.6	10	45.0	3	.2	63	4.8	123	9.3
4	11	16.0	11	17.9	10	45.2	4	.3	64	4.9	124	9.4
5	11	16.3	11	18.1	10	45.4	5	.4	65	4.9	125	9.5
6	11	16.5	11	18.4	10	45.7	6	.5	66	5.0	126	9.6
7	11	16.8	11	18.6	10	45.9	7	.5	67	5.1	127	9.6
8	11	17.0	11	18.9	10	46.2	8	.6	68	5.2	128	9.7
9	11	17.3	11	19.1	10	46.4	9	.7	69	5.2	129	9.8
10	11	17.5	11	19.4	10	46.6	10	.8	70	5.3	130	9.9
11	11	17.8	11	19.6	10	46.9	11	.8	71	5.4	131	9.9
12	11	18.0	11	19.9	10	47.1	12	.9	72	5.5	132	10.0
13	11	18.3	11	20.1	10	47.4	13	1.0	73	5.5	133	10.1
14	11	18.5	11	20.4	10	47.6	14	1.1	74	5.6	134	10.2
15	11	18.8	11	20.6	10	47.8	15	1.1	75	5.7	135	10.2
16	11	19.0	11	20.9	10	48.1	16	1.2	76	5.8	136	10.3
17	11	19.3	11	21.1	10	48.3	17	1.3	77	5.8	137	10.4
18	11	19.5	11	21.4	10	48.5	18	1.4	78	5.9	138	10.5
19	11	19.8	11	21.6	10	48.8	19	1.4	79	6.0	139	10.5
20	11	20.0	11	21.9	10	49.0	20	1.5	80	6.1	140	10.6
21	11	20.3	11	22.1	10	49.3	21	1.6	81	6.1	141	10.7
22	11	20.5	11	22.4	10	49.5	22	1.7	82	6.2	142	10.8
23	11	20.8	11	22.6	10	49.7	23	1.7	83	6.3	143	10.8
24	11	21.0	11	22.9	10	50.0	24	1.8	84	6.4	144	10.9
25	11	21.3	11	23.1	10	50.2	25	1.9	85	6.4	145	11.0
26	11	21.5	11	23.4	10	50.5	26	2.0	86	6.5	146	11.1
27	11	21.8	11	23.6	10	50.7	27	2.0	87	6.6	147	11.1
28	11	22.0	11	23.9	10	50.9	28	2.1	88	6.7	148	11.2
29	11	22.3	11	24.1	10	51.2	29	2.2	89	6.7	149	11.3
30	11	22.5	11	24.4	10	51.4	30	2.3	90	6.8	150	11.4
31	11	22.8	11	24.6	10	51.6	31	2.4	91	6.9	151	11.5
32	11	23.0	11	24.9	10	51.9	32	2.4	92	7.0	152	11.5
33	11	23.3	11	25.1	10	52.1	33	2.5	93	7.1	153	11.6
34	11	23.5	11	25.4	10	52.4	34	2.6	94	7.1	154	11.7
35	11	23.8	11	25.6	10	52.6	35	2.7	95	7.2	155	11.8
36	11	24.0	11	25.9	10	52.8	36	2.7	96	7.3	156	11.8
37	11	24.3	11	26.2	10	53.1	37	2.8	97	7.4	157	11.9
38	11	24.5	11	26.4	10	53.3	38	2.9	98	7.4	158	12.0
39	11	24.8	11	26.7	10	53.6	39	3.0	99	7.5	159	12.1
40	11	25.0	11	26.9	10	53.8	40	3.0	100	7.6	160	12.1
41	11	25.3	11	27.2	10	54.0	41	3.1	101	7.7	161	12.2
42	11	25.5	11	27.4	10	54.3	42	3.2	102	7.7	162	12.3
43	11	25.8	11	27.7	10	54.5	43	3.3	103	7.8	163	12.4
44	11	26.0	11	27.9	10	54.7	44	3.3	104	7.9	164	12.4
45	11	26.3	11	28.2	10	55.0	45	3.4	105	8.0	165	12.5
46	11	26.5	11	28.4	10	55.2	46	3.5	106	8.0	166	12.6
47	11	26.8	11	28.7	10	55.5	47	3.6	107	8.1	167	12.7
48	11	27.0	11	28.9	10	55.7	48	3.6	108	8.2	168	12.7
49	11	27.3	11	29.2	10	55.9	49	3.7	109	8.3	169	12.8
50	11	27.5	11	29.4	10	56.2	50	3.8	110			

0 h 46 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	°	'	°	'	'	'	'		
0	11	30.0	11	31.9	10	58.6	0 .0	60 4.7	120 9.3
1	11	30.3	11	32.2	10	58.8	1 .1	61 4.7	121 9.4
2	11	30.5	11	32.4	10	59.0	2 .2	62 4.8	122 9.5
3	11	30.8	11	32.7	10	59.3	3 .2	63 4.9	123 9.5
4	11	31.0	11	32.9	10	59.5	4 .3	64 5.0	124 9.6
5	11	31.3	11	33.2	10	59.8	5 .4	65 5.0	125 9.7
6	11	31.5	11	33.4	10	60.0	6 .5	66 5.1	126 9.8
7	11	31.8	11	33.7	11	.2	7 .5	67 5.2	127 9.8
8	11	32.0	11	33.9	11	.5	8 .6	68 5.3	128 9.9
9	11	32.3	11	34.2	11	.7	9 .7	69 5.3	129 10.0
10	11	32.5	11	34.4	11	1.0	10 .8	70 5.4	130 10.1
11	11	32.8	11	34.7	11	1.2	11 .9	71 5.5	131 10.2
12	11	33.0	11	34.9	11	1.4	12 .9	72 5.6	132 10.2
13	11	33.3	11	35.2	11	1.7	13 1.0	73 5.7	133 10.3
14	11	33.5	11	35.4	11	1.9	14 1.1	74 5.7	134 10.4
15	11	33.8	11	35.7	11	2.1	15 1.2	75 5.8	135 10.5
16	11	34.0	11	35.9	11	2.4	16 1.2	76 5.9	136 10.5
17	11	34.3	11	36.2	11	2.6	17 1.3	77 6.0	137 10.6
18	11	34.5	11	36.4	11	2.9	18 1.4	78 6.0	138 10.7
19	11	34.8	11	36.7	11	3.1	19 1.5	79 6.1	139 10.8
20	11	35.0	11	36.9	11	3.3	20 1.6	80 6.2	140 10.9
21	11	35.3	11	37.2	11	3.6	21 1.6	81 6.3	141 10.9
22	11	35.5	11	37.4	11	3.8	22 1.7	82 6.4	142 11.0
23	11	35.8	11	37.7	11	4.1	23 1.8	83 6.4	143 11.1
24	11	36.0	11	37.9	11	4.3	24 1.9	84 6.5	144 11.2
25	11	36.3	11	38.2	11	4.5	25 1.9	85 6.6	145 11.2
26	11	36.5	11	38.4	11	4.8	26 2.0	86 6.7	146 11.3
27	11	36.8	11	38.7	11	5.0	27 2.1	87 6.7	147 11.4
28	11	37.0	11	38.9	11	5.2	28 2.2	88 6.8	148 11.5
29	11	37.3	11	39.2	11	5.5	29 2.2	89 6.9	149 11.5
30	11	37.5	11	39.4	11	5.7	30 2.3	90 7.0	150 11.6
31	11	37.8	11	39.7	11	6.0	31 2.4	91 7.1	151 11.7
32	11	38.0	11	39.9	11	6.2	32 2.5	92 7.1	152 11.8
33	11	38.3	11	40.2	11	6.4	33 2.6	93 7.2	153 11.9
34	11	38.5	11	40.4	11	6.7	34 2.6	94 7.3	154 11.9
35	11	38.8	11	40.7	11	6.9	35 2.7	95 7.4	155 12.0
36	11	39.0	11	40.9	11	7.2	36 2.8	96 7.4	156 12.1
37	11	39.3	11	41.2	11	7.4	37 2.9	97 7.5	157 12.2
38	11	39.5	11	41.4	11	7.6	38 2.9	98 7.6	158 12.2
39	11	39.8	11	41.7	11	7.9	39 3.0	99 7.7	159 12.3
40	11	40.0	11	41.9	11	8.1	40 3.1	100 7.8	160 12.4
41	11	40.3	11	42.2	11	8.3	41 3.2	101 7.8	161 12.5
42	11	40.5	11	42.4	11	8.6	42 3.3	102 7.9	162 12.6
43	11	40.8	11	42.7	11	8.8	43 3.3	103 8.0	163 12.6
44	11	41.0	11	42.9	11	9.1	44 3.4	104 8.1	164 12.7
45	11	41.3	11	43.2	11	9.3	45 3.5	105 8.1	165 12.8
46	11	41.5	11	43.4	11	9.5	46 3.6	106 8.2	166 12.9
47	11	41.8	11	43.7	11	9.8	47 3.6	107 8.3	167 12.9
48	11	42.0	11	44.0	11	10.0	48 3.7	108 8.4	168 13.0
49	11	42.3	11	44.2	11	10.3	49 3.8	109 8.4	169 13.1
50	11	42.5	11	44.5	11	10.5	50 3.9	110 8.5	170 13.2
51	11	42.8	11	44.7	11	10.7	51 4.0	111 8.6	171 13.3
52	11	43.0	11	45.0	11	11.0	52 4.0	112 8.7	172 13.3
53	11	43.3	11	45.2	11	11.2	53 4.1	113 8.8	173 13.4
54	11	43.5	11	45.5	11	11.5	54 4.2	114 8.8	174 13.5
55	11	43.8	11	45.7	11	11.7	55 4.3	115 8.9	175 13.6
56	11	44.0	11	46.0	11	11.9	56 4.3	116 9.0	176 13.6
57	11	44.3	11	46.2	11	12.2	57 4.4	117 9.1	177 13.7
58	11	44.5	11	46.5	11	12.4	58 4.5	118 9.1	178 13.8
59	11	44.8	11	46.7	11	12.6	59 4.6	119 9.2	179 13.9
60	11	45.0	11	47.0	11	12.9	60 4.7	120 9.3	180 14.0

0 h 47 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	°	'	°	'	'	'	'		
0	11	45.0	11	47.0	11	12.9	0 .0	60 4.8	120 9.5
1	11	45.3	11	47.2	11	13.1	1 .1	61 4.8	121 9.6
2	11	45.5	11	47.5	11	13.4	2 .2	62 4.9	122 9.7
3	11	45.8	11	47.7	11	13.6	3 .2	63 5.0	123 9.7
4	11	46.0	11	48.0	11	13.8	4 .3	64 5.1	124 9.8
5	11	46.3	11	48.2	11	14.1	5 .4	65 5.1	125 9.9
6	11	46.5	11	48.5	11	14.3	6 .5	66 5.2	126 10.0
7	11	46.8	11	48.7	11	14.6	7 .6	67 5.3	127 10.1
8	11	47.0	11	49.0	11	14.8	8 .6	68 5.4	128 10.1
9	11	47.3	11	49.2	11	15.0	9 .7	69 5.5	129 10.2
10	11	47.5	11	49.5	11	15.3	10 .8	70 5.5	130 10.3
11	11	47.8	11	49.7	11	15.5	11 .9	71 5.6	131 10.4
12	11	48.0	11	50.0	11	15.7	12 1.0	72 5.7	132 10.5
13	11	48.3	11	50.2	11	16.0	13 1.0	73 5.8	133 10.5
14	11	48.5	11	50.5	11	16.2	14 1.1	74 5.9	134 10.6
15	11	48.8	11	50.7	11	16.5	15 1.2	75 5.9	135 10.7
16	11	49.0	11	51.0	11	16.7	16 1.3	76 6.0	136 10.8
17	11	49.3	11	51.2	11	16.9	17 1.3	77 6.1	137 10.8
18	11	49.5	11	51.5	11	17.2	18 1.4	78 6.2	138 10.9
19	11	49.8	11	51.7	11	17.4	19 1.5	79 6.3	139 11.0
20	11	50.0	11	52.0	11	17.7	20 1.6	80 6.3	140 11.1
21	11	50.3	11	52.2	11	17.9	21 1.7	81 6.4	141 11.2
22	11	50.5	11	52.5	11	18.1	22 1.7	82 6.5	142 11.2
23	11	50.8	11	52.7	11	18.4	23 1.8	83 6.6	143 11.3
24	11	51.0	11	53.0	11	18.6	24 1.9	84 6.7	144 11.4
25	11	51.3	11	53.2	11	18.8	25 2.0	85 6.7	145 11.5
26	11	51.5	11	53.5	11	19.1	26 2.1	86 6.8	146 11.6
27	11	51.8	11	53.7	11	19.3	27 2.1	87 6.9	147 11.6
28	11	52.0	11	54.0	11	19.6	28 2.2	88 7.0	148 11.7
29	11	52.3	11	54.2	11	19.8	29 2.3	89 7.0	149 11.8
30	11	52.5	11	54.5	11	20.0	30 2.4	90 7.1	150 11.9
31	11	52.8	11	54.7	11	20.3	31 2.5	91 7.2	151 12.0
32	11	53.0	11	55.0	11	20.5	32 2.5	92 7.3	152 12.0
33	11	53.3	11	55.2	11	20.8	33 2.6	93 7.4	153 12.1
34	11	53.5	11	55.5	11	21.0	34 2.7	94 7.4	154 12.2
35	11	53.8	11	55.7	11	21.2	35 2.8	95 7.5	155 12.3
36	11	54.0	11	56.0	11	21.5	36 2.9	96 7.6	156 12.4
37	11	54.3	11	56.2	11	21.7	37 2.9	97 7.7	157 12.4
38	11	54.5	11	56.5	11	22.0	38 3.0	98 7.8	158 12.5
39	11	54.8	11	56.7	11	22.2	39 3.1	99 7.8	159 12.6
40	11	55.0	11	57.0	11	22.4	40 3.2	100 7.9	160 12.7
41	11	55.3	11	57.2	11	22.7	41 3.2	101 8.0	161 12.7
42	11	55.5	11	57.5	11	22.9	42 3.3	102 8.1	162 12.8
43	11	55.8	11	57.7	11	23.1	43 3.4	103 8.2	163 12.9
44	11	56.0	11	58.0	11	23.4	44 3.5	104 8.2	164 13.0
45	11	56.3	11	58.2	11	23.6	45 3.6	105 8.3	165 13.1
46	11	56.5	11	58.5	11	23.9	46 3.6	106 8.4	166 13.1
47	11	56.8	11	58.7	11	24.1	47 3.7	107 8.5	167 13.2
48	11	57.0	11	59.0	11	24.3	48 3.8	108 8.6	168 13.3
49	11	57.3	11	59.2	11	24.6	49 3.9	109 8.6	169 13.4
50	11	57.5	11	59.5	11	24.8	50 4.0	110 8.7	170 13.5
51	11	57.8	11	59.7	11	25.1	51 4.0	111 8.8	171 13.5
52	11	58.0	11	60.0	11	25.3	52 4.1	112 8.9	172 13.6
53	11	58.3	12	.2	11	25.5	53 4.2	113 8.9	173 13.7
54	11	58.5	12	.5	11	25.8	54 4.3	114 9.0	174 13.8
55	11	58.8	12	.7	11	26.0	55 4.4	115 9.1	175 13.9
56	11	59.0	12	1.0	11	26.2	56 4.4	116 9.2	176 13.9
57	11	59.3	12	1.2	11	26.5	57 4.5	117 9.3	177 14.0
58	11	59.5	12	1.5	11	26.7	58 4.6	118 9.3	178 14.1
59	11	59.8	12	1.7	11	27.0	59 4.7	119 9.4	179 14.2
60	12	.0	12	2.0	11	27.2	60 4.8	120 9.5	180 14.3

0 h 48 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	'	'	'
0	12	.0	12	2.0	11	27.2	0 .0 60 4.9 120 9.7
1	12	.3	12	2.3	11	27.4	1 .1 61 4.9 121 9.8
2	12	.5	12	2.5	11	27.7	2 .2 62 5.0 122 9.9
3	12	.8	12	2.8	11	27.9	3 .2 63 5.1 123 9.9
4	12	1.0	12	3.0	11	28.2	4 .3 64 5.2 124 10.0
5	12	1.3	12	3.3	11	28.4	5 .4 65 5.3 125 10.1
6	12	1.5	12	3.5	11	28.6	6 .5 66 5.3 126 10.2
7	12	1.8	12	3.8	11	28.9	7 .6 67 5.4 127 10.3
8	12	2.0	12	4.0	11	29.1	8 .6 68 5.5 128 10.3
9	12	2.3	12	4.3	11	29.3	9 .7 69 5.6 129 10.4
10	12	2.5	12	4.5	11	29.6	10 .8 70 5.7 130 10.5
11	12	2.8	12	4.8	11	29.8	11 .9 71 5.7 131 10.6
12	12	3.0	12	5.0	11	30.1	12 1.0 72 5.8 132 10.7
13	12	3.3	12	5.3	11	30.3	13 1.1 73 5.9 133 10.8
14	12	3.5	12	5.5	11	30.5	14 1.1 74 6.0 134 10.8
15	12	3.8	12	5.8	11	30.8	15 1.2 75 6.1 135 10.9
16	12	4.0	12	6.0	11	31.0	16 1.3 76 6.1 136 11.0
17	12	4.3	12	6.3	11	31.3	17 1.4 77 6.2 137 11.1
18	12	4.5	12	6.5	11	31.5	18 1.5 78 6.3 138 11.2
19	12	4.8	12	6.8	11	31.7	19 1.5 79 6.4 139 11.2
20	12	5.0	12	7.0	11	32.0	20 1.6 80 6.5 140 11.3
21	12	5.3	12	7.3	11	32.2	21 1.7 81 6.5 141 11.4
22	12	5.5	12	7.5	11	32.4	22 1.8 82 6.6 142 11.5
23	12	5.8	12	7.8	11	32.7	23 1.9 83 6.7 143 11.6
24	12	6.0	12	8.0	11	32.9	24 1.9 84 6.8 144 11.6
25	12	6.3	12	8.3	11	33.2	25 2.0 85 6.9 145 11.7
26	12	6.5	12	8.5	11	33.4	26 2.1 86 7.0 146 11.8
27	12	6.8	12	8.8	11	33.6	27 2.2 87 7.0 147 11.9
28	12	7.0	12	9.0	11	33.9	28 2.3 88 7.1 148 12.0
29	12	7.3	12	9.3	11	34.1	29 2.3 89 7.2 149 12.0
30	12	7.5	12	9.5	11	34.4	30 2.4 90 7.3 150 12.1
31	12	7.8	12	9.8	11	34.6	31 2.5 91 7.4 151 12.2
32	12	8.0	12	10.0	11	34.8	32 2.6 92 7.4 152 12.3
33	12	8.3	12	10.3	11	35.1	33 2.7 93 7.5 153 12.4
34	12	8.5	12	10.5	11	35.3	34 2.7 94 7.6 154 12.4
35	12	8.8	12	10.8	11	35.6	35 2.8 95 7.7 155 12.5
36	12	9.0	12	11.0	11	35.8	36 2.9 96 7.8 156 12.6
37	12	9.3	12	11.3	11	36.0	37 3.0 97 7.8 157 12.7
38	12	9.5	12	11.5	11	36.3	38 3.1 98 7.9 158 12.8
39	12	9.8	12	11.8	11	36.5	39 3.2 99 8.0 159 12.9
40	12	10.0	12	12.0	11	36.7	40 3.2 100 8.1 160 12.9
41	12	10.3	12	12.3	11	37.0	41 3.3 101 8.2 161 13.0
42	12	10.5	12	12.5	11	37.2	42 3.4 102 8.2 162 13.1
43	12	10.8	12	12.8	11	37.5	43 3.5 103 8.3 163 13.2
44	12	11.0	12	13.0	11	37.7	44 3.6 104 8.4 164 13.3
45	12	11.3	12	13.3	11	37.9	45 3.6 105 8.5 165 13.3
46	12	11.5	12	13.5	11	38.2	46 3.7 106 8.6 166 13.4
47	12	11.8	12	13.8	11	38.4	47 3.8 107 8.6 167 13.5
48	12	12.0	12	14.0	11	38.7	48 3.9 108 8.7 168 13.6
49	12	12.3	12	14.3	11	38.9	49 4.0 109 8.8 169 13.7
50	12	12.5	12	14.5	11	39.1	50 4.0 110 8.9 170 13.7
51	12	12.8	12	14.8	11	39.4	51 4.1 111 9.0 171 13.8
52	12	13.0	12	15.0	11	39.6	52 4.2 112 9.1 172 13.9
53	12	13.3	12	15.3	11	39.8	53 4.3 113 9.1 173 14.0
54	12	13.5	12	15.5	11	40.1	54 4.4 114 9.2 174 14.1
55	12	13.8	12	15.8	11	40.3	55 4.4 115 9.3 175 14.1
56	12	14.0	12	16.0	11	40.6	56 4.5 116 9.4 176 14.2
57	12	14.3	12	16.3	11	40.8	57 4.6 117 9.5 177 14.3
58	12	14.5	12	16.5	11	41.0	58 4.7 118 9.5 178 14.4
59	12	14.8	12	16.8	11	41.3	59 4.8 119 9.6 179 14.5
60	12	15.0	12	17.0	11	41.5	60 4.9 120 9.7 180 14.6

0 h 49 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	'	'	'
0	12	15.0	12	17.0	11	41.5	0 .0 60 5.0 120 9.9
1	12	15.3	12	17.3	11	41.8	1 .1 61 5.0 121 10.0
2	12	15.5	12	17.5	11	42.0	2 .2 62 5.1 122 10.1
3	12	15.8	12	17.8	11	42.2	3 .2 63 5.2 123 10.1
4	12	16.0	12	18.0	11	42.5	4 .3 64 5.3 124 10.2
5	12	16.3	12	18.3	11	42.7	5 .4 65 5.4 125 10.3
6	12	16.5	12	18.5	11	42.9	6 .5 66 5.4 126 10.4
7	12	16.8	12	18.8	11	43.2	7 .6 67 5.5 127 10.5
8	12	17.0	12	19.0	11	43.4	8 .7 68 5.6 128 10.6
9	12	17.3	12	19.3	11	43.7	9 .7 69 5.7 129 10.6
10	12	17.5	12	19.5	11	43.9	10 .8 70 5.8 130 10.7
11	12	17.8	12	19.8	11	44.1	11 .9 71 5.9 131 10.8
12	12	18.0	12	20.1	11	44.4	12 1.0 72 5.9 132 10.9
13	12	18.3	12	20.3	11	44.6	13 1.1 73 6.0 133 11.0
14	12	18.5	12	20.6	11	44.9	14 1.2 74 6.1 134 11.1
15	12	18.8	12	20.8	11	45.1	15 1.2 75 6.2 135 11.1
16	12	19.0	12	21.1	11	45.3	16 1.3 76 6.3 136 11.2
17	12	19.3	12	21.3	11	45.6	17 1.4 77 6.4 137 11.3
18	12	19.5	12	21.6	11	45.8	18 1.5 78 6.4 138 11.4
19	12	19.8	12	21.8	11	46.1	19 1.6 79 6.5 139 11.5
20	12	20.0	12	22.1	11	46.3	20 1.7 80 6.6 140 11.6
21	12	20.3	12	22.3	11	46.5	21 1.7 81 6.7 141 11.6
22	12	20.5	12	22.6	11	46.8	22 1.8 82 6.8 142 11.7
23	12	20.8	12	22.8	11	47.0	23 1.9 83 6.8 143 11.8
24	12	21.0	12	23.1	11	47.2	24 2.0 84 6.9 144 11.9
25	12	21.3	12	23.3	11	47.5	25 2.1 85 7.0 145 12.0
26	12	21.5	12	23.6	11	47.7	26 2.1 86 7.1 146 12.0
27	12	21.8	12	23.8	11	48.0	27 2.2 87 7.2 147 12.1
28	12	22.0	12	24.1	11	48.2	28 2.3 88 7.3 148 12.2
29	12	22.3	12	24.3	11	48.4	29 2.4 89 7.3 149 12.3
30	12	22.5	12	24.6	11	48.7	30 2.5 90 7.4 150 12.4
31	12	22.8	12	24.8	11	48.9	31 2.6 91 7.5 151 12.5
32	12	23.0	12	25.1	11	49.2	32 2.6 92 7.6 152 12.5
33	12	23.3	12	25.3	11	49.4	33 2.7 93 7.7 153 12.6
34	12	23.5	12	25.6	11	49.6	34 2.8 94 7.8 154 12.7
35	12	23.8	12	25.8	11	49.9	35 2.9 95 7.8 155 12.8
36	12	24.0	12	26.1	11	50.1	36 3.0 96 7.9 156 12.9
37	12	24.3	12	26.3	11	50.3	37 3.1 97 8.0 157 13.0
38	12	24.5	12	26.6	11	50.6	38 3.1 98 8.1 158 13.0
39	12	24.8	12	26.8	11	50.8	39 3.2 99 8.2 159 13.1
40	12	25.0	12	27.1	11	51.1	40 3.3 100 8.3 160 13.2
41	12	25.3	12	27.3	11	51.3	41 3.4 101 8.3 161 13.3
42	12	25.5	12	27.6	11	51.5	42 3.5 102 8.4 162 13.4
43	12	25.8	12	27.8	11	51.8	43 3.5 103 8.5 163 13.4
44	12	26.0	12	28.1	11	52.0	44 3.6 104 8.6 164 13.5
45	12	26.3	12	28.3	11	52.3	45 3.7 105 8.7 165 13.6
46	12	26.5	12	28.6	11	52.5	46 3.8 106 8.7 166 13.7
47	12	26.8	12	28.8	11	52.7	47 3.9 107 8.8 167 13.8
48	12	27.0	12	29.1	11	53.0	48 4.0 108 8.9 168 13.9
49	12	27.3	12	29.3	11	53.2	49 4.0 109 9.0 169 13.9
50	12	27.5	12	29.6	11	53.4	50 4.1 110 9.1 170 14.0
51	12	27.8	12	29.8	11	53.7	51 4.2 111 9.2 171 14.1
52	12	28.0	12	30.1	11	53.9	52 4.3 112 9.2 172 14.2
53	12	28.3	12	30.3	11	54.2	53 4.4 113 9.3 173 14.3
54	12	28.5	12	30.6	11	54.4	54 4.5 114 9.4 174 14.4
55	12	28.8	12	30.8	11	54.6	55 4.5 115 9.5 175 14.4
56	12	29.0	12	31.1	11	54.9	56 4.6 116 9.6 176 14.5
57	12	29.3	12	31.3	11	55.1	57 4.7 117 9.7 177 14.6
58	12	29.5	12	31.6	11	55.4	58 4.8 118 9.7 178 14.7
59	12	29.8	12	31.8	11	55.6	59 4.9 119 9.8 179 14.8
60	12	30.0	12	32.1	11	55.8	60 5.0 120 9.9 180 14.9

0 h 50 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.
	° /	° /	° /	′	′	′	′	′	′
0	12 30.0	12 32.1	11 55.8	0	.0	60	5.1	120	10.1
1	12 30.3	12 32.3	11 56.1	1	.1	61	5.1	121	10.2
2	12 30.5	12 32.6	11 56.3	2	.2	62	5.2	122	10.3
3	12 30.8	12 32.8	11 56.5	3	.3	63	5.3	123	10.4
4	12 31.0	12 33.1	11 56.8	4	.3	64	5.4	124	10.4
5	12 31.3	12 33.3	11 57.0	5	.4	65	5.5	125	10.5
6	12 31.5	12 33.6	11 57.3	6	.5	66	5.6	126	10.6
7	12 31.8	12 33.8	11 57.5	7	.6	67	5.6	127	10.7
8	12 32.0	12 34.1	11 57.7	8	.7	68	5.7	128	10.8
9	12 32.3	12 34.3	11 58.0	9	.8	69	5.8	129	10.9
10	12 32.5	12 34.6	11 58.2	10	.8	70	5.9	130	10.9
11	12 32.8	12 34.8	11 58.5	11	.9	71	6.0	131	11.0
12	12 33.0	12 35.1	11 58.7	12	1.0	72	6.1	132	11.1
13	12 33.3	12 35.3	11 58.9	13	1.1	73	6.1	133	11.2
14	12 33.5	12 35.6	11 59.2	14	1.2	74	6.2	134	11.3
15	12 33.8	12 35.8	11 59.4	15	1.3	75	6.3	135	11.4
16	12 34.0	12 36.1	11 59.7	16	1.3	76	6.4	136	11.4
17	12 34.3	12 36.3	11 59.9	17	1.4	77	6.5	137	11.5
18	12 34.5	12 36.6	12 .1	18	1.5	78	6.6	138	11.6
19	12 34.8	12 36.8	12 .4	19	1.6	79	6.6	139	11.7
20	12 35.0	12 37.1	12 .6	20	1.7	80	6.7	140	11.8
21	12 35.3	12 37.3	12 .8	21	1.8	81	6.8	141	11.9
22	12 35.5	12 37.6	12 1.1	22	1.9	82	6.9	142	12.0
23	12 35.8	12 37.8	12 1.3	23	1.9	83	7.0	143	12.0
24	12 36.0	12 38.1	12 1.6	24	2.0	84	7.1	144	12.1
25	12 36.3	12 38.4	12 1.8	25	2.1	85	7.2	145	12.2
26	12 36.5	12 38.6	12 2.0	26	2.2	86	7.2	146	12.3
27	12 36.8	12 38.9	12 2.3	27	2.3	87	7.3	147	12.4
28	12 37.0	12 39.1	12 2.5	28	2.4	88	7.4	148	12.5
29	12 37.3	12 39.4	12 2.8	29	2.4	89	7.5	149	12.5
30	12 37.5	12 39.6	12 3.0	30	2.5	90	7.6	150	12.6
31	12 37.8	12 39.9	12 3.2	31	2.6	91	7.7	151	12.7
32	12 38.0	12 40.1	12 3.5	32	2.7	92	7.7	152	12.8
33	12 38.3	12 40.4	12 3.7	33	2.8	93	7.8	153	12.9
34	12 38.5	12 40.6	12 3.9	34	2.9	94	7.9	154	13.0
35	12 38.8	12 40.9	12 4.2	35	2.9	95	8.0	155	13.0
36	12 39.0	12 41.1	12 4.4	36	3.0	96	8.1	156	13.1
37	12 39.3	12 41.4	12 4.7	37	3.1	97	8.2	157	13.2
38	12 39.5	12 41.6	12 4.9	38	3.2	98	8.2	158	13.3
39	12 39.8	12 41.9	12 5.1	39	3.3	99	8.3	159	13.4
40	12 40.0	12 42.1	12 5.4	40	3.4	100	8.4	160	13.5
41	12 40.3	12 42.4	12 5.6	41	3.5	101	8.5	161	13.6
42	12 40.5	12 42.6	12 5.9	42	3.5	102	8.6	162	13.6
43	12 40.8	12 42.9	12 6.1	43	3.6	103	8.7	163	13.7
44	12 41.0	12 43.1	12 6.3	44	3.7	104	8.8	164	13.8
45	12 41.3	12 43.4	12 6.6	45	3.8	105	8.8	165	13.9
46	12 41.5	12 43.6	12 6.8	46	3.9	106	8.9	166	14.0
47	12 41.8	12 43.9	12 7.0	47	4.0	107	9.0	167	14.1
48	12 42.0	12 44.1	12 7.3	48	4.0	108	9.1	168	14.1
49	12 42.3	12 44.4	12 7.5	49	4.1	109	9.2	169	14.2
50	12 42.5	12 44.6	12 7.8	50	4.2	110	9.3	170	14.3
51	12 42.8	12 44.9	12 8.0	51	4.3	111	9.3	171	14.4
52	12 43.0	12 45.1	12 8.2	52	4.4	112	9.4	172	14.5
53	12 43.3	12 45.4	12 8.5	53	4.5	113	9.5	173	14.6
54	12 43.5	12 45.6	12 8.7	54	4.5	114	9.6	174	14.6
55	12 43.8	12 45.9	12 9.0	55	4.6	115	9.7	175	14.7
56	12 44.0	12 46.1	12 9.2	56	4.7	116	9.8	176	14.8
57	12 44.3	12 46.4	12 9.4	57	4.8	117	9.8	177	14.9
58	12 44.5	12 46.6	12 9.7	58	4.9	118	9.9	178	15.0
59	12 44.8	12 46.9	12 9.9	59	5.0	119	10.0	179	15.1
60	12 45.0	12 47.1	12 10.2	60	5.1	120	10.1	180	15.2

0 h 51 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.
	° /	° /	° /	′	′	′	′	′	′
0	12 45.0	12 47.1	12 10.2	0	.0	60	5.2	120	10.3
1	12 45.3	12 47.4	12 10.4	1	.1	61	5.2	121	10.4
2	12 45.5	12 47.6	12 10.6	2	.2	62	5.3	122	10.5
3	12 45.8	12 47.9	12 10.9	3	.3	63	5.4	123	10.6
4	12 46.0	12 48.1	12 11.1	4	.3	64	5.5	124	10.6
5	12 46.3	12 48.4	12 11.3	5	.4	65	5.6	125	10.7
6	12 46.5	12 48.6	12 11.6	6	.5	66	5.7	126	10.8
7	12 46.8	12 48.9	12 11.8	7	.6	67	5.8	127	10.9
8	12 47.0	12 49.1	12 12.1	8	.7	68	5.8	128	11.0
9	12 47.3	12 49.4	12 12.3	9	.8	69	5.9	129	11.1
10	12 47.5	12 49.6	12 12.5	10	.9	70	6.0	130	11.2
11	12 47.8	12 49.9	12 12.8	11	.9	71	6.1	131	11.2
12	12 48.0	12 50.1	12 13.0	12	1.0	72	6.2	132	11.3
13	12 48.3	12 50.4	12 13.3	13	1.1	73	6.3	133	11.4
14	12 48.5	12 50.6	12 13.5	14	1.2	74	6.4	134	11.5
15	12 48.8	12 50.9	12 13.7	15	1.3	75	6.4	135	11.6
16	12 49.0	12 51.1	12 14.0	16	1.4	76	6.5	136	11.7
17	12 49.3	12 51.4	12 14.2	17	1.5	77	6.6	137	11.8
18	12 49.5	12 51.6	12 14.4	18	1.5	78	6.7	138	11.8
19	12 49.8	12 51.9	12 14.7	19	1.6	79	6.8	139	11.9
20	12 50.0	12 52.1	12 14.9	20	1.7	80	6.9	140	12.0
21	12 50.3	12 52.4	12 15.2	21	1.8	81	7.0	141	12.1
22	12 50.5	12 52.6	12 15.4	22	1.9	82	7.0	142	12.2
23	12 50.8	12 52.9	12 15.6	23	2.0	83	7.1	143	12.3
24	12 51.0	12 53.1	12 15.9	24	2.1	84	7.2	144	12.4
25	12 51.3	12 53.4	12 16.1	25	2.1	85	7.3	145	12.4
26	12 51.5	12 53.6	12 16.4	26	2.2	86	7.4	146	12.5
27	12 51.8	12 53.9	12 16.6	27	2.3	87	7.5	147	12.6
28	12 52.0	12 54.1	12 16.8	28	2.4	88	7.6	148	12.7
29	12 52.3	12 54.4	12 17.1	29	2.5	89	7.6	149	12.8
30	12 52.5	12 54.6	12 17.3	30	2.6	90	7.7	150	12.9
31	12 52.8	12 54.9	12 17.5	31	2.7	91	7.8	151	13.0
32	12 53.0	12 55.1	12 17.8	32	2.7	92	7.9	152	13.0
33	12 53.3	12 55.4	12 18.0	33	2.8	93	8.0	153	13.1
34	12 53.5	12 55.6	12 18.3	34	2.9	94	8.1	154	13.2
35	12 53.8	12 55.9	12 18.5	35	3.0	95	8.2	155	13.3
36	12 54.0	12 56.2	12 18.7	36	3.1	96	8.2	156	13.4
37	12 54.3	12 56.4	12 19.0	37	3.2	97	8.3	157	13.5
38	12 54.5	12 56.7	12 19.2	38	3.3	98	8.4	158	13.6
39	12 54.8	12 56.9	12 19.5	39	3.3	99	8.5	159	13.6
40	12 55.0	12 57.2	12 19.7	40	3.4	100	8.6	160	13.7
41	12 55.3	12 57.4	12 19.9	41	3.5	101	8.7	161	13.8
42	12 55.5	12 57.7	12 20.2	42	3.6	102	8.8	162	13.9
43	12 55.8	12 57.9	12 20.4	43	3.7	103	8.8	163	14.0
44	12 56.0	12 58.2	12 20.6	44	3.8	104	8.9	164	14.1
45	12 56.3	12 58.4	12 20.9	45	3.9	105	9.0	165	14.2
46	12 56.5	12 58.7	12 21.1	46	3.9	106	9.1	166	14.2
47	12 56.8	12 58.9	12 21.4	47	4.0	107	9.2	167	14.3
48	12 57.0	12 59.2	12 21.6	48	4.1	108	9.3	168	14.4
49	12 57.3	12 59.4	12 21.8	49	4.2	109	9.4	169	14.5
50	12 57.5	12 59.7	12 22.1	50	4.3	110	9.4	170	14.6
51	12 57.8	12 59.9	12 22.3	51	4.4	111	9.5	171	14.7
52	12 58.0	13 .2	12 22.6	52	4.5	112	9.6	172	14.8
53	12 58.3	13 .4	12 22.8	53	4.5	113	9.7	173	14.8
54	12 58.5	13 .7	12 23.0	54	4.6	114	9.8	174	14.9
55	12 58.8	13 .9	12 23.3	55	4.7	115	9.9	175	15.0
56	12 59.0	13 1.2	12 23.5	56	4.8	116	10.0	176	15.1
57	12 59.3	13 1.4	12 23.8	57	4.9	117	10.0	177	15.2
58	12 59.5	13 1.7	12 24.0	58	5.0	118	10.1	178	15.3
59	12 59.8	13 1.9	12 24.2	59	5.1	119	10.2	179	15.4
60	13 .0	13 2.2	12 24.5	60	5.2	120	10.3	180	15.5

0 h 52 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	13	.0	13	2.2	12	24.5	0	.0	60	5.3	120	10.5
1	13	.3	13	2.4	12	24.7	1	.1	61	5.3	121	10.6
2	13	.5	13	2.7	12	24.9	2	.2	62	5.4	122	10.7
3	13	.8	13	2.9	12	25.2	3	.3	63	5.5	123	10.8
4	13	1.0	13	3.2	12	25.4	4	.4	64	5.6	124	10.9
5	13	1.3	13	3.4	12	25.7	5	.4	65	5.7	125	10.9
6	13	1.5	13	3.7	12	25.9	6	.5	66	5.8	126	11.0
7	13	1.8	13	3.9	12	26.1	7	.6	67	5.9	127	11.1
8	13	2.0	13	4.2	12	26.4	8	.7	68	6.0	128	11.2
9	13	2.3	13	4.4	12	26.6	9	.8	69	6.0	129	11.3
10	13	2.5	13	4.7	12	26.9	10	.9	70	6.1	130	11.4
11	13	2.8	13	4.9	12	27.1	11	1.0	71	6.2	131	11.5
12	13	3.0	13	5.2	12	27.3	12	1.1	72	6.3	132	11.6
13	13	3.3	13	5.4	12	27.6	13	1.1	73	6.4	133	11.6
14	13	3.5	13	5.7	12	27.8	14	1.2	74	6.5	134	11.7
15	13	3.8	13	5.9	12	28.0	15	1.3	75	6.6	135	11.8
16	13	4.0	13	6.2	12	28.3	16	1.4	76	6.7	136	11.9
17	13	4.3	13	6.4	12	28.5	17	1.5	77	6.7	137	12.0
18	13	4.5	13	6.7	12	28.8	18	1.6	78	6.8	138	12.1
19	13	4.8	13	6.9	12	29.0	19	1.7	79	6.9	139	12.2
20	13	5.0	13	7.2	12	29.2	20	1.8	80	7.0	140	12.3
21	13	5.3	13	7.4	12	29.5	21	1.8	81	7.1	141	12.3
22	13	5.5	13	7.7	12	29.7	22	1.9	82	7.2	142	12.4
23	13	5.8	13	7.9	12	30.0	23	2.0	83	7.3	143	12.5
24	13	6.0	13	8.2	12	30.2	24	2.1	84	7.4	144	12.6
25	13	6.3	13	8.4	12	30.4	25	2.2	85	7.4	145	12.7
26	13	6.5	13	8.7	12	30.7	26	2.3	86	7.5	146	12.8
27	13	6.8	13	8.9	12	30.9	27	2.4	87	7.6	147	12.9
28	13	7.0	13	9.2	12	31.1	28	2.5	88	7.7	148	13.0
29	13	7.3	13	9.4	12	31.4	29	2.5	89	7.8	149	13.0
30	13	7.5	13	9.7	12	31.6	30	2.6	90	7.9	150	13.1
31	13	7.8	13	9.9	12	31.9	31	2.7	91	8.0	151	13.2
32	13	8.0	13	10.2	12	32.1	32	2.8	92	8.1	152	13.3
33	13	8.3	13	10.4	12	32.3	33	2.9	93	8.1	153	13.4
34	13	8.5	13	10.7	12	32.6	34	3.0	94	8.2	154	13.5
35	13	8.8	13	10.9	12	32.8	35	3.1	95	8.3	155	13.6
36	13	9.0	13	11.2	12	33.1	36	3.2	96	8.4	156	13.7
37	13	9.3	13	11.4	12	33.3	37	3.2	97	8.5	157	13.7
38	13	9.5	13	11.7	12	33.5	38	3.3	98	8.6	158	13.8
39	13	9.8	13	11.9	12	33.8	39	3.4	99	8.7	159	13.9
40	13	10.0	13	12.2	12	34.0	40	3.5	100	8.8	160	14.0
41	13	10.3	13	12.4	12	34.2	41	3.6	101	8.8	161	14.1
42	13	10.5	13	12.7	12	34.5	42	3.7	102	8.9	162	14.2
43	13	10.8	13	12.9	12	34.7	43	3.8	103	9.0	163	14.3
44	13	11.0	13	13.2	12	35.0	44	3.9	104	9.1	164	14.4
45	13	11.3	13	13.4	12	35.2	45	3.9	105	9.2	165	14.4
46	13	11.5	13	13.7	12	35.4	46	4.0	106	9.3	166	14.5
47	13	11.8	13	13.9	12	35.7	47	4.1	107	9.4	167	14.6
48	13	12.0	13	14.2	12	35.9	48	4.2	108	9.5	168	14.7
49	13	12.3	13	14.5	12	36.2	49	4.3	109	9.5	169	14.8
50	13	12.5	13	14.7	12	36.4	50	4.4	110	9.6	170	14.9
51	13	12.8	13	15.0	12	36.6	51	4.5	111	9.7	171	15.0
52	13	13.0	13	15.2	12	36.9	52	4.6	112	9.8	172	15.1
53	13	13.3	13	15.5	12	37.1	53	4.6	113	9.9	173	15.1
54	13	13.5	13	15.7	12	37.4	54	4.7	114	10.0	174	15.2
55	13	13.8	13	16.0	12	37.6	55	4.8	115	10.1	175	15.3
56	13	14.0	13	16.2	12	37.8	56	4.9	116	10.2	176	15.4
57	13	14.3	13	16.5	12	38.1	57	5.0	117	10.2	177	15.5
58	13	14.5	13	16.7	12	38.3	58	5.1	118	10.3	178	15.6
59	13	14.8	13	17.0	12	38.5	59	5.2	119	10.4	179	15.7
60	13	15.0	13	17.2	12	38.8	60	5.3	120	10.5	180	15.8

0 h 53 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	13	15.0	13	17.2	12	38.8	0	.0	60	5.4	120	10.7
1	13	15.3	13	17.5	12	39.0	1	.1	61	5.4	121	10.8
2	13	15.5	13	17.7	12	39.3	2	.2	62	5.5	122	10.9
3	13	15.8	13	18.0	12	39.5	3	.3	63	5.6	123	11.0
4	13	16.0	13	18.2	12	39.7	4	.4	64	5.7	124	11.1
5	13	16.3	13	18.5	12	40.0	5	.4	65	5.8	125	11.1
6	13	16.5	13	18.7	12	40.2	6	.5	66	5.9	126	11.2
7	13	16.8	13	19.0	12	40.5	7	.6	67	6.0	127	11.3
8	13	17.0	13	19.2	12	40.7	8	.7	68	6.1	128	11.4
9	13	17.3	13	19.5	12	40.9	9	.8	69	6.2	129	11.5
10	13	17.5	13	19.7	12	41.2	10	.9	70	6.2	130	11.6
11	13	17.8	13	20.0	12	41.4	11	1.0	71	6.3	131	11.7
12	13	18.0	13	20.2	12	41.6	12	1.1	72	6.4	132	11.8
13	13	18.3	13	20.5	12	41.9	13	1.2	73	6.5	133	11.9
14	13	18.5	13	20.7	12	42.1	14	1.2	74	6.6	134	11.9
15	13	18.8	13	21.0	12	42.4	15	1.3	75	6.7	135	12.0
16	13	19.0	13	21.2	12	42.6	16	1.4	76	6.8	136	12.1
17	13	19.3	13	21.5	12	42.8	17	1.5	77	6.9	137	12.2
18	13	19.5	13	21.7	12	43.1	18	1.6	78	7.0	138	12.3
19	13	19.8	13	22.0	12	43.3	19	1.7	79	7.0	139	12.4
20	13	20.0	13	22.2	12	43.6	20	1.8	80	7.1	140	12.5
21	13	20.3	13	22.5	12	43.8	21	1.9	81	7.2	141	12.6
22	13	20.5	13	22.7	12	44.0	22	2.0	82	7.3	142	12.7
23	13	20.8	13	23.0	12	44.3	23	2.1	83	7.4	143	12.8
24	13	21.0	13	23.2	12	44.5	24	2.1	84	7.5	144	12.8
25	13	21.3	13	23.5	12	44.7	25	2.2	85	7.6	145	12.9
26	13	21.5	13	23.7	12	45.0	26	2.3	86	7.7	146	13.0
27	13	21.8	13	24.0	12	45.2	27	2.4	87	7.8	147	13.1
28	13	22.0	13	24.2	12	45.5	28	2.5	88	7.8	148	13.2
29	13	22.3	13	24.5	12	45.7	29	2.6	89	7.9	149	13.3
30	13	22.5	13	24.7	12	45.9	30	2.7	90	8.0	150	13.4
31	13	22.8	13	25.0	12	46.2	31	2.8	91	8.1	151	13.5
32	13	23.0	13	25.2	12	46.4	32	2.9	92	8.2	152	13.6
33	13	23.3	13	25.5	12	46.7	33	2.9	93	8.3	153	13.6
34	13	23.5	13	25.7	12	46.9	34	3.0	94	8.4	154	13.7
35	13	23.8	13	26.0	12	47.1	35	3.1	95	8.5	155	13.8
36	13	24.0	13	26.2	12	47.4	36	3.2	96	8.6	156	13.9
37	13	24.3	13	26.5	12	47.6	37	3.3	97	8.6	157	14.0
38	13	24.5	13	26.7	12	47.9	38	3.4	98	8.7	158	14.1
39	13	24.8	13	27.0	12	48.1	39	3.5	99	8.8	159	14.2
40	13	25.0	13	27.2	12	48.3	40	3.6	100	8.9	160	14.3
41	13	25.3	13	27.5	12	48.6	41	3.7	101	9.0	161	14.4
42	13	25.5	13	27.7	12	48.8	42	3.7	102	9.1	162	14.4
43	13	25.8	13	28.0	12	49.0	43	3.8	103	9.2	163	14.5
44	13	26.0	13	28.2	12	49.3	44	3.9	104	9.3	164	14.6
45	13	26.3	13	28.5	12	49.5	45	4.0	105	9.4	165	14.7
46	13	26.5	13	28.7	12	49.8	46	4.1	106	9.5	166	14.8
47	13	26.8	13	29.0	12	50.0	47	4.2	107	9.5	167	14.9
48	13	27.0	13	29.2	12	50.2	48	4.3	108	9.6	168	15.0
49	13	27.3	13	29.5	12	50.5	49	4.4	109	9.7	169	15.1
50	13	27.5	13	29.7								

0 h 54 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.
	° /	° /	° /	°	'	°	'	°	'
0	13 30.0	13 32.3	12 53.1	0	.0	60	5.5	120	10.9
1	13 30.3	13 32.5	12 53.3	1	.1	61	5.5	121	11.0
2	13 30.5	13 32.8	12 53.6	2	.2	62	5.6	122	11.1
3	13 30.8	13 33.0	12 53.8	3	.3	63	5.7	123	11.2
4	13 31.0	13 33.3	12 54.1	4	.4	64	5.8	124	11.3
5	13 31.3	13 33.5	12 54.3	5	.5	65	5.9	125	11.4
6	13 31.5	13 33.8	12 54.5	6	.5	66	6.0	126	11.4
7	13 31.8	13 34.0	12 54.8	7	.6	67	6.1	127	11.5
8	13 32.0	13 34.3	12 55.0	8	.7	68	6.2	128	11.6
9	13 32.3	13 34.5	12 55.2	9	.8	69	6.3	129	11.7
10	13 32.5	13 34.8	12 55.5	10	.9	70	6.4	130	11.8
11	13 32.8	13 35.0	12 55.7	11	1.0	71	6.4	131	11.9
12	13 33.0	13 35.3	12 56.0	12	1.1	72	6.5	132	12.0
13	13 33.3	13 35.5	12 56.2	13	1.2	73	6.6	133	12.1
14	13 33.5	13 35.8	12 56.4	14	1.3	74	6.7	134	12.2
15	13 33.8	13 36.0	12 56.7	15	1.4	75	6.8	135	12.3
16	13 34.0	13 36.3	12 56.9	16	1.5	76	6.9	136	12.4
17	13 34.3	13 36.5	12 57.2	17	1.5	77	7.0	137	12.4
18	13 34.5	13 36.8	12 57.4	18	1.6	78	7.1	138	12.5
19	13 34.8	13 37.0	12 57.6	19	1.7	79	7.2	139	12.6
20	13 35.0	13 37.3	12 57.9	20	1.8	80	7.3	140	12.7
21	13 35.3	13 37.5	12 58.1	21	1.9	81	7.4	141	12.8
22	13 35.5	13 37.8	12 58.3	22	2.0	82	7.4	142	12.9
23	13 35.8	13 38.0	12 58.6	23	2.1	83	7.5	143	13.0
24	13 36.0	13 38.3	12 58.8	24	2.2	84	7.6	144	13.1
25	13 36.3	13 38.5	12 59.1	25	2.3	85	7.7	145	13.2
26	13 36.5	13 38.8	12 59.3	26	2.4	86	7.8	146	13.3
27	13 36.8	13 39.0	12 59.5	27	2.5	87	7.9	147	13.4
28	13 37.0	13 39.3	12 59.8	28	2.5	88	8.0	148	13.4
29	13 37.3	13 39.5	13 .0	29	2.6	89	8.1	149	13.5
30	13 37.5	13 39.8	13 .3	30	2.7	90	8.2	150	13.6
31	13 37.8	13 40.0	13 .5	31	2.8	91	8.3	151	13.7
32	13 38.0	13 40.3	13 .7	32	2.9	92	8.4	152	13.8
33	13 38.3	13 40.5	13 1.0	33	3.0	93	8.4	153	13.9
34	13 38.5	13 40.8	13 1.2	34	3.1	94	8.5	154	14.0
35	13 38.8	13 41.0	13 1.5	35	3.2	95	8.6	155	14.1
36	13 39.0	13 41.3	13 1.7	36	3.3	96	8.7	156	14.2
37	13 39.3	13 41.5	13 1.9	37	3.4	97	8.8	157	14.3
38	13 39.5	13 41.8	13 2.2	38	3.5	98	8.9	158	14.4
39	13 39.8	13 42.0	13 2.4	39	3.5	99	9.0	159	14.4
40	13 40.0	13 42.3	13 2.6	40	3.6	100	9.1	160	14.5
41	13 40.3	13 42.5	13 2.9	41	3.7	101	9.2	161	14.6
42	13 40.5	13 42.8	13 3.1	42	3.8	102	9.3	162	14.7
43	13 40.8	13 43.0	13 3.4	43	3.9	103	9.4	163	14.8
44	13 41.0	13 43.3	13 3.6	44	4.0	104	9.4	164	14.9
45	13 41.3	13 43.5	13 3.8	45	4.1	105	9.5	165	15.0
46	13 41.5	13 43.8	13 4.1	46	4.2	106	9.6	166	15.1
47	13 41.8	13 44.0	13 4.3	47	4.3	107	9.7	167	15.2
48	13 42.0	13 44.3	13 4.6	48	4.4	108	9.8	168	15.3
49	13 42.3	13 44.5	13 4.8	49	4.5	109	9.9	169	15.4
50	13 42.5	13 44.8	13 5.0	50	4.5	110	10.0	170	15.4
51	13 42.8	13 45.0	13 5.3	51	4.6	111	10.1	171	15.5
52	13 43.0	13 45.3	13 5.5	52	4.7	112	10.2	172	15.6
53	13 43.3	13 45.5	13 5.7	53	4.8	113	10.3	173	15.7
54	13 43.5	13 45.8	13 6.0	54	4.9	114	10.4	174	15.8
55	13 43.8	13 46.0	13 6.2	55	5.0	115	10.4	175	15.9
56	13 44.0	13 46.3	13 6.5	56	5.1	116	10.5	176	16.0
57	13 44.3	13 46.5	13 6.7	57	5.2	117	10.6	177	16.1
58	13 44.5	13 46.8	13 6.9	58	5.3	118	10.7	178	16.2
59	13 44.8	13 47.0	13 7.2	59	5.4	119	10.8	179	16.3
60	13 45.0	13 47.3	13 7.4	60	5.5	120	10.9	180	16.4

0 h 55 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.
	° /	° /	° /	°	'	°	'	°	'
0	13 45.0	13 47.3	13 7.4	0	.0	60	5.6	120	11.1
1	13 45.3	13 47.5	13 7.7	1	.1	61	5.6	121	11.2
2	13 45.5	13 47.8	13 7.9	2	.2	62	5.7	122	11.3
3	13 45.8	13 48.0	13 8.1	3	.3	63	5.8	123	11.4
4	13 46.0	13 48.3	13 8.4	4	.4	64	5.9	124	11.5
5	13 46.3	13 48.5	13 8.6	5	.5	65	6.0	125	11.6
6	13 46.5	13 48.8	13 8.8	6	.6	66	6.1	126	11.7
7	13 46.8	13 49.0	13 9.1	7	.6	67	6.2	127	11.7
8	13 47.0	13 49.3	13 9.3	8	.7	68	6.3	128	11.8
9	13 47.3	13 49.5	13 9.6	9	.8	69	6.4	129	11.9
10	13 47.5	13 49.8	13 9.8	10	.9	70	6.5	130	12.0
11	13 47.8	13 50.0	13 10.0	11	1.0	71	6.6	131	12.1
12	13 48.0	13 50.3	13 10.3	12	1.1	72	6.7	132	12.2
13	13 48.3	13 50.6	13 10.5	13	1.2	73	6.8	133	12.3
14	13 48.5	13 50.8	13 10.8	14	1.3	74	6.8	134	12.4
15	13 48.8	13 51.1	13 11.0	15	1.4	75	6.9	135	12.5
16	13 49.0	13 51.3	13 11.2	16	1.5	76	7.0	136	12.6
17	13 49.3	13 51.6	13 11.5	17	1.6	77	7.1	137	12.7
18	13 49.5	13 51.8	13 11.7	18	1.7	78	7.2	138	12.8
19	13 49.8	13 52.1	13 12.0	19	1.8	79	7.3	139	12.9
20	13 50.0	13 52.3	13 12.2	20	1.9	80	7.4	140	13.0
21	13 50.3	13 52.6	13 12.4	21	1.9	81	7.5	141	13.0
22	13 50.5	13 52.8	13 12.7	22	2.0	82	7.6	142	13.1
23	13 50.8	13 53.1	13 12.9	23	2.1	83	7.7	143	13.2
24	13 51.0	13 53.3	13 13.1	24	2.2	84	7.8	144	13.3
25	13 51.3	13 53.6	13 13.4	25	2.3	85	7.9	145	13.4
26	13 51.5	13 53.8	13 13.6	26	2.4	86	8.0	146	13.5
27	13 51.8	13 54.1	13 13.9	27	2.5	87	8.0	147	13.6
28	13 52.0	13 54.3	13 14.1	28	2.6	88	8.1	148	13.7
29	13 52.3	13 54.6	13 14.3	29	2.7	89	8.2	149	13.8
30	13 52.5	13 54.8	13 14.6	30	2.8	90	8.3	150	13.9
31	13 52.8	13 55.1	13 14.8	31	2.9	91	8.4	151	14.0
32	13 53.0	13 55.3	13 15.1	32	3.0	92	8.5	152	14.1
33	13 53.3	13 55.6	13 15.3	33	3.1	93	8.6	153	14.2
34	13 53.5	13 55.8	13 15.5	34	3.1	94	8.7	154	14.2
35	13 53.8	13 56.1	13 15.8	35	3.2	95	8.8	155	14.3
36	13 54.0	13 56.3	13 16.0	36	3.3	96	8.9	156	14.4
37	13 54.3	13 56.6	13 16.2	37	3.4	97	9.0	157	14.5
38	13 54.5	13 56.8	13 16.5	38	3.5	98	9.1	158	14.6
39	13 54.8	13 57.1	13 16.7	39	3.6	99	9.2	159	14.7
40	13 55.0	13 57.3	13 17.0	40	3.7	100	9.3	160	14.8
41	13 55.3	13 57.6	13 17.2	41	3.8	101	9.3	161	14.9
42	13 55.5	13 57.8	13 17.4	42	3.9	102	9.4	162	15.0
43	13 55.8	13 58.1	13 17.7	43	4.0	103	9.5	163	15.1
44	13 56.0	13 58.3	13 17.9	44	4.1	104	9.6	164	15.2
45	13 56.3	13 58.6	13 18.2	45	4.2	105	9.7	165	15.3
46	13 56.5	13 58.8	13 18.4	46	4.3	106	9.8	166	15.4
47	13 56.8	13 59.1	13 18.6	47	4.3	107	9.9	167	15.4
48	13 57.0	13 59.3	13 18.9	48	4.4	108	10.0	168	15.5
49	13 57.3	13 59.6	13 19.1	49	4.5	109	10.1	169	15.6
50	13 57.5	13 59.8	13 19.3	50	4.6	110	10.2	170	15.7
51	13 57.8	14 .1	13 19.6	51	4.7	111	10.3	171	15.8
52	13 58.0	14 .3	13 19.8	52	4.8	112	10.4	172	15.9
53	13 58.3	14 .6	13 20.1	53	4.9	113	10.5	173	16.0
54	13 58.5	14 .8	13 20.3	54	5.0	114	10.5	174	16.1
55	13 58.8	14 1.1	13 20.5	55	5.1	115	10.6	175	16.2
56	13 59.0	14 1.3	13 20.8	56	5.2	116	10.7	176	16.3
57	13 59.3	14 1.6	13 21.0	57	5.3	117	10.8	177	16.4
58	13 59.5	14 1.8	13 21.3	58	5.4	118	10.9	178	16.5
59	13 59.8	14 2.1	13 21.5	59	5.5	119	11.0	179	16.6
60	14 .0	14 2.3	13 21.7	60	5.6	120	11.1	180	16.7

0 h 56 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	o	'	o		
0	14	.0	14	2.3	13	21.7	0 .0	60 5.7	120 11.3
1	14	.3	14	2.6	13	22.0	1 .1	61 5.7	121 11.4
2	14	.5	14	2.8	13	22.2	2 .2	62 5.8	122 11.5
3	14	.8	14	3.1	13	22.4	3 .3	63 5.9	123 11.6
4	14	1.0	14	3.3	13	22.7	4 .4	64 6.0	124 11.7
5	14	1.3	14	3.6	13	22.9	5 .5	65 6.1	125 11.8
6	14	1.5	14	3.8	13	23.2	6 .6	66 6.2	126 11.9
7	14	1.8	14	4.1	13	23.4	7 .7	67 6.3	127 12.0
8	14	2.0	14	4.3	13	23.6	8 .8	68 6.4	128 12.1
9	14	2.3	14	4.6	13	23.9	9 .8	69 6.5	129 12.1
10	14	2.5	14	4.8	13	24.1	10 .9	70 6.6	130 12.2
11	14	2.8	14	5.1	13	24.4	11 1.0	71 6.7	131 12.3
12	14	3.0	14	5.3	13	24.6	12 1.1	72 6.8	132 12.4
13	14	3.3	14	5.6	13	24.8	13 1.2	73 6.9	133 12.5
14	14	3.5	14	5.8	13	25.1	14 1.3	74 7.0	134 12.6
15	14	3.8	14	6.1	13	25.3	15 1.4	75 7.1	135 12.7
16	14	4.0	14	6.3	13	25.6	16 1.5	76 7.2	136 12.8
17	14	4.3	14	6.6	13	25.8	17 1.6	77 7.3	137 12.9
18	14	4.5	14	6.8	13	26.0	18 1.7	78 7.3	138 13.0
19	14	4.8	14	7.1	13	26.3	19 1.8	79 7.4	139 13.1
20	14	5.0	14	7.3	13	26.5	20 1.9	80 7.5	140 13.2
21	14	5.3	14	7.6	13	26.7	21 2.0	81 7.6	141 13.3
22	14	5.5	14	7.8	13	27.0	22 2.1	82 7.7	142 13.4
23	14	5.8	14	8.1	13	27.2	23 2.2	83 7.8	143 13.5
24	14	6.0	14	8.4	13	27.5	24 2.3	84 7.9	144 13.6
25	14	6.3	14	8.6	13	27.7	25 2.4	85 8.0	145 13.7
26	14	6.5	14	8.9	13	27.9	26 2.4	86 8.1	146 13.7
27	14	6.8	14	9.1	13	28.2	27 2.5	87 8.2	147 13.8
28	14	7.0	14	9.4	13	28.4	28 2.6	88 8.3	148 13.9
29	14	7.3	14	9.6	13	28.7	29 2.7	89 8.4	149 14.0
30	14	7.5	14	9.9	13	28.9	30 2.8	90 8.5	150 14.1
31	14	7.8	14	10.1	13	29.1	31 2.9	91 8.6	151 14.2
32	14	8.0	14	10.4	13	29.4	32 3.0	92 8.7	152 14.3
33	14	8.3	14	10.6	13	29.6	33 3.1	93 8.8	153 14.4
34	14	8.5	14	10.9	13	29.8	34 3.2	94 8.9	154 14.5
35	14	8.8	14	11.1	13	30.1	35 3.3	95 8.9	155 14.6
36	14	9.0	14	11.4	13	30.3	36 3.4	96 9.0	156 14.7
37	14	9.3	14	11.6	13	30.6	37 3.5	97 9.1	157 14.8
38	14	9.5	14	11.9	13	30.8	38 3.6	98 9.2	158 14.9
39	14	9.8	14	12.1	13	31.0	39 3.7	99 9.3	159 15.0
40	14	10.0	14	12.4	13	31.3	40 3.8	100 9.4	160 15.1
41	14	10.3	14	12.6	13	31.5	41 3.9	101 9.5	161 15.2
42	14	10.5	14	12.9	13	31.8	42 4.0	102 9.6	162 15.3
43	14	10.8	14	13.1	13	32.0	43 4.0	103 9.7	163 15.3
44	14	11.0	14	13.4	13	32.2	44 4.1	104 9.8	164 15.4
45	14	11.3	14	13.6	13	32.5	45 4.2	105 9.9	165 15.5
46	14	11.5	14	13.9	13	32.7	46 4.3	106 10.0	166 15.6
47	14	11.8	14	14.1	13	32.9	47 4.4	107 10.1	167 15.7
48	14	12.0	14	14.4	13	33.2	48 4.5	108 10.2	168 15.8
49	14	12.3	14	14.6	13	33.4	49 4.6	109 10.3	169 15.9
50	14	12.5	14	14.9	13	33.7	50 4.7	110 10.4	170 16.0
51	14	12.8	14	15.1	13	33.9	51 4.8	111 10.5	171 16.1
52	14	13.0	14	15.4	13	34.1	52 4.9	112 10.5	172 16.2
53	14	13.3	14	15.6	13	34.4	53 5.0	113 10.6	173 16.3
54	14	13.5	14	15.9	13	34.6	54 5.1	114 10.7	174 16.4
55	14	13.8	14	16.1	13	34.9	55 5.2	115 10.8	175 16.5
56	14	14.0	14	16.4	13	35.1	56 5.3	116 10.9	176 16.6
57	14	14.3	14	16.6	13	35.3	57 5.4	117 11.0	177 16.7
58	14	14.5	14	16.9	13	35.6	58 5.5	118 11.1	178 16.8
59	14	14.8	14	17.1	13	35.8	59 5.6	119 11.2	179 16.9
60	14	15.0	14	17.4	13	36.1	60 5.7	120 11.3	180 17.0

0 h 57 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	o	'	o		
0	14	15.0	14	17.4	13	36.1	0 .0	60 5.8	120 11.5
1	14	15.3	14	17.6	13	36.3	1 .1	61 5.8	121 11.6
2	14	15.5	14	17.9	13	36.5	2 .2	62 5.9	122 11.7
3	14	15.8	14	18.1	13	36.8	3 .3	63 6.0	123 11.8
4	14	16.0	14	18.4	13	37.0	4 .4	64 6.1	124 11.9
5	14	16.3	14	18.6	13	37.2	5 .5	65 6.2	125 12.0
6	14	16.5	14	18.9	13	37.5	6 .6	66 6.3	126 12.1
7	14	16.8	14	19.1	13	37.7	7 .7	67 6.4	127 12.2
8	14	17.0	14	19.4	13	38.0	8 .8	68 6.5	128 12.3
9	14	17.3	14	19.6	13	38.2	9 .9	69 6.6	129 12.4
10	14	17.5	14	19.9	13	38.4	10 1.0	70 6.7	130 12.5
11	14	17.8	14	20.1	13	38.7	11 1.1	71 6.8	131 12.6
12	14	18.0	14	20.4	13	38.9	12 1.2	72 6.9	132 12.7
13	14	18.3	14	20.6	13	39.2	13 1.2	73 7.0	133 12.7
14	14	18.5	14	20.9	13	39.4	14 1.3	74 7.1	134 12.8
15	14	18.8	14	21.1	13	39.6	15 1.4	75 7.2	135 12.9
16	14	19.0	14	21.4	13	39.9	16 1.5	76 7.3	136 13.0
17	14	19.3	14	21.6	13	40.1	17 1.6	77 7.4	137 13.1
18	14	19.5	14	21.9	13	40.3	18 1.7	78 7.5	138 13.2
19	14	19.8	14	22.1	13	40.6	19 1.8	79 7.6	139 13.3
20	14	20.0	14	22.4	13	40.8	20 1.9	80 7.7	140 13.4
21	14	20.3	14	22.6	13	41.1	21 2.0	81 7.8	141 13.5
22	14	20.5	14	22.9	13	41.3	22 2.1	82 7.9	142 13.6
23	14	20.8	14	23.1	13	41.5	23 2.2	83 8.0	143 13.7
24	14	21.0	14	23.4	13	41.8	24 2.3	84 8.1	144 13.8
25	14	21.3	14	23.6	13	42.0	25 2.4	85 8.1	145 13.9
26	14	21.5	14	23.9	13	42.3	26 2.5	86 8.2	146 14.0
27	14	21.8	14	24.1	13	42.5	27 2.6	87 8.3	147 14.1
28	14	22.0	14	24.4	13	42.7	28 2.7	88 8.4	148 14.2
29	14	22.3	14	24.6	13	43.0	29 2.8	89 8.5	149 14.3
30	14	22.5	14	24.9	13	43.2	30 2.9	90 8.6	150 14.4
31	14	22.8	14	25.1	13	43.4	31 3.0	91 8.7	151 14.5
32	14	23.0	14	25.4	13	43.7	32 3.1	92 8.8	152 14.6
33	14	23.3	14	25.6	13	43.9	33 3.2	93 8.9	153 14.7
34	14	23.5	14	25.9	13	44.2	34 3.3	94 9.0	154 14.8
35	14	23.8	14	26.1	13	44.4	35 3.4	95 9.1	155 14.9
36	14	24.0	14	26.4	13	44.6	36 3.5	96 9.2	156 15.0
37	14	24.3	14	26.7	13	44.9	37 3.5	97 9.3	157 15.0
38	14	24.5	14	26.9	13	45.1	38 3.6	98 9.4	158 15.1
39	14	24.8	14	27.2	13	45.4	39 3.7	99 9.5	159 15.2
40	14	25.0	14	27.4	13	45.6	40 3.8	100 9.6	160 15.3
41	14	25.3	14	27.7	13	45.8	41 3.9	101 9.7	161 15.4
42	14	25.5	14	27.9	13	46.1	42 4.0	102 9.8	162 15.5
43	14	25.8	14	28.2	13	46.3	43 4.1	103 9.9	163 15.6
44	14	26.0	14	28.4	13	46.5	44 4.2	104 10.0	164 15.7
45	14	26.3	14	28.7	13	46.8	45 4.3	105 10.1	165 15.8
46	14	26.5	14	28.9	13	47.0	46 4.4	106 10.2	166 15.9
47	14	26.8	14	29.2	13	47.3	47 4.5	107 10.3	167 16.0
48	14	27.0	14	29.4	13	47.5	48 4.6	108 10.4	168 16.1
49	14	27.3	14	29.7	13	47.7	49 4.7	109 10.4	169 16.2
50	14	27.5	14	29.9	13	48.0	50 4.8	110 10.5	170 16.3
51	14	27.8	14	30.2	13	48.2	51 4.9	111 10.6	171 16.4
52	14	28.0	14	30.4	13	48.5	52 5.0	112 10.7	172 16.5
53	14	28.3	14	30.7	13	48.7	53 5.1	113 10.8	173 16.6
54	14	28.5	14	30.9	13	48.9	54 5.2	114 10.9	174 16.7
55	14	28.8	14	31.2	13	49.2	55 5.3	115 11.0	175 16.8
56	14	29.0	14	31.4	13	49.4	56 5.4	116 11.1	176 16.9
57	14	29.3	14	31.7	13	49.7	57 5.5	117 11.2	177 17.0
58	14	29.5	14	31.9	13	49.9	58 5.6	118 11.3	178 17.1
59	14	29.8	14	32.2	13	50.1	59 5.7	119 11.4	179 17.2
60	14	30.0	14	32.4	13	50.4	60 5.8	120 11.5	180 17.3

0 h 58 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	14 30.0	14 32.4	13 50.4	0 .0	60 5.9	120 11.7
1	14 30.3	14 32.7	13 50.6	1 .1	61 5.9	121 11.8
2	14 30.5	14 32.9	13 50.8	2 .2	62 6.0	122 11.9
3	14 30.8	14 33.2	13 51.1	3 .3	63 6.1	123 12.0
4	14 31.0	14 33.4	13 51.3	4 .4	64 6.2	124 12.1
5	14 31.3	14 33.7	13 51.6	5 .5	65 6.3	125 12.2
6	14 31.5	14 33.9	13 51.8	6 .6	66 6.4	126 12.3
7	14 31.8	14 34.2	13 52.0	7 .7	67 6.5	127 12.4
8	14 32.0	14 34.4	13 52.3	8 .8	68 6.6	128 12.5
9	14 32.3	14 34.7	13 52.5	9 .9	69 6.7	129 12.6
10	14 32.5	14 34.9	13 52.8	10 1.0	70 6.8	130 12.7
11	14 32.8	14 35.2	13 53.0	11 1.1	71 6.9	131 12.8
12	14 33.0	14 35.4	13 53.2	12 1.2	72 7.0	132 12.9
13	14 33.3	14 35.7	13 53.5	13 1.3	73 7.1	133 13.0
14	14 33.5	14 35.9	13 53.7	14 1.4	74 7.2	134 13.1
15	14 33.8	14 36.2	13 53.9	15 1.5	75 7.3	135 13.2
16	14 34.0	14 36.4	13 54.2	16 1.6	76 7.4	136 13.3
17	14 34.3	14 36.7	13 54.4	17 1.7	77 7.5	137 13.4
18	14 34.5	14 36.9	13 54.7	18 1.8	78 7.6	138 13.5
19	14 34.8	14 37.2	13 54.9	19 1.9	79 7.7	139 13.6
20	14 35.0	14 37.4	13 55.1	20 2.0	80 7.8	140 13.7
21	14 35.3	14 37.7	13 55.4	21 2.0	81 7.9	141 13.7
22	14 35.5	14 37.9	13 55.6	22 2.1	82 8.0	142 13.8
23	14 35.8	14 38.2	13 55.9	23 2.2	83 8.1	143 13.9
24	14 36.0	14 38.4	13 56.1	24 2.3	84 8.2	144 14.0
25	14 36.3	14 38.7	13 56.3	25 2.4	85 8.3	145 14.1
26	14 36.5	14 38.9	13 56.6	26 2.5	86 8.4	146 14.2
27	14 36.8	14 39.2	13 56.8	27 2.6	87 8.5	147 14.3
28	14 37.0	14 39.4	13 57.0	28 2.7	88 8.6	148 14.4
29	14 37.3	14 39.7	13 57.3	29 2.8	89 8.7	149 14.5
30	14 37.5	14 39.9	13 57.5	30 2.9	90 8.8	150 14.6
31	14 37.8	14 40.2	13 57.8	31 3.0	91 8.9	151 14.7
32	14 38.0	14 40.4	13 58.0	32 3.1	92 9.0	152 14.8
33	14 38.3	14 40.7	13 58.2	33 3.2	93 9.1	153 14.9
34	14 38.5	14 40.9	13 58.5	34 3.3	94 9.2	154 15.0
35	14 38.8	14 41.2	13 58.7	35 3.4	95 9.3	155 15.1
36	14 39.0	14 41.4	13 59.0	36 3.5	96 9.4	156 15.2
37	14 39.3	14 41.7	13 59.2	37 3.6	97 9.5	157 15.3
38	14 39.5	14 41.9	13 59.4	38 3.7	98 9.6	158 15.4
39	14 39.8	14 42.2	13 59.7	39 3.8	99 9.7	159 15.5
40	14 40.0	14 42.4	13 59.9	40 3.9	100 9.8	160 15.6
41	14 40.3	14 42.7	14 .1	41 4.0	101 9.8	161 15.7
42	14 40.5	14 42.9	14 .4	42 4.1	102 9.9	162 15.8
43	14 40.8	14 43.2	14 .6	43 4.2	103 10.0	163 15.9
44	14 41.0	14 43.4	14 .9	44 4.3	104 10.1	164 16.0
45	14 41.3	14 43.7	14 1.1	45 4.4	105 10.2	165 16.1
46	14 41.5	14 43.9	14 1.3	46 4.5	106 10.3	166 16.2
47	14 41.8	14 44.2	14 1.6	47 4.6	107 10.4	167 16.3
48	14 42.0	14 44.5	14 1.8	48 4.7	108 10.5	168 16.4
49	14 42.3	14 44.7	14 2.1	49 4.8	109 10.6	169 16.5
50	14 42.5	14 45.0	14 2.3	50 4.9	110 10.7	170 16.6
51	14 42.8	14 45.2	14 2.5	51 5.0	111 10.8	171 16.7
52	14 43.0	14 45.5	14 2.8	52 5.1	112 10.9	172 16.8
53	14 43.3	14 45.7	14 3.0	53 5.2	113 11.0	173 16.9
54	14 43.5	14 46.0	14 3.3	54 5.3	114 11.1	174 17.0
55	14 43.8	14 46.2	14 3.5	55 5.4	115 11.2	175 17.1
56	14 44.0	14 46.5	14 3.7	56 5.5	116 11.3	176 17.2
57	14 44.3	14 46.7	14 4.0	57 5.6	117 11.4	177 17.3
58	14 44.5	14 47.0	14 4.2	58 5.7	118 11.5	178 17.4
59	14 44.8	14 47.2	14 4.4	59 5.8	119 11.6	179 17.5
60	14 45.0	14 47.5	14 4.7	60 5.9	120 11.7	180 17.6

0 h 59 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	14 45.0	14 47.5	14 4.7	0 .0	60 6.0	120 11.9
1	14 45.3	14 47.7	14 4.9	1 .1	61 6.0	121 12.0
2	14 45.5	14 48.0	14 5.2	2 .2	62 6.1	122 12.1
3	14 45.8	14 48.2	14 5.4	3 .3	63 6.2	123 12.2
4	14 46.0	14 48.5	14 5.6	4 .4	64 6.3	124 12.3
5	14 46.3	14 48.7	14 5.9	5 .5	65 6.4	125 12.4
6	14 46.5	14 49.0	14 6.1	6 .6	66 6.5	126 12.5
7	14 46.8	14 49.2	14 6.4	7 .7	67 6.6	127 12.6
8	14 47.0	14 49.5	14 6.6	8 .8	68 6.7	128 12.7
9	14 47.3	14 49.7	14 6.8	9 .9	69 6.8	129 12.8
10	14 47.5	14 50.0	14 7.1	10 1.0	70 6.9	130 12.9
11	14 47.8	14 50.2	14 7.3	11 1.1	71 7.0	131 13.0
12	14 48.0	14 50.5	14 7.5	12 1.2	72 7.1	132 13.1
13	14 48.3	14 50.7	14 7.8	13 1.3	73 7.2	133 13.2
14	14 48.5	14 51.0	14 8.0	14 1.4	74 7.3	134 13.3
15	14 48.8	14 51.2	14 8.3	15 1.5	75 7.4	135 13.4
16	14 49.0	14 51.5	14 8.5	16 1.6	76 7.5	136 13.5
17	14 49.3	14 51.7	14 8.7	17 1.7	77 7.6	137 13.6
18	14 49.5	14 52.0	14 9.0	18 1.8	78 7.7	138 13.7
19	14 49.8	14 52.2	14 9.2	19 1.9	79 7.8	139 13.8
20	14 50.0	14 52.5	14 9.5	20 2.0	80 7.9	140 13.9
21	14 50.3	14 52.7	14 9.7	21 2.1	81 8.0	141 14.0
22	14 50.5	14 53.0	14 9.9	22 2.2	82 8.1	142 14.1
23	14 50.8	14 53.2	14 10.2	23 2.3	83 8.2	143 14.2
24	14 51.0	14 53.5	14 10.4	24 2.4	84 8.3	144 14.3
25	14 51.3	14 53.7	14 10.6	25 2.5	85 8.4	145 14.4
26	14 51.5	14 54.0	14 10.9	26 2.6	86 8.5	146 14.5
27	14 51.8	14 54.2	14 11.1	27 2.7	87 8.6	147 14.6
28	14 52.0	14 54.5	14 11.4	28 2.8	88 8.7	148 14.7
29	14 52.3	14 54.7	14 11.6	29 2.9	89 8.8	149 14.8
30	14 52.5	14 55.0	14 11.8	30 3.0	90 8.9	150 14.9
31	14 52.8	14 55.2	14 12.1	31 3.1	91 9.0	151 15.0
32	14 53.0	14 55.5	14 12.3	32 3.2	92 9.1	152 15.1
33	14 53.3	14 55.7	14 12.6	33 3.3	93 9.2	153 15.2
34	14 53.5	14 56.0	14 12.8	34 3.4	94 9.3	154 15.3
35	14 53.8	14 56.2	14 13.0	35 3.5	95 9.4	155 15.4
36	14 54.0	14 56.5	14 13.3	36 3.6	96 9.5	156 15.5
37	14 54.3	14 56.7	14 13.5	37 3.7	97 9.6	157 15.6
38	14 54.5	14 57.0	14 13.8	38 3.8	98 9.7	158 15.7
39	14 54.8	14 57.2	14 14.0	39 3.9	99 9.8	159 15.8
40	14 55.0	14 57.5	14 14.2	40 4.0	100 9.9	160 15.9
41	14 55.3	14 57.7	14 14.5	41 4.1	101 10.0	161 16.0
42	14 55.5	14 58.0	14 14.7	42 4.2	102 10.1	162 16.1
43	14 55.8	14 58.2	14 14.9	43 4.3	103 10.2	163 16.2
44	14 56.0	14 58.5	14 15.2	44 4.4	104 10.3	164 16.3
45	14 56.3	14 58.7	14 15.4	45 4.5	105 10.4	165 16.4
46	14 56.5	14 59.0	14 15.7	46 4.6	106 10.5	166 16.5
47	14 56.8	14 59.2	14 15.9	47 4.7	107 10.6	167 16.6
48	14 57.0	14 59.5	14 16.1	48 4.8	108 10.7	168 16.7
49	14 57.3	14 59.7	14 16.4	49 4.9	109 10.8	169 16.8
50	14 57.5	14 60.0	14 16.6	50 5.0	110 10.9	170 16.9
51	14 57.8	15 .2	14 16.9	51 5.1	111 11.0	171 17.0
52	14 58.0	15 .5	14 17.1	52 5.2	112 11.1	172 17.1
53	14 58.3	15 .7	14 17.3	53 5.3	113 11.2	173 17.2
54	14 58.5	15 1.0	14 17.6	54 5.4	114 11.3	174 17.3
55	14 58.8	15 1.2	14 17.8	55 5.5	115 11.4	175 17.4
56	14 59.0	15 1.5	14 18.0	56 5.6	116 11.5	176 17.5
57	14 59.3	15 1.7	14 18.3	57 5.7	117 11.6	177 17.6
58	14 59.5	15 2.0	14 18.5	58 5.8	118 11.7	178 17.7
59	14 59.8	15 2.2	14 18.8	59 5.9	119 11.8	179 17.8
60	15 .0	15 2.5	14 19.0	60 6.0	120 11.9	180 17.9

1 h 0 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	15	.0	15	2.5	14	19.0	0 .0 60 6.1 120 12.1
1	15	.3	15	2.8	14	19.2	1 .1 61 6.2 121 12.2
2	15	.5	15	3.0	14	19.5	2 .2 62 6.3 122 12.3
3	15	.8	15	3.3	14	19.7	3 .3 63 6.4 123 12.4
4	15	1.0	15	3.5	14	20.0	4 .4 64 6.5 124 12.5
5	15	1.3	15	3.8	14	20.2	5 .5 65 6.6 125 12.6
6	15	1.5	15	4.0	14	20.4	6 .6 66 6.7 126 12.7
7	15	1.8	15	4.3	14	20.7	7 .7 67 6.8 127 12.8
8	15	2.0	15	4.5	14	20.9	8 .8 68 6.9 128 12.9
9	15	2.3	15	4.8	14	21.1	9 .9 69 7.0 129 13.0
10	15	2.5	15	5.0	14	21.4	10 1.0 70 7.1 130 13.1
11	15	2.8	15	5.3	14	21.6	11 1.1 71 7.2 131 13.2
12	15	3.0	15	5.5	14	21.9	12 1.2 72 7.3 132 13.3
13	15	3.3	15	5.8	14	22.1	13 1.3 73 7.4 133 13.4
14	15	3.5	15	6.0	14	22.3	14 1.4 74 7.5 134 13.5
15	15	3.8	15	6.3	14	22.6	15 1.5 75 7.6 135 13.6
16	15	4.0	15	6.5	14	22.8	16 1.6 76 7.7 136 13.7
17	15	4.3	15	6.8	14	23.1	17 1.7 77 7.8 137 13.8
18	15	4.5	15	7.0	14	23.3	18 1.8 78 7.9 138 13.9
19	15	4.8	15	7.3	14	23.5	19 1.9 79 8.0 139 14.0
20	15	5.0	15	7.5	14	23.8	20 2.0 80 8.1 140 14.1
21	15	5.3	15	7.8	14	24.0	21 2.1 81 8.2 141 14.2
22	15	5.5	15	8.0	14	24.2	22 2.2 82 8.3 142 14.3
23	15	5.8	15	8.3	14	24.5	23 2.3 83 8.4 143 14.4
24	15	6.0	15	8.5	14	24.7	24 2.4 84 8.5 144 14.5
25	15	6.3	15	8.8	14	25.0	25 2.5 85 8.6 145 14.6
26	15	6.5	15	9.0	14	25.2	26 2.6 86 8.7 146 14.7
27	15	6.8	15	9.3	14	25.4	27 2.7 87 8.8 147 14.8
28	15	7.0	15	9.5	14	25.7	28 2.8 88 8.9 148 14.9
29	15	7.3	15	9.8	14	25.9	29 2.9 89 9.0 149 15.0
30	15	7.5	15	10.0	14	26.2	30 3.0 90 9.1 150 15.1
31	15	7.8	15	10.3	14	26.4	31 3.1 91 9.2 151 15.2
32	15	8.0	15	10.5	14	26.6	32 3.2 92 9.3 152 15.3
33	15	8.3	15	10.8	14	26.9	33 3.3 93 9.4 153 15.4
34	15	8.5	15	11.0	14	27.1	34 3.4 94 9.5 154 15.5
35	15	8.8	15	11.3	14	27.4	35 3.5 95 9.6 155 15.6
36	15	9.0	15	11.5	14	27.6	36 3.6 96 9.7 156 15.7
37	15	9.3	15	11.8	14	27.8	37 3.7 97 9.8 157 15.8
38	15	9.5	15	12.0	14	28.1	38 3.8 98 9.9 158 15.9
39	15	9.8	15	12.3	14	28.3	39 3.9 99 10.0 159 16.0
40	15	10.0	15	12.5	14	28.5	40 4.0 100 10.1 160 16.1
41	15	10.3	15	12.8	14	28.8	41 4.1 101 10.2 161 16.2
42	15	10.5	15	13.0	14	29.0	42 4.2 102 10.3 162 16.3
43	15	10.8	15	13.3	14	29.3	43 4.3 103 10.4 163 16.4
44	15	11.0	15	13.5	14	29.5	44 4.4 104 10.5 164 16.5
45	15	11.3	15	13.8	14	29.7	45 4.5 105 10.6 165 16.6
46	15	11.5	15	14.0	14	30.0	46 4.6 106 10.7 166 16.7
47	15	11.8	15	14.3	14	30.2	47 4.7 107 10.8 167 16.8
48	15	12.0	15	14.5	14	30.5	48 4.8 108 10.9 168 16.9
49	15	12.3	15	14.8	14	30.7	49 4.9 109 11.0 169 17.0
50	15	12.5	15	15.0	14	30.9	50 5.0 110 11.1 170 17.1
51	15	12.8	15	15.3	14	31.2	51 5.1 111 11.2 171 17.2
52	15	13.0	15	15.5	14	31.4	52 5.2 112 11.3 172 17.3
53	15	13.3	15	15.8	14	31.6	53 5.3 113 11.4 173 17.4
54	15	13.5	15	16.0	14	31.9	54 5.4 114 11.5 174 17.5
55	15	13.8	15	16.3	14	32.1	55 5.5 115 11.6 175 17.6
56	15	14.0	15	16.5	14	32.4	56 5.6 116 11.7 176 17.7
57	15	14.3	15	16.8	14	32.6	57 5.7 117 11.8 177 17.8
58	15	14.5	15	17.0	14	32.8	58 5.8 118 11.9 178 17.9
59	15	14.8	15	17.3	14	33.1	59 5.9 119 12.0 179 18.0
60	15	15.0	15	17.5	14	33.3	60 6.1 120 12.1 180 18.2

1 h 1 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	15	15.0	15	17.5	14	33.3	0 .0 60 6.2 120 12.3
1	15	15.3	15	17.8	14	33.6	1 .1 61 6.3 121 12.4
2	15	15.5	15	18.0	14	33.8	2 .2 62 6.4 122 12.5
3	15	15.8	15	18.3	14	34.0	3 .3 63 6.5 123 12.6
4	15	16.0	15	18.5	14	34.3	4 .4 64 6.6 124 12.7
5	15	16.3	15	18.8	14	34.5	5 .5 65 6.7 125 12.8
6	15	16.5	15	19.0	14	34.7	6 .6 66 6.8 126 12.9
7	15	16.8	15	19.3	14	35.0	7 .7 67 6.9 127 13.0
8	15	17.0	15	19.5	14	35.2	8 .8 68 7.0 128 13.1
9	15	17.3	15	19.8	14	35.5	9 .9 69 7.1 129 13.2
10	15	17.5	15	20.0	14	35.7	10 1.0 70 7.2 130 13.3
11	15	17.8	15	20.3	14	35.9	11 1.1 71 7.3 131 13.4
12	15	18.0	15	20.6	14	36.2	12 1.2 72 7.4 132 13.5
13	15	18.3	15	20.8	14	36.4	13 1.3 73 7.5 133 13.6
14	15	18.5	15	21.1	14	36.7	14 1.4 74 7.6 134 13.7
15	15	18.8	15	21.3	14	36.9	15 1.5 75 7.7 135 13.8
16	15	19.0	15	21.6	14	37.1	16 1.6 76 7.8 136 13.9
17	15	19.3	15	21.8	14	37.4	17 1.7 77 7.9 137 14.0
18	15	19.5	15	22.1	14	37.6	18 1.8 78 8.0 138 14.1
19	15	19.8	15	22.3	14	37.9	19 1.9 79 8.1 139 14.2
20	15	20.0	15	22.6	14	38.1	20 2.1 80 8.2 140 14.4
21	15	20.3	15	22.8	14	38.3	21 2.2 81 8.3 141 14.5
22	15	20.5	15	23.1	14	38.6	22 2.3 82 8.4 142 14.6
23	15	20.8	15	23.3	14	38.8	23 2.4 83 8.5 143 14.7
24	15	21.0	15	23.6	14	39.0	24 2.5 84 8.6 144 14.8
25	15	21.3	15	23.8	14	39.3	25 2.6 85 8.7 145 14.9
26	15	21.5	15	24.1	14	39.5	26 2.7 86 8.8 146 15.0
27	15	21.8	15	24.3	14	39.8	27 2.8 87 8.9 147 15.1
28	15	22.0	15	24.6	14	40.0	28 2.9 88 9.0 148 15.2
29	15	22.3	15	24.8	14	40.2	29 3.0 89 9.1 149 15.3
30	15	22.5	15	25.1	14	40.5	30 3.1 90 9.2 150 15.4
31	15	22.8	15	25.3	14	40.7	31 3.2 91 9.3 151 15.5
32	15	23.0	15	25.6	14	41.0	32 3.3 92 9.4 152 15.6
33	15	23.3	15	25.8	14	41.2	33 3.4 93 9.5 153 15.7
34	15	23.5	15	26.1	14	41.4	34 3.5 94 9.6 154 15.8
35	15	23.8	15	26.3	14	41.7	35 3.6 95 9.7 155 15.9
36	15	24.0	15	26.6	14	41.9	36 3.7 96 9.8 156 16.0
37	15	24.3	15	26.8	14	42.1	37 3.8 97 9.9 157 16.1
38	15	24.5	15	27.1	14	42.4	38 3.9 98 10.0 158 16.2
39	15	24.8	15	27.3	14	42.6	39 4.0 99 10.1 159 16.3
40	15	25.0	15	27.6	14	42.9	40 4.1 100 10.3 160 16.4
41	15	25.3	15	27.8	14	43.1	41 4.2 101 10.4 161 16.5
42	15	25.5	15	28.1	14	43.3	42 4.3 102 10.5 162 16.6
43	15	25.8	15	28.3	14	43.6	43 4.4 103 10.6 163 16.7
44	15	26.0	15	28.6	14	43.8	44 4.5 104 10.7 164 16.8
45	15	26.3	15	28.8	14	44.1	45 4.6 105 10.8 165 16.9
46	15	26.5	15	29.1	14	44.3	46 4.7 106 10.9 166 17.0
47	15	26.8	15	29.3	14	44.5	47 4.8 107 11.0 167 17.1
48	15	27.0	15	29.6	14	44.8	48 4.9 108 11.1 168 17.2
49	15	27.3	15	29.8	14	45.0	49 5.0 109 11.2 169 17.3
50	15	27.5	15	30.1	14	45.2	50 5.1 110 11.3 170 17.4
51	15	27.8	15	30.3	14	45.5	51 5.2 111 11.4 171 17.5
52	15	28.0	15	30.6	14	45.7	52 5.3 112 11.5 172 17.6
53	15	28.3	15	30.8	14	46.0	53 5.4 113 11.6 173 17.7
54	15	28.5	15	31.1	14	46.2	54 5.5 114 11.7 174 17.8
55	15	28.8	15	31.3	14	46.4	55 5.6 115 11.8 175 17.9
56	15	29.0	15	31.6	14	46.7	56 5.7 116 11.9 176 18.0
57	15	29.3	15	31.8	14	46.9	57 5.8 117 12.0 177 18.1
58	15	29.5	15	32.1	14	47.2	58 5.9 118 12.1 178 18.2
59	15	29.8	15	32.3	14	47.4	59 6.0 119 12.2 179 18.3
60	15	30.0	15	32.6	14	47.6	60 6.2 120 12.3 180 18.5

1 h 2 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	15 30.0	15 32.6	14 47.6	0 .0	60 6.3	120 12.5
1	15 30.3	15 32.8	14 47.9	1 .1	61 6.4	121 12.6
2	15 30.5	15 33.1	14 48.1	2 .2	62 6.5	122 12.7
3	15 30.8	15 33.3	14 48.3	3 .3	63 6.6	123 12.8
4	15 31.0	15 33.6	14 48.6	4 .4	64 6.7	124 12.9
5	15 31.3	15 33.8	14 48.8	5 .5	65 6.8	125 13.0
6	15 31.5	15 34.1	14 49.1	6 .6	66 6.9	126 13.1
7	15 31.8	15 34.3	14 49.3	7 .7	67 7.0	127 13.2
8	15 32.0	15 34.6	14 49.5	8 .8	68 7.1	128 13.3
9	15 32.3	15 34.8	14 49.8	9 .9	69 7.2	129 13.4
10	15 32.5	15 35.1	14 50.0	10 1.0	70 7.3	130 13.5
11	15 32.8	15 35.3	14 50.3	11 1.1	71 7.4	131 13.6
12	15 33.0	15 35.6	14 50.5	12 1.3	72 7.5	132 13.8
13	15 33.3	15 35.8	14 50.7	13 1.4	73 7.6	133 13.9
14	15 33.5	15 36.1	14 51.0	14 1.5	74 7.7	134 14.0
15	15 33.8	15 36.3	14 51.2	15 1.6	75 7.8	135 14.1
16	15 34.0	15 36.6	14 51.5	16 1.7	76 7.9	136 14.2
17	15 34.3	15 36.8	14 51.7	17 1.8	77 8.0	137 14.3
18	15 34.5	15 37.1	14 51.9	18 1.9	78 8.1	138 14.4
19	15 34.8	15 37.3	14 52.2	19 2.0	79 8.2	139 14.5
20	15 35.0	15 37.6	14 52.4	20 2.1	80 8.3	140 14.6
21	15 35.3	15 37.8	14 52.6	21 2.2	81 8.4	141 14.7
22	15 35.5	15 38.1	14 52.9	22 2.3	82 8.5	142 14.8
23	15 35.8	15 38.3	14 53.1	23 2.4	83 8.6	143 14.9
24	15 36.0	15 38.6	14 53.4	24 2.5	84 8.8	144 15.0
25	15 36.3	15 38.9	14 53.6	25 2.6	85 8.9	145 15.1
26	15 36.5	15 39.1	14 53.8	26 2.7	86 9.0	146 15.2
27	15 36.8	15 39.4	14 54.1	27 2.8	87 9.1	147 15.3
28	15 37.0	15 39.6	14 54.3	28 2.9	88 9.2	148 15.4
29	15 37.3	15 39.9	14 54.6	29 3.0	89 9.3	149 15.5
30	15 37.5	15 40.1	14 54.8	30 3.1	90 9.4	150 15.6
31	15 37.8	15 40.4	14 55.0	31 3.2	91 9.5	151 15.7
32	15 38.0	15 40.6	14 55.3	32 3.3	92 9.6	152 15.8
33	15 38.3	15 40.9	14 55.5	33 3.4	93 9.7	153 15.9
34	15 38.5	15 41.1	14 55.7	34 3.5	94 9.8	154 16.0
35	15 38.8	15 41.4	14 56.0	35 3.6	95 9.9	155 16.1
36	15 39.0	15 41.6	14 56.2	36 3.8	96 10.0	156 16.3
37	15 39.3	15 41.9	14 56.5	37 3.9	97 10.1	157 16.4
38	15 39.5	15 42.1	14 56.7	38 4.0	98 10.2	158 16.5
39	15 39.8	15 42.4	14 56.9	39 4.1	99 10.3	159 16.6
40	15 40.0	15 42.6	14 57.2	40 4.2	100 10.4	160 16.7
41	15 40.3	15 42.9	14 57.4	41 4.3	101 10.5	161 16.8
42	15 40.5	15 43.1	14 57.7	42 4.4	102 10.6	162 16.9
43	15 40.8	15 43.4	14 57.9	43 4.5	103 10.7	163 17.0
44	15 41.0	15 43.6	14 58.1	44 4.6	104 10.8	164 17.1
45	15 41.3	15 43.9	14 58.4	45 4.7	105 10.9	165 17.2
46	15 41.5	15 44.1	14 58.6	46 4.8	106 11.0	166 17.3
47	15 41.8	15 44.4	14 58.8	47 4.9	107 11.1	167 17.4
48	15 42.0	15 44.6	14 59.1	48 5.0	108 11.3	168 17.5
49	15 42.3	15 44.9	14 59.3	49 5.1	109 11.4	169 17.6
50	15 42.5	15 45.1	14 59.6	50 5.2	110 11.5	170 17.7
51	15 42.8	15 45.4	14 59.8	51 5.3	111 11.6	171 17.8
52	15 43.0	15 45.6	15 .0	52 5.4	112 11.7	172 17.9
53	15 43.3	15 45.9	15 .3	53 5.5	113 11.8	173 18.0
54	15 43.5	15 46.1	15 .5	54 5.6	114 11.9	174 18.1
55	15 43.8	15 46.4	15 .8	55 5.7	115 12.0	175 18.2
56	15 44.0	15 46.6	15 1.0	56 5.8	116 12.1	176 18.3
57	15 44.3	15 46.9	15 1.2	57 5.9	117 12.2	177 18.4
58	15 44.5	15 47.1	15 1.5	58 6.0	118 12.3	178 18.5
59	15 44.8	15 47.4	15 1.7	59 6.1	119 12.4	179 18.6
60	15 45.0	15 47.6	15 2.0	60 6.3	120 12.5	180 18.8

1 h 3 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	15 45.0	15 47.6	15 2.0	0 .0	60 6.4	120 12.7
1	15 45.3	15 47.9	15 2.2	1 .1	61 6.5	121 12.8
2	15 45.5	15 48.1	15 2.4	2 .2	62 6.6	122 12.9
3	15 45.8	15 48.4	15 2.7	3 .3	63 6.7	123 13.0
4	15 46.0	15 48.6	15 2.9	4 .4	64 6.8	124 13.1
5	15 46.3	15 48.9	15 3.1	5 .5	65 6.9	125 13.2
6	15 46.5	15 49.1	15 3.4	6 .6	66 7.0	126 13.3
7	15 46.8	15 49.4	15 3.6	7 .7	67 7.1	127 13.4
8	15 47.0	15 49.6	15 3.9	8 .8	68 7.2	128 13.5
9	15 47.3	15 49.9	15 4.1	9 1.0	69 7.3	129 13.7
10	15 47.5	15 50.1	15 4.3	10 1.1	70 7.4	130 13.8
11	15 47.8	15 50.4	15 4.6	11 1.2	71 7.5	131 13.9
12	15 48.0	15 50.6	15 4.8	12 1.3	72 7.6	132 14.0
13	15 48.3	15 50.9	15 5.1	13 1.4	73 7.7	133 14.1
14	15 48.5	15 51.1	15 5.3	14 1.5	74 7.8	134 14.2
15	15 48.8	15 51.4	15 5.5	15 1.6	75 7.9	135 14.3
16	15 49.0	15 51.6	15 5.8	16 1.7	76 8.0	136 14.4
17	15 49.3	15 51.9	15 6.0	17 1.8	77 8.1	137 14.5
18	15 49.5	15 52.1	15 6.2	18 1.9	78 8.3	138 14.6
19	15 49.8	15 52.4	15 6.5	19 2.0	79 8.4	139 14.7
20	15 50.0	15 52.6	15 6.7	20 2.1	80 8.5	140 14.8
21	15 50.3	15 52.9	15 7.0	21 2.2	81 8.6	141 14.9
22	15 50.5	15 53.1	15 7.2	22 2.3	82 8.7	142 15.0
23	15 50.8	15 53.4	15 7.4	23 2.4	83 8.8	143 15.1
24	15 51.0	15 53.6	15 7.7	24 2.5	84 8.9	144 15.2
25	15 51.3	15 53.9	15 7.9	25 2.6	85 9.0	145 15.3
26	15 51.5	15 54.1	15 8.2	26 2.8	86 9.1	146 15.5
27	15 51.8	15 54.4	15 8.4	27 2.9	87 9.2	147 15.6
28	15 52.0	15 54.6	15 8.6	28 3.0	88 9.3	148 15.7
29	15 52.3	15 54.9	15 8.9	29 3.1	89 9.4	149 15.8
30	15 52.5	15 55.1	15 9.1	30 3.2	90 9.5	150 15.9
31	15 52.8	15 55.4	15 9.3	31 3.3	91 9.6	151 16.0
32	15 53.0	15 55.6	15 9.6	32 3.4	92 9.7	152 16.1
33	15 53.3	15 55.9	15 9.8	33 3.5	93 9.8	153 16.2
34	15 53.5	15 56.1	15 10.1	34 3.6	94 9.9	154 16.3
35	15 53.8	15 56.4	15 10.3	35 3.7	95 10.1	155 16.4
36	15 54.0	15 56.7	15 10.5	36 3.8	96 10.2	156 16.5
37	15 54.3	15 56.9	15 10.8	37 3.9	97 10.3	157 16.6
38	15 54.5	15 57.2	15 11.0	38 4.0	98 10.4	158 16.7
39	15 54.8	15 57.4	15 11.3	39 4.1	99 10.5	159 16.8
40	15 55.0	15 57.7	15 11.5	40 4.2	100 10.6	160 16.9
41	15 55.3	15 57.9	15 11.7	41 4.3	101 10.7	161 17.0
42	15 55.5	15 58.2	15 12.0	42 4.4	102 10.8	162 17.1
43	15 55.8	15 58.4	15 12.2	43 4.6	103 10.9	163 17.3
44	15 56.0	15 58.7	15 12.4	44 4.7	104 11.0	164 17.4
45	15 56.3	15 58.9	15 12.7	45 4.8	105 11.1	165 17.5
46	15 56.5	15 59.2	15 12.9	46 4.9	106 11.2	166 17.6
47	15 56.8	15 59.4	15 13.2	47 5.0	107 11.3	167 17.7
48	15 57.0	15 59.7	15 13.4	48 5.1	108 11.4	168 17.8
49	15 57.3	15 59.9	15 13.6	49 5.2	109 11.5	169 17.9
50	15 57.5	16 .2	15 13.9	50 5.3	110 11.6	170 18.0
51	15 57.8	16 .4	15 14.1	51 5.4	111 11.7	171 18.1
52	15 58.0	16 .7	15 14.4	52 5.5	112 11.9	172 18.2
53	15 58.3	16 .9	15 14.6	53 5.6	113 12.0	173 18.3
54	15 58.5	16 1.2	15 14.8	54 5.7	114 12.1	174 18.4
55	15 58.8	16 1.4	15 15.1	55 5.8	115 12.2	175 18.5
56	15 59.0	16 1.7	15 15.3	56 5.9	116 12.3	176 18.6
57	15 59.3	16 1.9	15 15.6	57 6.0	117 12.4	177 18.7
58	15 59.5	16 2.2	15 15.8	58 6.1	118 12.5	178 18.8
59	15 59.8	16 2.4	15 16.0	59 6.2	119 12.6	179 18.9
60	16 .0	16 2.7	15 16.3	60 6.4	120 12.7	180 19.1

1 h 4 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	o	'	o
0	16	.0	16	2.7	15	16.3	0 .0 60 6.5 120 12.9
1	16	.3	16	2.9	15	16.5	1 .1 61 6.6 121 13.0
2	16	.5	16	3.2	15	16.7	2 .2 62 6.7 122 13.1
3	16	.8	16	3.4	15	17.0	3 .3 63 6.8 123 13.2
4	16	1.0	16	3.7	15	17.2	4 .4 64 6.9 124 13.3
5	16	1.3	16	3.9	15	17.5	5 .5 65 7.0 125 13.4
6	16	1.5	16	4.2	15	17.7	6 .6 66 7.1 126 13.5
7	16	1.8	16	4.4	15	17.9	7 .8 67 7.2 127 13.7
8	16	2.0	16	4.7	15	18.2	8 .9 68 7.3 128 13.8
9	16	2.3	16	4.9	15	18.4	9 1.0 69 7.4 129 13.9
10	16	2.5	16	5.2	15	18.7	10 1.1 70 7.5 130 14.0
11	16	2.8	16	5.4	15	18.9	11 1.2 71 7.6 131 14.1
12	16	3.0	16	5.7	15	19.1	12 1.3 72 7.7 132 14.2
13	16	3.3	16	5.9	15	19.4	13 1.4 73 7.8 133 14.3
14	16	3.5	16	6.2	15	19.6	14 1.5 74 8.0 134 14.4
15	16	3.8	16	6.4	15	19.8	15 1.6 75 8.1 135 14.5
16	16	4.0	16	6.7	15	20.1	16 1.7 76 8.2 136 14.6
17	16	4.3	16	6.9	15	20.3	17 1.8 77 8.3 137 14.7
18	16	4.5	16	7.2	15	20.6	18 1.9 78 8.4 138 14.8
19	16	4.8	16	7.4	15	20.8	19 2.0 79 8.5 139 14.9
20	16	5.0	16	7.7	15	21.0	20 2.2 80 8.6 140 15.1
21	16	5.3	16	7.9	15	21.3	21 2.3 81 8.7 141 15.2
22	16	5.5	16	8.2	15	21.5	22 2.4 82 8.8 142 15.3
23	16	5.8	16	8.4	15	21.8	23 2.5 83 8.9 143 15.4
24	16	6.0	16	8.7	15	22.0	24 2.6 84 9.0 144 15.5
25	16	6.3	16	8.9	15	22.2	25 2.7 85 9.1 145 15.6
26	16	6.5	16	9.2	15	22.5	26 2.8 86 9.2 146 15.7
27	16	6.8	16	9.4	15	22.7	27 2.9 87 9.4 147 15.8
28	16	7.0	16	9.7	15	22.9	28 3.0 88 9.5 148 15.9
29	16	7.3	16	9.9	15	23.2	29 3.1 89 9.6 149 16.0
30	16	7.5	16	10.2	15	23.4	30 3.2 90 9.7 150 16.1
31	16	7.8	16	10.4	15	23.7	31 3.3 91 9.8 151 16.2
32	16	8.0	16	10.7	15	23.9	32 3.4 92 9.9 152 16.3
33	16	8.3	16	10.9	15	24.1	33 3.5 93 10.0 153 16.4
34	16	8.5	16	11.2	15	24.4	34 3.7 94 10.1 154 16.6
35	16	8.8	16	11.4	15	24.6	35 3.8 95 10.2 155 16.7
36	16	9.0	16	11.7	15	24.9	36 3.9 96 10.3 156 16.8
37	16	9.3	16	11.9	15	25.1	37 4.0 97 10.4 157 16.9
38	16	9.5	16	12.2	15	25.3	38 4.1 98 10.5 158 17.0
39	16	9.8	16	12.4	15	25.6	39 4.2 99 10.6 159 17.1
40	16	10.0	16	12.7	15	25.8	40 4.3 100 10.8 160 17.2
41	16	10.3	16	12.9	15	26.0	41 4.4 101 10.9 161 17.3
42	16	10.5	16	13.2	15	26.3	42 4.5 102 11.0 162 17.4
43	16	10.8	16	13.4	15	26.5	43 4.6 103 11.1 163 17.5
44	16	11.0	16	13.7	15	26.8	44 4.7 104 11.2 164 17.6
45	16	11.3	16	13.9	15	27.0	45 4.8 105 11.3 165 17.7
46	16	11.5	16	14.2	15	27.2	46 4.9 106 11.4 166 17.8
47	16	11.8	16	14.4	15	27.5	47 5.1 107 11.5 167 18.0
48	16	12.0	16	14.7	15	27.7	48 5.2 108 11.6 168 18.1
49	16	12.3	16	15.0	15	28.0	49 5.3 109 11.7 169 18.2
50	16	12.5	16	15.2	15	28.2	50 5.4 110 11.8 170 18.3
51	16	12.8	16	15.5	15	28.4	51 5.5 111 11.9 171 18.4
52	16	13.0	16	15.7	15	28.7	52 5.6 112 12.0 172 18.5
53	16	13.3	16	16.0	15	28.9	53 5.7 113 12.1 173 18.6
54	16	13.5	16	16.2	15	29.2	54 5.8 114 12.3 174 18.7
55	16	13.8	16	16.5	15	29.4	55 5.9 115 12.4 175 18.8
56	16	14.0	16	16.7	15	29.6	56 6.0 116 12.5 176 18.9
57	16	14.3	16	17.0	15	29.9	57 6.1 117 12.6 177 19.0
58	16	14.5	16	17.2	15	30.1	58 6.2 118 12.7 178 19.1
59	16	14.8	16	17.5	15	30.3	59 6.3 119 12.8 179 19.2
60	16	15.0	16	17.7	15	30.6	60 6.5 120 12.9 180 19.4

1 h 5 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	o	'	o
0	16	15.0	16	17.7	15	30.6	0 .0 60 6.6 120 13.1
1	16	15.3	16	18.0	15	30.8	1 .1 61 6.7 121 13.2
2	16	15.5	16	18.2	15	31.1	2 .2 62 6.8 122 13.3
3	16	15.8	16	18.5	15	31.3	3 .3 63 6.9 123 13.4
4	16	16.0	16	18.7	15	31.5	4 .4 64 7.0 124 13.5
5	16	16.3	16	19.0	15	31.8	5 .5 65 7.1 125 13.6
6	16	16.5	16	19.2	15	32.0	6 .7 66 7.2 126 13.8
7	16	16.8	16	19.5	15	32.3	7 .8 67 7.3 127 13.9
8	16	17.0	16	19.7	15	32.5	8 .9 68 7.4 128 14.0
9	16	17.3	16	20.0	15	32.7	9 1.0 69 7.5 129 14.1
10	16	17.5	16	20.2	15	33.0	10 1.1 70 7.6 130 14.2
11	16	17.8	16	20.5	15	33.2	11 1.2 71 7.8 131 14.3
12	16	18.0	16	20.7	15	33.4	12 1.3 72 7.9 132 14.4
13	16	18.3	16	21.0	15	33.7	13 1.4 73 8.0 133 14.5
14	16	18.5	16	21.2	15	33.9	14 1.5 74 8.1 134 14.6
15	16	18.8	16	21.5	15	34.2	15 1.6 75 8.2 135 14.7
16	16	19.0	16	21.7	15	34.4	16 1.7 76 8.3 136 14.8
17	16	19.3	16	22.0	15	34.6	17 1.9 77 8.4 137 15.0
18	16	19.5	16	22.2	15	34.9	18 2.0 78 8.5 138 15.1
19	16	19.8	16	22.5	15	35.1	19 2.1 79 8.6 139 15.2
20	16	20.0	16	22.7	15	35.4	20 2.2 80 8.7 140 15.3
21	16	20.3	16	23.0	15	35.6	21 2.3 81 8.8 141 15.4
22	16	20.5	16	23.2	15	35.8	22 2.4 82 9.0 142 15.5
23	16	20.8	16	23.5	15	36.1	23 2.5 83 9.1 143 15.6
24	16	21.0	16	23.7	15	36.3	24 2.6 84 9.2 144 15.7
25	16	21.3	16	24.0	15	36.5	25 2.7 85 9.3 145 15.8
26	16	21.5	16	24.2	15	36.8	26 2.8 86 9.4 146 15.9
27	16	21.8	16	24.5	15	37.0	27 2.9 87 9.5 147 16.0
28	16	22.0	16	24.7	15	37.3	28 3.1 88 9.6 148 16.2
29	16	22.3	16	25.0	15	37.5	29 3.2 89 9.7 149 16.3
30	16	22.5	16	25.2	15	37.7	30 3.3 90 9.8 150 16.4
31	16	22.8	16	25.5	15	38.0	31 3.4 91 9.9 151 16.5
32	16	23.0	16	25.7	15	38.2	32 3.5 92 10.0 152 16.6
33	16	23.3	16	26.0	15	38.5	33 3.6 93 10.2 153 16.7
34	16	23.5	16	26.2	15	38.7	34 3.7 94 10.3 154 16.8
35	16	23.8	16	26.5	15	38.9	35 3.8 95 10.4 155 16.9
36	16	24.0	16	26.7	15	39.2	36 3.9 96 10.5 156 17.0
37	16	24.3	16	27.0	15	39.4	37 4.0 97 10.6 157 17.1
38	16	24.5	16	27.2	15	39.7	38 4.1 98 10.7 158 17.2
39	16	24.8	16	27.5	15	39.9	39 4.3 99 10.8 159 17.4
40	16	25.0	16	27.7	15	40.1	40 4.4 100 10.9 160 17.5
41	16	25.3	16	28.0	15	40.4	41 4.5 101 11.0 161 17.6
42	16	25.5	16	28.2	15	40.6	42 4.6 102 11.1 162 17.7
43	16	25.8	16	28.5	15	40.8	43 4.7 103 11.2 163 17.8
44	16	26.0	16	28.7	15	41.1	44 4.8 104 11.4 164 17.9
45	16	26.3	16	29.0	15	41.3	45 4.9 105 11.5 165 18.0
46	16	26.5	16	29.2	15	41.6	46 5.0 106 11.6 166 18.1
47	16	26.8	16	29.5	15	41.8	47 5.1 107 11.7 167 18.2
48	16	27.0	16	29.7	15	42.0	48 5.2 108 11.8 168 18.3
49	16	27.3	16	30.0	15	42.3	49 5.3 109 11.9 169 18.4
50	16	27.5	16	30.2	15	42.5	50 5.5 110 12.0 170 18.6
51	16	27.8	16	30.5	15	42.8	51 5.6 111 12.1 171 18.7
52	16	28.0	16	30.7	15	43.0	52 5.7 112 12.2 172 18.8
53	16	28.3	16	31.0	15	43.2	53 5.8 113 12.3 173 18.9
54	16	28.5	16	31.2	15	43.5	54 5.9 114 12.4 174 19.0
55	16	28.8	16	31.5	15	43.7	55 6.0 115 12.6 175 19.1
56	16	29.0	16	31.7	15	43.9	56 6.1 116 12.7 176 19.2
57	16	29.3	16	32.0	15	44.2	57 6.2 117 12.8 177 19.3
58	16	29.5	16	32.2	15	44.4	58 6.3 118 12.9 178 19.4
59	16	29.8	16	32.5	15	44.7	59 6.4 119 13.0 179 19.5
60	16	30.0	16	32.8	15	44.9	60 6.6 120 13.1 180 19.7

1 h 6 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	16 30.0	16 32.8	15 44.9	0 .0	60 6.7	120 13.3
1	16 30.3	16 33.0	15 45.1	1 .1	61 6.8	121 13.4
2	16 30.5	16 33.3	15 45.4	2 .2	62 6.9	122 13.5
3	16 30.8	16 33.5	15 45.6	3 .3	63 7.0	123 13.6
4	16 31.0	16 33.8	15 45.9	4 .4	64 7.1	124 13.7
5	16 31.3	16 34.0	15 46.1	5 .6	65 7.2	125 13.9
6	16 31.5	16 34.3	15 46.3	6 .7	66 7.3	126 14.0
7	16 31.8	16 34.5	15 46.6	7 .8	67 7.4	127 14.1
8	16 32.0	16 34.8	15 46.8	8 .9	68 7.5	128 14.2
9	16 32.3	16 35.0	15 47.0	9 1.0	69 7.6	129 14.3
10	16 32.5	16 35.3	15 47.3	10 1.1	70 7.8	130 14.4
11	16 32.8	16 35.5	15 47.5	11 1.2	71 7.9	131 14.5
12	16 33.0	16 35.8	15 47.8	12 1.3	72 8.0	132 14.6
13	16 33.3	16 36.0	15 48.0	13 1.4	73 8.1	133 14.7
14	16 33.5	16 36.3	15 48.2	14 1.6	74 8.2	134 14.9
15	16 33.8	16 36.5	15 48.5	15 1.7	75 8.3	135 15.0
16	16 34.0	16 36.8	15 48.7	16 1.8	76 8.4	136 15.1
17	16 34.3	16 37.0	15 49.0	17 1.9	77 8.5	137 15.2
18	16 34.5	16 37.3	15 49.2	18 2.0	78 8.6	138 15.3
19	16 34.8	16 37.5	15 49.4	19 2.1	79 8.8	139 15.4
20	16 35.0	16 37.8	15 49.7	20 2.2	80 8.9	140 15.5
21	16 35.3	16 38.0	15 49.9	21 2.3	81 9.0	141 15.6
22	16 35.5	16 38.3	15 50.1	22 2.4	82 9.1	142 15.7
23	16 35.8	16 38.5	15 50.4	23 2.5	83 9.2	143 15.8
24	16 36.0	16 38.8	15 50.6	24 2.7	84 9.3	144 16.0
25	16 36.3	16 39.0	15 50.9	25 2.8	85 9.4	145 16.1
26	16 36.5	16 39.3	15 51.1	26 2.9	86 9.5	146 16.2
27	16 36.8	16 39.5	15 51.3	27 3.0	87 9.6	147 16.3
28	16 37.0	16 39.8	15 51.6	28 3.1	88 9.8	148 16.4
29	16 37.3	16 40.0	15 51.8	29 3.2	89 9.9	149 16.5
30	16 37.5	16 40.3	15 52.1	30 3.3	90 10.0	150 16.6
31	16 37.8	16 40.5	15 52.3	31 3.4	91 10.1	151 16.7
32	16 38.0	16 40.8	15 52.5	32 3.5	92 10.2	152 16.8
33	16 38.3	16 41.0	15 52.8	33 3.7	93 10.3	153 17.0
34	16 38.5	16 41.3	15 53.0	34 3.8	94 10.4	154 17.1
35	16 38.8	16 41.5	15 53.3	35 3.9	95 10.5	155 17.2
36	16 39.0	16 41.8	15 53.5	36 4.0	96 10.6	156 17.3
37	16 39.3	16 42.0	15 53.7	37 4.1	97 10.8	157 17.4
38	16 39.5	16 42.3	15 54.0	38 4.2	98 10.9	158 17.5
39	16 39.8	16 42.5	15 54.2	39 4.3	99 11.0	159 17.6
40	16 40.0	16 42.8	15 54.4	40 4.4	100 11.1	160 17.7
41	16 40.3	16 43.0	15 54.7	41 4.5	101 11.2	161 17.8
42	16 40.5	16 43.3	15 54.9	42 4.7	102 11.3	162 18.0
43	16 40.8	16 43.5	15 55.2	43 4.8	103 11.4	163 18.1
44	16 41.0	16 43.8	15 55.4	44 4.9	104 11.5	164 18.2
45	16 41.3	16 44.0	15 55.6	45 5.0	105 11.6	165 18.3
46	16 41.5	16 44.3	15 55.9	46 5.1	106 11.7	166 18.4
47	16 41.8	16 44.5	15 56.1	47 5.2	107 11.9	167 18.5
48	16 42.0	16 44.8	15 56.4	48 5.3	108 12.0	168 18.6
49	16 42.3	16 45.0	15 56.6	49 5.4	109 12.1	169 18.7
50	16 42.5	16 45.3	15 56.8	50 5.5	110 12.2	170 18.8
51	16 42.8	16 45.5	15 57.1	51 5.7	111 12.3	171 19.0
52	16 43.0	16 45.8	15 57.3	52 5.8	112 12.4	172 19.1
53	16 43.3	16 46.0	15 57.5	53 5.9	113 12.5	173 19.2
54	16 43.5	16 46.3	15 57.8	54 6.0	114 12.6	174 19.3
55	16 43.8	16 46.5	15 58.0	55 6.1	115 12.7	175 19.4
56	16 44.0	16 46.8	15 58.3	56 6.2	116 12.9	176 19.5
57	16 44.3	16 47.0	15 58.5	57 6.3	117 13.0	177 19.6
58	16 44.5	16 47.3	15 58.7	58 6.4	118 13.1	178 19.7
59	16 44.8	16 47.5	15 59.0	59 6.5	119 13.2	179 19.8
60	16 45.0	16 47.8	15 59.2	60 6.7	120 13.3	180 20.0

1 h 7 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	16 45.0	16 47.8	15 59.2	0 .0	60 6.8	120 13.5
1	16 45.3	16 48.0	15 59.5	1 .1	61 6.9	121 13.6
2	16 45.5	16 48.3	15 59.7	2 .2	62 7.0	122 13.7
3	16 45.8	16 48.5	15 59.9	3 .3	63 7.1	123 13.8
4	16 46.0	16 48.8	16 .2	4 .5	64 7.2	124 14.0
5	16 46.3	16 49.0	16 .4	5 .6	65 7.3	125 14.1
6	16 46.5	16 49.3	16 .6	6 .7	66 7.4	126 14.2
7	16 46.8	16 49.5	16 .9	7 .8	67 7.5	127 14.3
8	16 47.0	16 49.8	16 1.1	8 .9	68 7.7	128 14.4
9	16 47.3	16 50.0	16 1.4	9 1.0	69 7.8	129 14.5
10	16 47.5	16 50.3	16 1.6	10 1.1	70 7.9	130 14.6
11	16 47.8	16 50.5	16 1.8	11 1.2	71 8.0	131 14.7
12	16 48.0	16 50.8	16 2.1	12 1.4	72 8.1	132 14.9
13	16 48.3	16 51.1	16 2.3	13 1.5	73 8.2	133 15.0
14	16 48.5	16 51.3	16 2.6	14 1.6	74 8.3	134 15.1
15	16 48.8	16 51.6	16 2.8	15 1.7	75 8.4	135 15.2
16	16 49.0	16 51.8	16 3.0	16 1.8	76 8.6	136 15.3
17	16 49.3	16 52.1	16 3.3	17 1.9	77 8.7	137 15.4
18	16 49.5	16 52.3	16 3.5	18 2.0	78 8.8	138 15.5
19	16 49.8	16 52.6	16 3.8	19 2.1	79 8.9	139 15.6
20	16 50.0	16 52.8	16 4.0	20 2.3	80 9.0	140 15.8
21	16 50.3	16 53.1	16 4.2	21 2.4	81 9.1	141 15.9
22	16 50.5	16 53.3	16 4.5	22 2.5	82 9.2	142 16.0
23	16 50.8	16 53.6	16 4.7	23 2.6	83 9.3	143 16.1
24	16 51.0	16 53.8	16 4.9	24 2.7	84 9.5	144 16.2
25	16 51.3	16 54.1	16 5.2	25 2.8	85 9.6	145 16.3
26	16 51.5	16 54.3	16 5.4	26 2.9	86 9.7	146 16.4
27	16 51.8	16 54.6	16 5.7	27 3.0	87 9.8	147 16.5
28	16 52.0	16 54.8	16 5.9	28 3.2	88 9.9	148 16.7
29	16 52.3	16 55.1	16 6.1	29 3.3	89 10.0	149 16.8
30	16 52.5	16 55.3	16 6.4	30 3.4	90 10.1	150 16.9
31	16 52.8	16 55.6	16 6.6	31 3.5	91 10.2	151 17.0
32	16 53.0	16 55.8	16 6.9	32 3.6	92 10.4	152 17.1
33	16 53.3	16 56.1	16 7.1	33 3.7	93 10.5	153 17.2
34	16 53.5	16 56.3	16 7.3	34 3.8	94 10.6	154 17.3
35	16 53.8	16 56.6	16 7.6	35 3.9	95 10.7	155 17.4
36	16 54.0	16 56.8	16 7.8	36 4.1	96 10.8	156 17.6
37	16 54.3	16 57.1	16 8.0	37 4.2	97 10.9	157 17.7
38	16 54.5	16 57.3	16 8.3	38 4.3	98 11.0	158 17.8
39	16 54.8	16 57.6	16 8.5	39 4.4	99 11.1	159 17.9
40	16 55.0	16 57.8	16 8.8	40 4.5	100 11.3	160 18.0
41	16 55.3	16 58.1	16 9.0	41 4.6	101 11.4	161 18.1
42	16 55.5	16 58.3	16 9.2	42 4.7	102 11.5	162 18.2
43	16 55.8	16 58.6	16 9.5	43 4.8	103 11.6	163 18.3
44	16 56.0	16 58.8	16 9.7	44 5.0	104 11.7	164 18.5
45	16 56.3	16 59.1	16 10.0	45 5.1	105 11.8	165 18.6
46	16 56.5	16 59.3	16 10.2	46 5.2	106 11.9	166 18.7
47	16 56.8	16 59.6	16 10.4	47 5.3	107 12.0	167 18.8
48	16 57.0	16 59.8	16 10.7	48 5.4	108 12.2	168 18.9
49	16 57.3	17 .1	16 10.9	49 5.5	109 12.3	169 19.0
50	16 57.5	17 .3	16 11.1	50 5.6	110 12.4	170 19.1
51	16 57.8	17 .6	16 11.4	51 5.7	111 12.5	171 19.2
52	16 58.0	17 .8	16 11.6	52 5.9	112 12.6	172 19.4
53	16 58.3	17 1.1	16 11.9	53 6.0	113 12.7	173 19.5
54	16 58.5	17 1.3	16 12.1	54 6.1	114 12.8	174 19.6
55	16 58.8	17 1.6	16 12.3	55 6.2	115 12.9	175 19.7
56	16 59.0	17 1.8	16 12.6	56 6.3	116 13.1	176 19.8
57	16 59.3	17 2.1	16 12.8	57 6.4	117 13.2	177 19.9
58	16 59.5	17 2.3	16 13.1	58 6.5	118 13.3	178 20.0
59	16 59.8	17 2.6	16 13.3	59 6.6	119 13.4	179 20.1
60	17 .0	17 2.8	16 13.5	60 6.8	120 13.5	180 20.3

1 h 8 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	17	.0	17	2.8	16	13.5	0 .0 60 6.9 120 13.7
1	17	.3	17	3.1	16	13.8	1 .1 61 7.0 121 13.8
2	17	.5	17	3.3	16	14.0	2 .2 62 7.1 122 13.9
3	17	.8	17	3.6	16	14.2	3 .3 63 7.2 123 14.0
4	17	1.0	17	3.8	16	14.5	4 .5 64 7.3 124 14.2
5	17	1.3	17	4.1	16	14.7	5 .6 65 7.4 125 14.3
6	17	1.5	17	4.3	16	15.0	6 .7 66 7.5 126 14.4
7	17	1.8	17	4.6	16	15.2	7 .8 67 7.6 127 14.5
8	17	2.0	17	4.8	16	15.4	8 .9 68 7.8 128 14.6
9	17	2.3	17	5.1	16	15.7	9 1.0 69 7.9 129 14.7
10	17	2.5	17	5.3	16	15.9	10 1.1 70 8.0 130 14.8
11	17	2.8	17	5.6	16	16.2	11 1.3 71 8.1 131 15.0
12	17	3.0	17	5.8	16	16.4	12 1.4 72 8.2 132 15.1
13	17	3.3	17	6.1	16	16.6	13 1.5 73 8.3 133 15.2
14	17	3.5	17	6.3	16	16.9	14 1.6 74 8.4 134 15.3
15	17	3.8	17	6.6	16	17.1	15 1.7 75 8.6 135 15.4
16	17	4.0	17	6.8	16	17.4	16 1.8 76 8.7 136 15.5
17	17	4.3	17	7.1	16	17.6	17 1.9 77 8.8 137 15.6
18	17	4.5	17	7.3	16	17.8	18 2.1 78 8.9 138 15.8
19	17	4.8	17	7.6	16	18.1	19 2.2 79 9.0 139 15.9
20	17	5.0	17	7.8	16	18.3	20 2.3 80 9.1 140 16.0
21	17	5.3	17	8.1	16	18.5	21 2.4 81 9.2 141 16.1
22	17	5.5	17	8.3	16	18.8	22 2.5 82 9.4 142 16.2
23	17	5.8	17	8.6	16	19.0	23 2.6 83 9.5 143 16.3
24	17	6.0	17	8.9	16	19.3	24 2.7 84 9.6 144 16.4
25	17	6.3	17	9.1	16	19.5	25 2.9 85 9.7 145 16.6
26	17	6.5	17	9.4	16	19.7	26 3.0 86 9.8 146 16.7
27	17	6.8	17	9.6	16	20.0	27 3.1 87 9.9 147 16.8
28	17	7.0	17	9.9	16	20.2	28 3.2 88 10.0 148 16.9
29	17	7.3	17	10.1	16	20.5	29 3.3 89 10.2 149 17.0
30	17	7.5	17	10.4	16	20.7	30 3.4 90 10.3 150 17.1
31	17	7.8	17	10.6	16	20.9	31 3.5 91 10.4 151 17.2
32	17	8.0	17	10.9	16	21.2	32 3.7 92 10.5 152 17.4
33	17	8.3	17	11.1	16	21.4	33 3.8 93 10.6 153 17.5
34	17	8.5	17	11.4	16	21.6	34 3.9 94 10.7 154 17.6
35	17	8.8	17	11.6	16	21.9	35 4.0 95 10.8 155 17.7
36	17	9.0	17	11.9	16	22.1	36 4.1 96 11.0 156 17.8
37	17	9.3	17	12.1	16	22.4	37 4.2 97 11.1 157 17.9
38	17	9.5	17	12.4	16	22.6	38 4.3 98 11.2 158 18.0
39	17	9.8	17	12.6	16	22.8	39 4.5 99 11.3 159 18.2
40	17	10.0	17	12.9	16	23.1	40 4.6 100 11.4 160 18.3
41	17	10.3	17	13.1	16	23.3	41 4.7 101 11.5 161 18.4
42	17	10.5	17	13.4	16	23.6	42 4.8 102 11.6 162 18.5
43	17	10.8	17	13.6	16	23.8	43 4.9 103 11.8 163 18.6
44	17	11.0	17	13.9	16	24.0	44 5.0 104 11.9 164 18.7
45	17	11.3	17	14.1	16	24.3	45 5.1 105 12.0 165 18.8
46	17	11.5	17	14.4	16	24.5	46 5.3 106 12.1 166 19.0
47	17	11.8	17	14.6	16	24.7	47 5.4 107 12.2 167 19.1
48	17	12.0	17	14.9	16	25.0	48 5.5 108 12.3 168 19.2
49	17	12.3	17	15.1	16	25.2	49 5.6 109 12.4 169 19.3
50	17	12.5	17	15.4	16	25.5	50 5.7 110 12.6 170 19.4
51	17	12.8	17	15.6	16	25.7	51 5.8 111 12.7 171 19.5
52	17	13.0	17	15.9	16	25.9	52 5.9 112 12.8 172 19.6
53	17	13.3	17	16.1	16	26.2	53 6.1 113 12.9 173 19.8
54	17	13.5	17	16.4	16	26.4	54 6.2 114 13.0 174 19.9
55	17	13.8	17	16.6	16	26.7	55 6.3 115 13.1 175 20.0
56	17	14.0	17	16.9	16	26.9	56 6.4 116 13.2 176 20.1
57	17	14.3	17	17.1	16	27.1	57 6.5 117 13.4 177 20.2
58	17	14.5	17	17.4	16	27.4	58 6.6 118 13.5 178 20.3
59	17	14.8	17	17.6	16	27.6	59 6.7 119 13.6 179 20.4
60	17	15.0	17	17.9	16	27.9	60 6.9 120 13.7 180 20.6

1 h 9 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	17	15.0	17	17.9	16	27.9	0 .0 60 7.0 120 13.9
1	17	15.3	17	18.1	16	28.1	1 .1 61 7.1 121 14.0
2	17	15.5	17	18.4	16	28.3	2 .2 62 7.2 122 14.1
3	17	15.8	17	18.6	16	28.6	3 .3 63 7.3 123 14.2
4	17	16.0	17	18.9	16	28.8	4 .5 64 7.4 124 14.4
5	17	16.3	17	19.1	16	29.0	5 .6 65 7.5 125 14.5
6	17	16.5	17	19.4	16	29.3	6 .7 66 7.6 126 14.6
7	17	16.8	17	19.6	16	29.5	7 .8 67 7.8 127 14.7
8	17	17.0	17	19.9	16	29.8	8 .9 68 7.9 128 14.8
9	17	17.3	17	20.1	16	30.0	9 1.0 69 8.0 129 14.9
10	17	17.5	17	20.4	16	30.2	10 1.2 70 8.1 130 15.1
11	17	17.8	17	20.6	16	30.5	11 1.3 71 8.2 131 15.2
12	17	18.0	17	20.9	16	30.7	12 1.4 72 8.3 132 15.3
13	17	18.3	17	21.1	16	31.0	13 1.5 73 8.5 133 15.4
14	17	18.5	17	21.4	16	31.2	14 1.6 74 8.6 134 15.5
15	17	18.8	17	21.6	16	31.4	15 1.7 75 8.7 135 15.6
16	17	19.0	17	21.9	16	31.7	16 1.9 76 8.8 136 15.8
17	17	19.3	17	22.1	16	31.9	17 2.0 77 8.9 137 15.9
18	17	19.5	17	22.4	16	32.1	18 2.1 78 9.0 138 16.0
19	17	19.8	17	22.6	16	32.4	19 2.2 79 9.2 139 16.1
20	17	20.0	17	22.9	16	32.6	20 2.3 80 9.3 140 16.2
21	17	20.3	17	23.1	16	32.9	21 2.4 81 9.4 141 16.3
22	17	20.5	17	23.4	16	33.1	22 2.5 82 9.5 142 16.4
23	17	20.8	17	23.6	16	33.3	23 2.7 83 9.6 143 16.6
24	17	21.0	17	23.9	16	33.6	24 2.8 84 9.7 144 16.7
25	17	21.3	17	24.1	16	33.8	25 2.9 85 9.8 145 16.8
26	17	21.5	17	24.4	16	34.1	26 3.0 86 10.0 146 16.9
27	17	21.8	17	24.6	16	34.3	27 3.1 87 10.1 147 17.0
28	17	22.0	17	24.9	16	34.5	28 3.2 88 10.2 148 17.1
29	17	22.3	17	25.1	16	34.8	29 3.4 89 10.3 149 17.3
30	17	22.5	17	25.4	16	35.0	30 3.5 90 10.4 150 17.4
31	17	22.8	17	25.6	16	35.2	31 3.6 91 10.5 151 17.5
32	17	23.0	17	25.9	16	35.5	32 3.7 92 10.7 152 17.6
33	17	23.3	17	26.1	16	35.7	33 3.8 93 10.8 153 17.7
34	17	23.5	17	26.4	16	36.0	34 3.9 94 10.9 154 17.8
35	17	23.8	17	26.6	16	36.2	35 4.1 95 11.0 155 18.0
36	17	24.0	17	26.9	16	36.4	36 4.2 96 11.1 156 18.1
37	17	24.3	17	27.2	16	36.7	37 4.3 97 11.2 157 18.2
38	17	24.5	17	27.4	16	36.9	38 4.4 98 11.4 158 18.3
39	17	24.8	17	27.7	16	37.2	39 4.5 99 11.5 159 18.4
40	17	25.0	17	27.9	16	37.4	40 4.6 100 11.6 160 18.5
41	17	25.3	17	28.2	16	37.6	41 4.7 101 11.7 161 18.6
42	17	25.5	17	28.4	16	37.9	42 4.9 102 11.8 162 18.8
43	17	25.8	17	28.7	16	38.1	43 5.0 103 11.9 163 18.9
44	17	26.0	17	28.9	16	38.3	44 5.1 104 12.0 164 19.0
45	17	26.3	17	29.2	16	38.6	45 5.2 105 12.2 165 19.1
46	17	26.5	17	29.4	16	38.8	46 5.3 106 12.3 166 19.2
47	17	26.8	17	29.7	16	39.1	47 5.4 107 12.4 167 19.3
48	17	27.0	17	29.9	16	39.3	48 5.6 108 12.5 168 19.5
49	17	27.3	17	30.2	16	39.5	49 5.7 109 12.6 169 19.6
50	17	27.5	17	30.4	16	39.8	50 5.8 110 12.7 170 19.7
51	17	27.8	17	30.7	16	40.0	51 5.9 111 12.9 171 19.8
52	17	28.0	17	30.9	16	40.3	52 6.0 112 13.0 172 19.9
53	17	28.3	17	31.2	16	40.5	53 6.1 113 13.1 173 20.0
54	17	28.5	17	31.4	16	40.7	54 6.3 114 13.2 174 20.2
55	17	28.8	17	31.7	16	41.0	55 6.4 115 13.3 175 20.3
56	17	29.0	17	31.9	16	41.2	56 6.5 116 13.4 176 20.4
57	17	29.3	17	32.2	16	41.5	57 6.6 117 13.6 177 20.5
58	17	29.5	17	32.4	16	41.7	58 6.7 118 13.7 178 20.6
59	17	29.8	17	32.7	16	41.9	59 6.8 119 13.8 179 20.7
60	17	30.0	17	32.9	16	42.2	60 7.0 120 13.9 180 20.9

1 h 10 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	17 30.0	17 32.9	16 42.2	0 .0	60 7.1	120 14.1
1	17 30.3	17 33.2	16 42.4	1 .1	61 7.2	121 14.2
2	17 30.5	17 33.4	16 42.6	2 .2	62 7.3	122 14.3
3	17 30.8	17 33.7	16 42.9	3 .4	63 7.4	123 14.5
4	17 31.0	17 33.9	16 43.1	4 .5	64 7.5	124 14.6
5	17 31.3	17 34.2	16 43.4	5 .6	65 7.6	125 14.7
6	17 31.5	17 34.4	16 43.6	6 .7	66 7.8	126 14.8
7	17 31.8	17 34.7	16 43.8	7 .8	67 7.9	127 14.9
8	17 32.0	17 34.9	16 44.1	8 .9	68 8.0	128 15.0
9	17 32.3	17 35.2	16 44.3	9 1.1	69 8.1	129 15.2
10	17 32.5	17 35.4	16 44.6	10 1.2	70 8.2	130 15.3
11	17 32.8	17 35.7	16 44.8	11 1.3	71 8.3	131 15.4
12	17 33.0	17 35.9	16 45.0	12 1.4	72 8.5	132 15.5
13	17 33.3	17 36.2	16 45.3	13 1.5	73 8.6	133 15.6
14	17 33.5	17 36.4	16 45.5	14 1.6	74 8.7	134 15.7
15	17 33.8	17 36.7	16 45.7	15 1.8	75 8.8	135 15.9
16	17 34.0	17 36.9	16 46.0	16 1.9	76 8.9	136 16.0
17	17 34.3	17 37.2	16 46.2	17 2.0	77 9.0	137 16.1
18	17 34.5	17 37.4	16 46.5	18 2.1	78 9.2	138 16.2
19	17 34.8	17 37.7	16 46.7	19 2.2	79 9.3	139 16.3
20	17 35.0	17 37.9	16 46.9	20 2.4	80 9.4	140 16.5
21	17 35.3	17 38.2	16 47.2	21 2.5	81 9.5	141 16.6
22	17 35.5	17 38.4	16 47.4	22 2.6	82 9.6	142 16.7
23	17 35.8	17 38.7	16 47.7	23 2.7	83 9.8	143 16.8
24	17 36.0	17 38.9	16 47.9	24 2.8	84 9.9	144 16.9
25	17 36.3	17 39.2	16 48.1	25 2.9	85 10.0	145 17.0
26	17 36.5	17 39.4	16 48.4	26 3.1	86 10.1	146 17.2
27	17 36.8	17 39.7	16 48.6	27 3.2	87 10.2	147 17.3
28	17 37.0	17 39.9	16 48.8	28 3.3	88 10.3	148 17.4
29	17 37.3	17 40.2	16 49.1	29 3.4	89 10.5	149 17.5
30	17 37.5	17 40.4	16 49.3	30 3.5	90 10.6	150 17.6
31	17 37.8	17 40.7	16 49.6	31 3.6	91 10.7	151 17.7
32	17 38.0	17 40.9	16 49.8	32 3.8	92 10.8	152 17.9
33	17 38.3	17 41.2	16 50.0	33 3.9	93 10.9	153 18.0
34	17 38.5	17 41.4	16 50.3	34 4.0	94 11.0	154 18.1
35	17 38.8	17 41.7	16 50.5	35 4.1	95 11.2	155 18.2
36	17 39.0	17 41.9	16 50.8	36 4.2	96 11.3	156 18.3
37	17 39.3	17 42.2	16 51.0	37 4.3	97 11.4	157 18.4
38	17 39.5	17 42.4	16 51.2	38 4.5	98 11.5	158 18.6
39	17 39.8	17 42.7	16 51.5	39 4.6	99 11.6	159 18.7
40	17 40.0	17 42.9	16 51.7	40 4.7	100 11.8	160 18.8
41	17 40.3	17 43.2	16 51.9	41 4.8	101 11.9	161 18.9
42	17 40.5	17 43.4	16 52.2	42 4.9	102 12.0	162 19.0
43	17 40.8	17 43.7	16 52.4	43 5.1	103 12.1	163 19.2
44	17 41.0	17 43.9	16 52.7	44 5.2	104 12.2	164 19.3
45	17 41.3	17 44.2	16 52.9	45 5.3	105 12.3	165 19.4
46	17 41.5	17 44.4	16 53.1	46 5.4	106 12.5	166 19.5
47	17 41.8	17 44.7	16 53.4	47 5.5	107 12.6	167 19.6
48	17 42.0	17 45.0	16 53.6	48 5.6	108 12.7	168 19.7
49	17 42.3	17 45.2	16 53.9	49 5.8	109 12.8	169 19.9
50	17 42.5	17 45.5	16 54.1	50 5.9	110 12.9	170 20.0
51	17 42.8	17 45.7	16 54.3	51 6.0	111 13.0	171 20.1
52	17 43.0	17 46.0	16 54.6	52 6.1	112 13.2	172 20.2
53	17 43.3	17 46.2	16 54.8	53 6.2	113 13.3	173 20.3
54	17 43.5	17 46.5	16 55.1	54 6.3	114 13.4	174 20.4
55	17 43.8	17 46.7	16 55.3	55 6.5	115 13.5	175 20.6
56	17 44.0	17 47.0	16 55.5	56 6.6	116 13.6	176 20.7
57	17 44.3	17 47.2	16 55.8	57 6.7	117 13.7	177 20.8
58	17 44.5	17 47.5	16 56.0	58 6.8	118 13.9	178 20.9
59	17 44.8	17 47.7	16 56.2	59 6.9	119 14.0	179 21.0
60	17 45.0	17 48.0	16 56.5	60 7.1	120 14.1	180 21.2

1 h 11 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	17 45.0	17 48.0	16 56.5	0 .0	60 7.2	120 14.3
1	17 45.3	17 48.2	16 56.7	1 .1	61 7.3	121 14.4
2	17 45.5	17 48.5	16 57.0	2 .2	62 7.4	122 14.5
3	17 45.8	17 48.7	16 57.2	3 .4	63 7.5	123 14.7
4	17 46.0	17 49.0	16 57.4	4 .5	64 7.6	124 14.8
5	17 46.3	17 49.2	16 57.7	5 .6	65 7.7	125 14.9
6	17 46.5	17 49.5	16 57.9	6 .7	66 7.9	126 15.0
7	17 46.8	17 49.7	16 58.2	7 .8	67 8.0	127 15.1
8	17 47.0	17 50.0	16 58.4	8 1.0	68 8.1	128 15.3
9	17 47.3	17 50.2	16 58.6	9 1.1	69 8.2	129 15.4
10	17 47.5	17 50.5	16 58.9	10 1.2	70 8.3	130 15.5
11	17 47.8	17 50.7	16 59.1	11 1.3	71 8.5	131 15.6
12	17 48.0	17 51.0	16 59.3	12 1.4	72 8.6	132 15.7
13	17 48.3	17 51.2	16 59.6	13 1.5	73 8.7	133 15.8
14	17 48.5	17 51.5	16 59.8	14 1.7	74 8.8	134 16.0
15	17 48.8	17 51.7	17 .1	15 1.8	75 8.9	135 16.1
16	17 49.0	17 52.0	17 .3	16 1.9	76 9.1	136 16.2
17	17 49.3	17 52.2	17 .5	17 2.0	77 9.2	137 16.3
18	17 49.5	17 52.5	17 .8	18 2.1	78 9.3	138 16.4
19	17 49.8	17 52.7	17 1.0	19 2.3	79 9.4	139 16.6
20	17 50.0	17 53.0	17 1.3	20 2.4	80 9.5	140 16.7
21	17 50.3	17 53.2	17 1.5	21 2.5	81 9.7	141 16.8
22	17 50.5	17 53.5	17 1.7	22 2.6	82 9.8	142 16.9
23	17 50.8	17 53.7	17 2.0	23 2.7	83 9.9	143 17.0
24	17 51.0	17 54.0	17 2.2	24 2.9	84 10.0	144 17.2
25	17 51.3	17 54.2	17 2.4	25 3.0	85 10.1	145 17.3
26	17 51.5	17 54.5	17 2.7	26 3.1	86 10.2	146 17.4
27	17 51.8	17 54.7	17 2.9	27 3.2	87 10.4	147 17.5
28	17 52.0	17 55.0	17 3.2	28 3.3	88 10.5	148 17.6
29	17 52.3	17 55.2	17 3.4	29 3.5	89 10.6	149 17.8
30	17 52.5	17 55.5	17 3.6	30 3.6	90 10.7	150 17.9
31	17 52.8	17 55.7	17 3.9	31 3.7	91 10.8	151 18.0
32	17 53.0	17 56.0	17 4.1	32 3.8	92 11.0	152 18.1
33	17 53.3	17 56.2	17 4.4	33 3.9	93 11.1	153 18.2
34	17 53.5	17 56.5	17 4.6	34 4.1	94 11.2	154 18.4
35	17 53.8	17 56.7	17 4.8	35 4.2	95 11.3	155 18.5
36	17 54.0	17 57.0	17 5.1	36 4.3	96 11.4	156 18.6
37	17 54.3	17 57.2	17 5.3	37 4.4	97 11.6	157 18.7
38	17 54.5	17 57.5	17 5.6	38 4.5	98 11.7	158 18.8
39	17 54.8	17 57.7	17 5.8	39 4.6	99 11.8	159 18.9
40	17 55.0	17 58.0	17 6.0	40 4.8	100 11.9	160 19.1
41	17 55.3	17 58.2	17 6.3	41 4.9	101 12.0	161 19.2
42	17 55.5	17 58.5	17 6.5	42 5.0	102 12.2	162 19.3
43	17 55.8	17 58.7	17 6.7	43 5.1	103 12.3	163 19.4
44	17 56.0	17 59.0	17 7.0	44 5.2	104 12.4	164 19.5
45	17 56.3	17 59.2	17 7.2	45 5.4	105 12.5	165 19.7
46	17 56.5	17 59.5	17 7.5	46 5.5	106 12.6	166 19.8
47	17 56.8	17 59.7	17 7.7	47 5.6	107 12.8	167 19.9
48	17 57.0	17 60.0	17 7.9	48 5.7	108 12.9	168 20.0
49	17 57.3	18 .2	17 8.2	49 5.8	109 13.0	169 20.1
50	17 57.5	18 .5	17 8.4	50 6.0	110 13.1	170 20.3
51	17 57.8	18 .7	17 8.7	51 6.1	111 13.2	171 20.4
52	17 58.0	18 1.0	17 8.9	52 6.2	112 13.3	172 20.5
53	17 58.3	18 1.2	17 9.1	53 6.3	113 13.5	173 20.6
54	17 58.5	18 1.5	17 9.4	54 6.4	114 13.6	174 20.7
55	17 58.8	18 1.7	17 9.6	55 6.6	115 13.7	175 20.9
56	17 59.0	18 2.0	17 9.8	56 6.7	116 13.8	176 21.0
57	17 59.3	18 2.2	17 10.1	57 6.8	117 13.9	177 21.1
58	17 59.5	18 2.5	17 10.3	58 6.9	118 14.1	178 21.2
59	17 59.8	18 2.7	17 10.6	59 7.0	119 14.2	179 21.3
60	18 .0	18 3.0	17 10.8	60 7.2	120 14.3	180 21.5

1 h 12 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.					
	o	'	o	'	o	'	o					
0	18	.0	18	3.0	17	10.8	0	.0	60	7.3	120	14.5
1	18	.3	18	3.3	17	11.0	1	.1	61	7.4	121	14.6
2	18	.5	18	3.5	17	11.3	2	.2	62	7.5	122	14.7
3	18	.8	18	3.8	17	11.5	3	.4	63	7.6	123	14.9
4	18	1.0	18	4.0	17	11.8	4	.5	64	7.7	124	15.0
5	18	1.3	18	4.3	17	12.0	5	.6	65	7.9	125	15.1
6	18	1.5	18	4.5	17	12.2	6	.7	66	8.0	126	15.2
7	18	1.8	18	4.8	17	12.5	7	.8	67	8.1	127	15.3
8	18	2.0	18	5.0	17	12.7	8	1.0	68	8.2	128	15.5
9	18	2.3	18	5.3	17	12.9	9	1.1	69	8.3	129	15.6
10	18	2.5	18	5.5	17	13.2	10	1.2	70	8.5	130	15.7
11	18	2.8	18	5.8	17	13.4	11	1.3	71	8.6	131	15.8
12	18	3.0	18	6.0	17	13.7	12	1.5	72	8.7	132	16.0
13	18	3.3	18	6.3	17	13.9	13	1.6	73	8.8	133	16.1
14	18	3.5	18	6.5	17	14.1	14	1.7	74	8.9	134	16.2
15	18	3.8	18	6.8	17	14.4	15	1.8	75	9.1	135	16.3
16	18	4.0	18	7.0	17	14.6	16	1.9	76	9.2	136	16.4
17	18	4.3	18	7.3	17	14.9	17	2.1	77	9.3	137	16.6
18	18	4.5	18	7.5	17	15.1	18	2.2	78	9.4	138	16.7
19	18	4.8	18	7.8	17	15.3	19	2.3	79	9.5	139	16.8
20	18	5.0	18	8.0	17	15.6	20	2.4	80	9.7	140	16.9
21	18	5.3	18	8.3	17	15.8	21	2.5	81	9.8	141	17.0
22	18	5.5	18	8.5	17	16.0	22	2.7	82	9.9	142	17.2
23	18	5.8	18	8.8	17	16.3	23	2.8	83	10.0	143	17.3
24	18	6.0	18	9.0	17	16.5	24	2.9	84	10.2	144	17.4
25	18	6.3	18	9.3	17	16.8	25	3.0	85	10.3	145	17.5
26	18	6.5	18	9.5	17	17.0	26	3.1	86	10.4	146	17.6
27	18	6.8	18	9.8	17	17.2	27	3.3	87	10.5	147	17.8
28	18	7.0	18	10.0	17	17.5	28	3.4	88	10.6	148	17.9
29	18	7.3	18	10.3	17	17.7	29	3.5	89	10.8	149	18.0
30	18	7.5	18	10.5	17	18.0	30	3.6	90	10.9	150	18.1
31	18	7.8	18	10.8	17	18.2	31	3.7	91	11.0	151	18.2
32	18	8.0	18	11.0	17	18.4	32	3.9	92	11.1	152	18.4
33	18	8.3	18	11.3	17	18.7	33	4.0	93	11.2	153	18.5
34	18	8.5	18	11.5	17	18.9	34	4.1	94	11.4	154	18.6
35	18	8.8	18	11.8	17	19.2	35	4.2	95	11.5	155	18.7
36	18	9.0	18	12.0	17	19.4	36	4.4	96	11.6	156	18.9
37	18	9.3	18	12.3	17	19.6	37	4.5	97	11.7	157	19.0
38	18	9.5	18	12.5	17	19.9	38	4.6	98	11.8	158	19.1
39	18	9.8	18	12.8	17	20.1	39	4.7	99	12.0	159	19.2
40	18	10.0	18	13.0	17	20.3	40	4.8	100	12.1	160	19.3
41	18	10.3	18	13.3	17	20.6	41	5.0	101	12.2	161	19.5
42	18	10.5	18	13.5	17	20.8	42	5.1	102	12.3	162	19.6
43	18	10.8	18	13.8	17	21.1	43	5.2	103	12.4	163	19.7
44	18	11.0	18	14.0	17	21.3	44	5.3	104	12.6	164	19.8
45	18	11.3	18	14.3	17	21.5	45	5.4	105	12.7	165	19.9
46	18	11.5	18	14.5	17	21.8	46	5.6	106	12.8	166	20.1
47	18	11.8	18	14.8	17	22.0	47	5.7	107	12.9	167	20.2
48	18	12.0	18	15.0	17	22.3	48	5.8	108	13.1	168	20.3
49	18	12.3	18	15.3	17	22.5	49	5.9	109	13.2	169	20.4
50	18	12.5	18	15.5	17	22.7	50	6.0	110	13.3	170	20.5
51	18	12.8	18	15.8	17	23.0	51	6.2	111	13.4	171	20.7
52	18	13.0	18	16.0	17	23.2	52	6.3	112	13.5	172	20.8
53	18	13.3	18	16.3	17	23.4	53	6.4	113	13.7	173	20.9
54	18	13.5	18	16.5	17	23.7	54	6.5	114	13.8	174	21.0
55	18	13.8	18	16.8	17	23.9	55	6.6	115	13.9	175	21.1
56	18	14.0	18	17.0	17	24.2	56	6.8	116	14.0	176	21.3
57	18	14.3	18	17.3	17	24.4	57	6.9	117	14.1	177	21.4
58	18	14.5	18	17.5	17	24.6	58	7.0	118	14.3	178	21.5
59	18	14.8	18	17.8	17	24.9	59	7.1	119	14.4	179	21.6
60	18	15.0	18	18.0	17	25.1	60	7.3	120	14.5	180	21.8

1 h 13 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.					
	o	'	o	'	o	'	o					
0	18	15.0	18	18.0	17	25.1	0	.0	60	7.4	120	14.7
1	18	15.3	18	18.3	17	25.4	1	.1	61	7.5	121	14.8
2	18	15.5	18	18.5	17	25.6	2	.2	62	7.6	122	14.9
3	18	15.8	18	18.8	17	25.8	3	.4	63	7.7	123	15.1
4	18	16.0	18	19.0	17	26.1	4	.5	64	7.8	124	15.2
5	18	16.3	18	19.3	17	26.3	5	.6	65	8.0	125	15.3
6	18	16.5	18	19.5	17	26.5	6	.7	66	8.1	126	15.4
7	18	16.8	18	19.8	17	26.8	7	.9	67	8.2	127	15.6
8	18	17.0	18	20.0	17	27.0	8	1.0	68	8.3	128	15.7
9	18	17.3	18	20.3	17	27.3	9	1.1	69	8.5	129	15.8
10	18	17.5	18	20.5	17	27.5	10	1.2	70	8.6	130	15.9
11	18	17.8	18	20.8	17	27.7	11	1.3	71	8.7	131	16.0
12	18	18.0	18	21.1	17	28.0	12	1.5	72	8.8	132	16.2
13	18	18.3	18	21.3	17	28.2	13	1.6	73	8.9	133	16.3
14	18	18.5	18	21.6	17	28.5	14	1.7	74	9.1	134	16.4
15	18	18.8	18	21.8	17	28.7	15	1.8	75	9.2	135	16.5
16	18	19.0	18	22.1	17	28.9	16	2.0	76	9.3	136	16.7
17	18	19.3	18	22.3	17	29.2	17	2.1	77	9.4	137	16.8
18	18	19.5	18	22.6	17	29.4	18	2.2	78	9.6	138	16.9
19	18	19.8	18	22.8	17	29.7	19	2.3	79	9.7	139	17.0
20	18	20.0	18	23.1	17	29.9	20	2.5	80	9.8	140	17.2
21	18	20.3	18	23.3	17	30.1	21	2.6	81	9.9	141	17.3
22	18	20.5	18	23.6	17	30.4	22	2.7	82	10.0	142	17.4
23	18	20.8	18	23.8	17	30.6	23	2.8	83	10.2	143	17.5
24	18	21.0	18	24.1	17	30.8	24	2.9	84	10.3	144	17.6
25	18	21.3	18	24.3	17	31.1	25	3.1	85	10.4	145	17.8
26	18	21.5	18	24.6	17	31.3	26	3.2	86	10.5	146	17.9
27	18	21.8	18	24.8	17	31.6	27	3.3	87	10.7	147	18.0
28	18	22.0	18	25.1	17	31.8	28	3.4	88	10.8	148	18.1
29	18	22.3	18	25.3	17	32.0	29	3.6	89	10.9	149	18.3
30	18	22.5	18	25.6	17	32.3	30	3.7	90	11.0	150	18.4
31	18	22.8	18	25.8	17	32.5	31	3.8	91	11.1	151	18.5
32	18	23.0	18	26.1	17	32.8	32	3.9	92	11.3	152	18.6
33	18	23.3	18	26.3	17	33.0	33	4.0	93	11.4	153	18.7
34	18	23.5	18	26.6	17	33.2	34	4.2	94	11.5	154	18.9
35	18	23.8	18	26.8	17	33.5	35	4.3	95	11.6	155	19.0
36	18	24.0	18	27.1	17	33.7	36	4.4	96	11.8	156	19.1
37	18	24.3	18	27.3	17	33.9	37	4.5	97	11.9	157	19.2
38	18	24.5	18	27.6	17	34.2	38	4.7	98	12.0	158	19.4
39	18	24.8	18	27.8	17	34.4	39	4.8	99	12.1	159	19.5
40	18	25.0	18	28.1	17	34.7	40	4.9	100	12.3	160	19.6
41	18	25.3	18	28.3	17	34.9	41	5.0	101	12.4	161	19.7
42	18	25.5	18	28.6	17	35.1	42	5.1	102	12.5	162	19.8
43	18	25.8	18	28.8	17	35.4	43	5.3	103	12.6	163	20.0
44	18	26.0	18	29.1	17	35.6	44	5.4	104	12.7	164	20.1
45	18	26.3	18	29.3	17	35.9	45	5.5	105	12.9	165	20.2
46	18	26.5	18	29.6	17	36.1	46	5.6	106	13.0	166	20.3
47	18	26.8	18	29.8	17	36.3	47	5.8	107	13.1	167	20.5
48	18	27.0	18	30.1	17	36.6	48	5.9	108	13.2	168	20.6
49	18	27.3	18	30.3	17	36.8	49	6.0	109			

1 h 14 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	18 30.0	18 33.1	17 39.4	0 .0	60 7.5	120 14.9
1	18 30.3	18 33.3	17 39.7	1 .1	61 7.6	121 15.0
2	18 30.5	18 33.6	17 39.9	2 .2	62 7.7	122 15.1
3	18 30.8	18 33.8	17 40.1	3 .4	63 7.8	123 15.3
4	18 31.0	18 34.1	17 40.4	4 .5	64 7.9	124 15.4
5	18 31.3	18 34.3	17 40.6	5 .6	65 8.1	125 15.5
6	18 31.5	18 34.6	17 40.9	6 .7	66 8.2	126 15.6
7	18 31.8	18 34.8	17 41.1	7 .9	67 8.3	127 15.8
8	18 32.0	18 35.1	17 41.3	8 1.0	68 8.4	128 15.9
9	18 32.3	18 35.3	17 41.6	9 1.1	69 8.6	129 16.0
10	18 32.5	18 35.6	17 41.8	10 1.2	70 8.7	130 16.1
11	18 32.8	18 35.8	17 42.1	11 1.4	71 8.8	131 16.3
12	18 33.0	18 36.1	17 42.3	12 1.5	72 8.9	132 16.4
13	18 33.3	18 36.3	17 42.5	13 1.6	73 9.1	133 16.5
14	18 33.5	18 36.6	17 42.8	14 1.7	74 9.2	134 16.6
15	18 33.8	18 36.8	17 43.0	15 1.9	75 9.3	135 16.8
16	18 34.0	18 37.1	17 43.3	16 2.0	76 9.4	136 16.9
17	18 34.3	18 37.3	17 43.5	17 2.1	77 9.6	137 17.0
18	18 34.5	18 37.6	17 43.7	18 2.2	78 9.7	138 17.1
19	18 34.8	18 37.8	17 44.0	19 2.4	79 9.8	139 17.3
20	18 35.0	18 38.1	17 44.2	20 2.5	80 9.9	140 17.4
21	18 35.3	18 38.3	17 44.4	21 2.6	81 10.1	141 17.5
22	18 35.5	18 38.6	17 44.7	22 2.7	82 10.2	142 17.6
23	18 35.8	18 38.8	17 44.9	23 2.9	83 10.3	143 17.8
24	18 36.0	18 39.1	17 45.2	24 3.0	84 10.4	144 17.9
25	18 36.3	18 39.4	17 45.4	25 3.1	85 10.6	145 18.0
26	18 36.5	18 39.6	17 45.6	26 3.2	86 10.7	146 18.1
27	18 36.8	18 39.9	17 45.9	27 3.4	87 10.8	147 18.3
28	18 37.0	18 40.1	17 46.1	28 3.5	88 10.9	148 18.4
29	18 37.3	18 40.4	17 46.4	29 3.6	89 11.1	149 18.5
30	18 37.5	18 40.6	17 46.6	30 3.7	90 11.2	150 18.6
31	18 37.8	18 40.9	17 46.8	31 3.8	91 11.3	151 18.7
32	18 38.0	18 41.1	17 47.1	32 4.0	92 11.4	152 18.9
33	18 38.3	18 41.4	17 47.3	33 4.1	93 11.5	153 19.0
34	18 38.5	18 41.6	17 47.5	34 4.2	94 11.7	154 19.1
35	18 38.8	18 41.9	17 47.8	35 4.3	95 11.8	155 19.2
36	18 39.0	18 42.1	17 48.0	36 4.5	96 11.9	156 19.4
37	18 39.3	18 42.4	17 48.3	37 4.6	97 12.0	157 19.5
38	18 39.5	18 42.6	17 48.5	38 4.7	98 12.2	158 19.6
39	18 39.8	18 42.9	17 48.7	39 4.8	99 12.3	159 19.7
40	18 40.0	18 43.1	17 49.0	40 5.0	100 12.4	160 19.9
41	18 40.3	18 43.4	17 49.2	41 5.1	101 12.5	161 20.0
42	18 40.5	18 43.6	17 49.5	42 5.2	102 12.7	162 20.1
43	18 40.8	18 43.9	17 49.7	43 5.3	103 12.8	163 20.2
44	18 41.0	18 44.1	17 49.9	44 5.5	104 12.9	164 20.4
45	18 41.3	18 44.4	17 50.2	45 5.6	105 13.0	165 20.5
46	18 41.5	18 44.6	17 50.4	46 5.7	106 13.2	166 20.6
47	18 41.8	18 44.9	17 50.6	47 5.8	107 13.3	167 20.7
48	18 42.0	18 45.1	17 50.9	48 6.0	108 13.4	168 20.9
49	18 42.3	18 45.4	17 51.1	49 6.1	109 13.5	169 21.0
50	18 42.5	18 45.6	17 51.4	50 6.2	110 13.7	170 21.1
51	18 42.8	18 45.9	17 51.6	51 6.3	111 13.8	171 21.2
52	18 43.0	18 46.1	17 51.8	52 6.5	112 13.9	172 21.4
53	18 43.3	18 46.4	17 52.1	53 6.6	113 14.0	173 21.5
54	18 43.5	18 46.6	17 52.3	54 6.7	114 14.2	174 21.6
55	18 43.8	18 46.9	17 52.6	55 6.8	115 14.3	175 21.7
56	18 44.0	18 47.1	17 52.8	56 7.0	116 14.4	176 21.9
57	18 44.3	18 47.4	17 53.0	57 7.1	117 14.5	177 22.0
58	18 44.5	18 47.6	17 53.3	58 7.2	118 14.7	178 22.1
59	18 44.8	18 47.9	17 53.5	59 7.3	119 14.8	179 22.2
60	18 45.0	18 48.1	17 53.8	60 7.5	120 14.9	180 22.4

1 h 15 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	18 45.0	18 48.1	17 53.8	0 .0	60 7.6	120 15.1
1	18 45.3	18 48.4	17 54.0	1 .1	61 7.7	121 15.2
2	18 45.5	18 48.6	17 54.2	2 .3	62 7.8	122 15.4
3	18 45.8	18 48.9	17 54.5	3 .4	63 7.9	123 15.5
4	18 46.0	18 49.1	17 54.7	4 .5	64 8.1	124 15.6
5	18 46.3	18 49.4	17 54.9	5 .6	65 8.2	125 15.7
6	18 46.5	18 49.6	17 55.2	6 .8	66 8.3	126 15.9
7	18 46.8	18 49.9	17 55.4	7 .9	67 8.4	127 16.0
8	18 47.0	18 50.1	17 55.7	8 1.0	68 8.6	128 16.1
9	18 47.3	18 50.4	17 55.9	9 1.1	69 8.7	129 16.2
10	18 47.5	18 50.6	17 56.1	10 1.3	70 8.8	130 16.4
11	18 47.8	18 50.9	17 56.4	11 1.4	71 8.9	131 16.5
12	18 48.0	18 51.1	17 56.6	12 1.5	72 9.1	132 16.6
13	18 48.3	18 51.4	17 56.9	13 1.6	73 9.2	133 16.7
14	18 48.5	18 51.6	17 57.1	14 1.8	74 9.3	134 16.9
15	18 48.8	18 51.9	17 57.3	15 1.9	75 9.4	135 17.0
16	18 49.0	18 52.1	17 57.6	16 2.0	76 9.6	136 17.1
17	18 49.3	18 52.4	17 57.8	17 2.1	77 9.7	137 17.2
18	18 49.5	18 52.6	17 58.0	18 2.3	78 9.8	138 17.4
19	18 49.8	18 52.9	17 58.3	19 2.4	79 9.9	139 17.5
20	18 50.0	18 53.1	17 58.5	20 2.5	80 10.1	140 17.6
21	18 50.3	18 53.4	17 58.8	21 2.6	81 10.2	141 17.7
22	18 50.5	18 53.6	17 59.0	22 2.8	82 10.3	142 17.9
23	18 50.8	18 53.9	17 59.2	23 2.9	83 10.4	143 18.0
24	18 51.0	18 54.1	17 59.5	24 3.0	84 10.6	144 18.1
25	18 51.3	18 54.4	17 59.7	25 3.1	85 10.7	145 18.2
26	18 51.5	18 54.6	17 60.0	26 3.3	86 10.8	146 18.4
27	18 51.8	18 54.9	18 .2	27 3.4	87 10.9	147 18.5
28	18 52.0	18 55.1	18 .4	28 3.5	88 11.1	148 18.6
29	18 52.3	18 55.4	18 .7	29 3.6	89 11.2	149 18.7
30	18 52.5	18 55.6	18 .9	30 3.8	90 11.3	150 18.9
31	18 52.8	18 55.9	18 1.1	31 3.9	91 11.5	151 19.0
32	18 53.0	18 56.1	18 1.4	32 4.0	92 11.6	152 19.1
33	18 53.3	18 56.4	18 1.6	33 4.2	93 11.7	153 19.3
34	18 53.5	18 56.6	18 1.9	34 4.3	94 11.8	154 19.4
35	18 53.8	18 56.9	18 2.1	35 4.4	95 12.0	155 19.5
36	18 54.0	18 57.2	18 2.3	36 4.5	96 12.1	156 19.6
37	18 54.3	18 57.4	18 2.6	37 4.7	97 12.2	157 19.8
38	18 54.5	18 57.7	18 2.8	38 4.8	98 12.3	158 19.9
39	18 54.8	18 57.9	18 3.1	39 4.9	99 12.5	159 20.0
40	18 55.0	18 58.2	18 3.3	40 5.0	100 12.6	160 20.1
41	18 55.3	18 58.4	18 3.5	41 5.2	101 12.7	161 20.3
42	18 55.5	18 58.7	18 3.8	42 5.3	102 12.8	162 20.4
43	18 55.8	18 58.9	18 4.0	43 5.4	103 13.0	163 20.5
44	18 56.0	18 59.2	18 4.2	44 5.5	104 13.1	164 20.6
45	18 56.3	18 59.4	18 4.5	45 5.7	105 13.2	165 20.8
46	18 56.5	18 59.7	18 4.7	46 5.8	106 13.3	166 20.9
47	18 56.8	18 59.9	18 5.0	47 5.9	107 13.5	167 21.0
48	18 57.0	19 .2	18 5.2	48 6.0	108 13.6	168 21.1
49	18 57.3	19 .4	18 5.4	49 6.2	109 13.7	169 21.3
50	18 57.5	19 .7	18 5.7	50 6.3	110 13.8	170 21.4
51	18 57.8	19 .9	18 5.9	51 6.4	111 14.0	171 21.5
52	18 58.0	19 1.2	18 6.2	52 6.5	112 14.1	172 21.6
53	18 58.3	19 1.4	18 6.4	53 6.7	113 14.2	173 21.8
54	18 58.5	19 1.7	18 6.6	54 6.8	114 14.3	174 21.9
55	18 58.8	19 1.9	18 6.9	55 6.9	115 14.5	175 22.0
56	18 59.0	19 2.2	18 7.1	56 7.0	116 14.6	176 22.1
57	18 59.3	19 2.4	18 7.4	57 7.2	117 14.7	177 22.3
58	18 59.5	19 2.7	18 7.6	58 7.3	118 14.8	178 22.4
59	18 59.8	19 2.9	18 7.8	59 7.4	119 15.0	179 22.5
60	19 .0	19 3.2	18 8.1	60 7.6	120 15.1	180 22.7

1 h 16 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.		Δ popr.		Δ popr.	
	o	'	o	'	o	'	'	"	'	"	'	"
0	19	.0	19	3.2	18	8.1	0	.0	60	7.7	120	15.3
1	19	.3	19	3.4	18	8.3	1	.1	61	7.8	121	15.4
2	19	.5	19	3.7	18	8.5	2	.3	62	7.9	122	15.6
3	19	.8	19	3.9	18	8.8	3	.4	63	8.0	123	15.7
4	19	1.0	19	4.2	18	9.0	4	.5	64	8.2	124	15.8
5	19	1.3	19	4.4	18	9.3	5	.6	65	8.3	125	15.9
6	19	1.5	19	4.7	18	9.5	6	.8	66	8.4	126	16.1
7	19	1.8	19	4.9	18	9.7	7	.9	67	8.5	127	16.2
8	19	2.0	19	5.2	18	10.0	8	1.0	68	8.7	128	16.3
9	19	2.3	19	5.4	18	10.2	9	1.1	69	8.8	129	16.4
10	19	2.5	19	5.7	18	10.5	10	1.3	70	8.9	130	16.6
11	19	2.8	19	5.9	18	10.7	11	1.4	71	9.1	131	16.7
12	19	3.0	19	6.2	18	10.9	12	1.5	72	9.2	132	16.8
13	19	3.3	19	6.4	18	11.2	13	1.7	73	9.3	133	17.0
14	19	3.5	19	6.7	18	11.4	14	1.8	74	9.4	134	17.1
15	19	3.8	19	6.9	18	11.6	15	1.9	75	9.6	135	17.2
16	19	4.0	19	7.2	18	11.9	16	2.0	76	9.7	136	17.3
17	19	4.3	19	7.4	18	12.1	17	2.2	77	9.8	137	17.5
18	19	4.5	19	7.7	18	12.4	18	2.3	78	9.9	138	17.6
19	19	4.8	19	7.9	18	12.6	19	2.4	79	10.1	139	17.7
20	19	5.0	19	8.2	18	12.8	20	2.6	80	10.2	140	17.9
21	19	5.3	19	8.4	18	13.1	21	2.7	81	10.3	141	18.0
22	19	5.5	19	8.7	18	13.3	22	2.8	82	10.5	142	18.1
23	19	5.8	19	8.9	18	13.6	23	2.9	83	10.6	143	18.2
24	19	6.0	19	9.2	18	13.8	24	3.1	84	10.7	144	18.4
25	19	6.3	19	9.4	18	14.0	25	3.2	85	10.8	145	18.5
26	19	6.5	19	9.7	18	14.3	26	3.3	86	11.0	146	18.6
27	19	6.8	19	9.9	18	14.5	27	3.4	87	11.1	147	18.7
28	19	7.0	19	10.2	18	14.7	28	3.6	88	11.2	148	18.9
29	19	7.3	19	10.4	18	15.0	29	3.7	89	11.3	149	19.0
30	19	7.5	19	10.7	18	15.2	30	3.8	90	11.5	150	19.1
31	19	7.8	19	10.9	18	15.5	31	4.0	91	11.6	151	19.3
32	19	8.0	19	11.2	18	15.7	32	4.1	92	11.7	152	19.4
33	19	8.3	19	11.4	18	15.9	33	4.2	93	11.9	153	19.5
34	19	8.5	19	11.7	18	16.2	34	4.3	94	12.0	154	19.6
35	19	8.8	19	11.9	18	16.4	35	4.5	95	12.1	155	19.8
36	19	9.0	19	12.2	18	16.7	36	4.6	96	12.2	156	19.9
37	19	9.3	19	12.4	18	16.9	37	4.7	97	12.4	157	20.0
38	19	9.5	19	12.7	18	17.1	38	4.8	98	12.5	158	20.1
39	19	9.8	19	12.9	18	17.4	39	5.0	99	12.6	159	20.3
40	19	10.0	19	13.2	18	17.6	40	5.1	100	12.8	160	20.4
41	19	10.3	19	13.4	18	17.8	41	5.2	101	12.9	161	20.5
42	19	10.5	19	13.7	18	18.1	42	5.4	102	13.0	162	20.7
43	19	10.8	19	13.9	18	18.3	43	5.5	103	13.1	163	20.8
44	19	11.0	19	14.2	18	18.6	44	5.6	104	13.3	164	20.9
45	19	11.3	19	14.4	18	18.8	45	5.7	105	13.4	165	21.0
46	19	11.5	19	14.7	18	19.0	46	5.9	106	13.5	166	21.2
47	19	11.8	19	14.9	18	19.3	47	6.0	107	13.6	167	21.3
48	19	12.0	19	15.2	18	19.5	48	6.1	108	13.8	168	21.4
49	19	12.3	19	15.5	18	19.8	49	6.2	109	13.9	169	21.5
50	19	12.5	19	15.7	18	20.0	50	6.4	110	14.0	170	21.7
51	19	12.8	19	16.0	18	20.2	51	6.5	111	14.2	171	21.8
52	19	13.0	19	16.2	18	20.5	52	6.6	112	14.3	172	21.9
53	19	13.3	19	16.5	18	20.7	53	6.8	113	14.4	173	22.1
54	19	13.5	19	16.7	18	21.0	54	6.9	114	14.5	174	22.2
55	19	13.8	19	17.0	18	21.2	55	7.0	115	14.7	175	22.3
56	19	14.0	19	17.2	18	21.4	56	7.1	116	14.8	176	22.4
57	19	14.3	19	17.5	18	21.7	57	7.3	117	14.9	177	22.6
58	19	14.5	19	17.7	18	21.9	58	7.4	118	15.0	178	22.7
59	19	14.8	19	18.0	18	22.1	59	7.5	119	15.2	179	22.8
60	19	15.0	19	18.2	18	22.4	60	7.7	120	15.3	180	23.0

1 h 17 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.		Δ popr.		Δ popr.	
	o	'	o	'	o	'	'	"	'	"	'	"
0	19	15.0	19	18.2	18	22.4	0	.0	60	7.8	120	15.5
1	19	15.3	19	18.5	18	22.6	1	.1	61	7.9	121	15.6
2	19	15.5	19	18.7	18	22.9	2	.3	62	8.0	122	15.8
3	19	15.8	19	19.0	18	23.1	3	.4	63	8.1	123	15.9
4	19	16.0	19	19.2	18	23.3	4	.5	64	8.3	124	16.0
5	19	16.3	19	19.5	18	23.6	5	.6	65	8.4	125	16.1
6	19	16.5	19	19.7	18	23.8	6	.8	66	8.5	126	16.3
7	19	16.8	19	20.0	18	24.1	7	.9	67	8.7	127	16.4
8	19	17.0	19	20.2	18	24.3	8	1.0	68	8.8	128	16.5
9	19	17.3	19	20.5	18	24.5	9	1.2	69	8.9	129	16.7
10	19	17.5	19	20.7	18	24.8	10	1.3	70	9.0	130	16.8
11	19	17.8	19	21.0	18	25.0	11	1.4	71	9.2	131	16.9
12	19	18.0	19	21.2	18	25.2	12	1.6	72	9.3	132	17.1
13	19	18.3	19	21.5	18	25.5	13	1.7	73	9.4	133	17.2
14	19	18.5	19	21.7	18	25.7	14	1.8	74	9.6	134	17.3
15	19	18.8	19	22.0	18	26.0	15	1.9	75	9.7	135	17.4
16	19	19.0	19	22.2	18	26.2	16	2.1	76	9.8	136	17.6
17	19	19.3	19	22.5	18	26.4	17	2.2	77	9.9	137	17.7
18	19	19.5	19	22.7	18	26.7	18	2.3	78	10.1	138	17.8
19	19	19.8	19	23.0	18	26.9	19	2.5	79	10.2	139	18.0
20	19	20.0	19	23.2	18	27.2	20	2.6	80	10.3	140	18.1
21	19	20.3	19	23.5	18	27.4	21	2.7	81	10.5	141	18.2
22	19	20.5	19	23.7	18	27.6	22	2.8	82	10.6	142	18.3
23	19	20.8	19	24.0	18	27.9	23	3.0	83	10.7	143	18.5
24	19	21.0	19	24.2	18	28.1	24	3.1	84	10.9	144	18.6
25	19	21.3	19	24.5	18	28.3	25	3.2	85	11.0	145	18.7
26	19	21.5	19	24.7	18	28.6	26	3.4	86	11.1	146	18.9
27	19	21.8	19	25.0	18	28.8	27	3.5	87	11.2	147	19.0
28	19	22.0	19	25.2	18	29.1	28	3.6	88	11.4	148	19.1
29	19	22.3	19	25.5	18	29.3	29	3.7	89	11.5	149	19.2
30	19	22.5	19	25.7	18	29.5	30	3.9	90	11.6	150	19.4
31	19	22.8	19	26.0	18	29.8	31	4.0	91	11.8	151	19.5
32	19	23.0	19	26.2	18	30.0	32	4.1	92	11.9	152	19.6
33	19	23.3	19	26.5	18	30.3	33	4.3	93	12.0	153	19.8
34	19	23.5	19	26.7	18	30.5	34	4.4	94	12.1	154	19.9
35	19	23.8	19	27.0	18	30.7	35	4.5	95	12.3	155	20.0
36	19	24.0	19	27.2	18	31.0	36	4.7	96	12.4	156	20.2
37	19	24.3	19	27.5	18	31.2	37	4.8	97	12.5	157	20.3
38	19	24.5	19	27.7	18	31.5	38	4.9	98	12.7	158	20.4
39	19	24.8	19	28.0	18	31.7	39	5.0	99	12.8	159	20.5
40	19	25.0	19	28.2	18	31.9	40	5.2	100	12.9	160	20.7
41	19	25.3	19	28.5	18	32.2	41	5.3	101	13.0	161	20.8
42	19	25.5	19	28.7	18	32.4	42	5.4	102	13.2	162	20.9
43	19	25.8	19	29.0	18	32.6	43	5.6	103	13.3	163	21.1
44	19	26.0	19	29.2	18	32.9	44	5.7	104	13.4	164	21.2
45	19	26.3	19	29.5	18	33.1	45	5.8	105	13.6	165	21.3
46	19	26.5	19	29.7	18	33.4	46	5.9	106	13.7	166	21.4
47	19	26.8	19	30.0	18	33.6	47	6.1	107	13.8	167	21.6
48	19	27.0	19	30.2	18	33.8	48	6.2	108	14.0	168	21.7

1 h 18 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	19 30.0	19 33.3	18 36.7	0 .0	60 7.9	120 15.7
1	19 30.3	19 33.5	18 36.9	1 .1	61 8.0	121 15.8
2	19 30.5	19 33.8	18 37.2	2 .3	62 8.1	122 16.0
3	19 30.8	19 34.0	18 37.4	3 .4	63 8.2	123 16.1
4	19 31.0	19 34.3	18 37.7	4 .5	64 8.4	124 16.2
5	19 31.3	19 34.5	18 37.9	5 .7	65 8.5	125 16.4
6	19 31.5	19 34.8	18 38.1	6 .8	66 8.6	126 16.5
7	19 31.8	19 35.0	18 38.4	7 .9	67 8.8	127 16.6
8	19 32.0	19 35.3	18 38.6	8 1.0	68 8.9	128 16.7
9	19 32.3	19 35.5	18 38.8	9 1.2	69 9.0	129 16.9
10	19 32.5	19 35.8	18 39.1	10 1.3	70 9.2	130 17.0
11	19 32.8	19 36.0	18 39.3	11 1.4	71 9.3	131 17.1
12	19 33.0	19 36.3	18 39.6	12 1.6	72 9.4	132 17.3
13	19 33.3	19 36.5	18 39.8	13 1.7	73 9.6	133 17.4
14	19 33.5	19 36.8	18 40.0	14 1.8	74 9.7	134 17.5
15	19 33.8	19 37.0	18 40.3	15 2.0	75 9.8	135 17.7
16	19 34.0	19 37.3	18 40.5	16 2.1	76 9.9	136 17.8
17	19 34.3	19 37.5	18 40.8	17 2.2	77 10.1	137 17.9
18	19 34.5	19 37.8	18 41.0	18 2.4	78 10.2	138 18.1
19	19 34.8	19 38.0	18 41.2	19 2.5	79 10.3	139 18.2
20	19 35.0	19 38.3	18 41.5	20 2.6	80 10.5	140 18.3
21	19 35.3	19 38.5	18 41.7	21 2.7	81 10.6	141 18.4
22	19 35.5	19 38.8	18 41.9	22 2.9	82 10.7	142 18.6
23	19 35.8	19 39.0	18 42.2	23 3.0	83 10.9	143 18.7
24	19 36.0	19 39.3	18 42.4	24 3.1	84 11.0	144 18.8
25	19 36.3	19 39.5	18 42.7	25 3.3	85 11.1	145 19.0
26	19 36.5	19 39.8	18 42.9	26 3.4	86 11.3	146 19.1
27	19 36.8	19 40.0	18 43.1	27 3.5	87 11.4	147 19.2
28	19 37.0	19 40.3	18 43.4	28 3.7	88 11.5	148 19.4
29	19 37.3	19 40.5	18 43.6	29 3.8	89 11.6	149 19.5
30	19 37.5	19 40.8	18 43.9	30 3.9	90 11.8	150 19.6
31	19 37.8	19 41.0	18 44.1	31 4.1	91 11.9	151 19.8
32	19 38.0	19 41.3	18 44.3	32 4.2	92 12.0	152 19.9
33	19 38.3	19 41.5	18 44.6	33 4.3	93 12.2	153 20.0
34	19 38.5	19 41.8	18 44.8	34 4.4	94 12.3	154 20.1
35	19 38.8	19 42.0	18 45.1	35 4.6	95 12.4	155 20.3
36	19 39.0	19 42.3	18 45.3	36 4.7	96 12.6	156 20.4
37	19 39.3	19 42.5	18 45.5	37 4.8	97 12.7	157 20.5
38	19 39.5	19 42.8	18 45.8	38 5.0	98 12.8	158 20.7
39	19 39.8	19 43.0	18 46.0	39 5.1	99 13.0	159 20.8
40	19 40.0	19 43.3	18 46.2	40 5.2	100 13.1	160 20.9
41	19 40.3	19 43.5	18 46.5	41 5.4	101 13.2	161 21.1
42	19 40.5	19 43.8	18 46.7	42 5.5	102 13.3	162 21.2
43	19 40.8	19 44.0	18 47.0	43 5.6	103 13.5	163 21.3
44	19 41.0	19 44.3	18 47.2	44 5.8	104 13.6	164 21.5
45	19 41.3	19 44.5	18 47.4	45 5.9	105 13.7	165 21.6
46	19 41.5	19 44.8	18 47.7	46 6.0	106 13.9	166 21.7
47	19 41.8	19 45.0	18 47.9	47 6.1	107 14.0	167 21.8
48	19 42.0	19 45.3	18 48.2	48 6.3	108 14.1	168 22.0
49	19 42.3	19 45.5	18 48.4	49 6.4	109 14.3	169 22.1
50	19 42.5	19 45.8	18 48.6	50 6.5	110 14.4	170 22.2
51	19 42.8	19 46.0	18 48.9	51 6.7	111 14.5	171 22.4
52	19 43.0	19 46.3	18 49.1	52 6.8	112 14.7	172 22.5
53	19 43.3	19 46.5	18 49.3	53 6.9	113 14.8	173 22.6
54	19 43.5	19 46.8	18 49.6	54 7.1	114 14.9	174 22.8
55	19 43.8	19 47.0	18 49.8	55 7.2	115 15.0	175 22.9
56	19 44.0	19 47.3	18 50.1	56 7.3	116 15.2	176 23.0
57	19 44.3	19 47.5	18 50.3	57 7.5	117 15.3	177 23.2
58	19 44.5	19 47.8	18 50.5	58 7.6	118 15.4	178 23.3
59	19 44.8	19 48.0	18 50.8	59 7.7	119 15.6	179 23.4
60	19 45.0	19 48.3	18 51.0	60 7.9	120 15.7	180 23.6

1 h 19 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	19 45.0	19 48.3	18 51.0	0 .0	60 8.0	120 15.9
1	19 45.3	19 48.5	18 51.3	1 .1	61 8.1	121 16.0
2	19 45.5	19 48.8	18 51.5	2 .3	62 8.2	122 16.2
3	19 45.8	19 49.0	18 51.7	3 .4	63 8.3	123 16.3
4	19 46.0	19 49.3	18 52.0	4 .5	64 8.5	124 16.4
5	19 46.3	19 49.5	18 52.2	5 .7	65 8.6	125 16.6
6	19 46.5	19 49.8	18 52.4	6 .8	66 8.7	126 16.7
7	19 46.8	19 50.0	18 52.7	7 .9	67 8.9	127 16.8
8	19 47.0	19 50.3	18 52.9	8 1.1	68 9.0	128 17.0
9	19 47.3	19 50.5	18 53.2	9 1.2	69 9.1	129 17.1
10	19 47.5	19 50.8	18 53.4	10 1.3	70 9.3	130 17.2
11	19 47.8	19 51.0	18 53.6	11 1.5	71 9.4	131 17.4
12	19 48.0	19 51.3	18 53.9	12 1.6	72 9.5	132 17.5
13	19 48.3	19 51.6	18 54.1	13 1.7	73 9.7	133 17.6
14	19 48.5	19 51.8	18 54.4	14 1.9	74 9.8	134 17.8
15	19 48.8	19 52.1	18 54.6	15 2.0	75 9.9	135 17.9
16	19 49.0	19 52.3	18 54.8	16 2.1	76 10.1	136 18.0
17	19 49.3	19 52.6	18 55.1	17 2.3	77 10.2	137 18.2
18	19 49.5	19 52.8	18 55.3	18 2.4	78 10.3	138 18.3
19	19 49.8	19 53.1	18 55.6	19 2.5	79 10.5	139 18.4
20	19 50.0	19 53.3	18 55.8	20 2.7	80 10.6	140 18.6
21	19 50.3	19 53.6	18 56.0	21 2.8	81 10.7	141 18.7
22	19 50.5	19 53.8	18 56.3	22 2.9	82 10.9	142 18.8
23	19 50.8	19 54.1	18 56.5	23 3.0	83 11.0	143 18.9
24	19 51.0	19 54.3	18 56.7	24 3.2	84 11.1	144 19.1
25	19 51.3	19 54.6	18 57.0	25 3.3	85 11.3	145 19.2
26	19 51.5	19 54.8	18 57.2	26 3.4	86 11.4	146 19.3
27	19 51.8	19 55.1	18 57.5	27 3.6	87 11.5	147 19.5
28	19 52.0	19 55.3	18 57.7	28 3.7	88 11.7	148 19.6
29	19 52.3	19 55.6	18 57.9	29 3.8	89 11.8	149 19.7
30	19 52.5	19 55.8	18 58.2	30 4.0	90 11.9	150 19.9
31	19 52.8	19 56.1	18 58.4	31 4.1	91 12.1	151 20.0
32	19 53.0	19 56.3	18 58.7	32 4.2	92 12.2	152 20.1
33	19 53.3	19 56.6	18 58.9	33 4.4	93 12.3	153 20.3
34	19 53.5	19 56.8	18 59.1	34 4.5	94 12.5	154 20.4
35	19 53.8	19 57.1	18 59.4	35 4.6	95 12.6	155 20.5
36	19 54.0	19 57.3	18 59.6	36 4.8	96 12.7	156 20.7
37	19 54.3	19 57.6	18 59.8	37 4.9	97 12.9	157 20.8
38	19 54.5	19 57.8	19 .1	38 5.0	98 13.0	158 20.9
39	19 54.8	19 58.1	19 .3	39 5.2	99 13.1	159 21.1
40	19 55.0	19 58.3	19 .6	40 5.3	100 13.3	160 21.2
41	19 55.3	19 58.6	19 .8	41 5.4	101 13.4	161 21.3
42	19 55.5	19 58.8	19 1.0	42 5.6	102 13.5	162 21.5
43	19 55.8	19 59.1	19 1.3	43 5.7	103 13.6	163 21.6
44	19 56.0	19 59.3	19 1.5	44 5.8	104 13.8	164 21.7
45	19 56.3	19 59.6	19 1.8	45 6.0	105 13.9	165 21.9
46	19 56.5	19 59.8	19 2.0	46 6.1	106 14.0	166 22.0
47	19 56.8	20 .1	19 2.2	47 6.2	107 14.2	167 22.1
48	19 57.0	20 .3	19 2.5	48 6.4	108 14.3	168 22.3
49	19 57.3	20 .6	19 2.7	49 6.5	109 14.4	169 22.4
50	19 57.5	20 .8	19 2.9	50 6.6	110 14.6	170 22.5
51	19 57.8	20 1.1	19 3.2	51 6.8	111 14.7	171 22.7
52	19 58.0	20 1.3	19 3.4	52 6.9	112 14.8	172 22.8
53	19 58.3	20 1.6	19 3.7	53 7.0	113 15.0	173 22.9
54	19 58.5	20 1.8	19 3.9	54 7.2	114 15.1	174 23.1
55	19 58.8	20 2.1	19 4.1	55 7.3	115 15.2	175 23.2
56	19 59.0	20 2.3	19 4.4	56 7.4	116 15.4	176 23.3
57	19 59.3	20 2.6	19 4.6	57 7.6	117 15.5	177 23.5
58	19 59.5	20 2.8	19 4.9	58 7.7	118 15.6	178 23.6
59	19 59.8	20 3.1	19 5.1	59 7.8	119 15.8	179 23.7
60	20 .0	20 3.3	19 5.3	60 8.0	120 15.9	180 23.9

1 h 20 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.		Δ popr.		Δ popr.	
	°	'	°	'	°	'	'	"	'	"	'	"
0	20	.0	20	3.3	19	5.3	0	.0	60	8.1	120	16.1
1	20	.3	20	3.6	19	5.6	1	.1	61	8.2	121	16.2
2	20	.5	20	3.8	19	5.8	2	.3	62	8.3	122	16.4
3	20	.8	20	4.1	19	6.0	3	.4	63	8.5	123	16.5
4	20	1.0	20	4.3	19	6.3	4	.5	64	8.6	124	16.6
5	20	1.3	20	4.6	19	6.5	5	.7	65	8.7	125	16.8
6	20	1.5	20	4.8	19	6.8	6	.8	66	8.9	126	16.9
7	20	1.8	20	5.1	19	7.0	7	.9	67	9.0	127	17.0
8	20	2.0	20	5.3	19	7.2	8	1.1	68	9.1	128	17.2
9	20	2.3	20	5.6	19	7.5	9	1.2	69	9.3	129	17.3
10	20	2.5	20	5.8	19	7.7	10	1.3	70	9.4	130	17.4
11	20	2.8	20	6.1	19	8.0	11	1.5	71	9.5	131	17.6
12	20	3.0	20	6.3	19	8.2	12	1.6	72	9.7	132	17.7
13	20	3.3	20	6.6	19	8.4	13	1.7	73	9.8	133	17.8
14	20	3.5	20	6.8	19	8.7	14	1.9	74	9.9	134	18.0
15	20	3.8	20	7.1	19	8.9	15	2.0	75	10.1	135	18.1
16	20	4.0	20	7.3	19	9.2	16	2.1	76	10.2	136	18.2
17	20	4.3	20	7.6	19	9.4	17	2.3	77	10.3	137	18.4
18	20	4.5	20	7.8	19	9.6	18	2.4	78	10.5	138	18.5
19	20	4.8	20	8.1	19	9.9	19	2.5	79	10.6	139	18.6
20	20	5.0	20	8.3	19	10.1	20	2.7	80	10.7	140	18.8
21	20	5.3	20	8.6	19	10.3	21	2.8	81	10.9	141	18.9
22	20	5.5	20	8.8	19	10.6	22	3.0	82	11.0	142	19.1
23	20	5.8	20	9.1	19	10.8	23	3.1	83	11.1	143	19.2
24	20	6.0	20	9.4	19	11.1	24	3.2	84	11.3	144	19.3
25	20	6.3	20	9.6	19	11.3	25	3.4	85	11.4	145	19.5
26	20	6.5	20	9.9	19	11.5	26	3.5	86	11.5	146	19.6
27	20	6.8	20	10.1	19	11.8	27	3.6	87	11.7	147	19.7
28	20	7.0	20	10.4	19	12.0	28	3.8	88	11.8	148	19.9
29	20	7.3	20	10.6	19	12.3	29	3.9	89	11.9	149	20.0
30	20	7.5	20	10.9	19	12.5	30	4.0	90	12.1	150	20.1
31	20	7.8	20	11.1	19	12.7	31	4.2	91	12.2	151	20.3
32	20	8.0	20	11.4	19	13.0	32	4.3	92	12.3	152	20.4
33	20	8.3	20	11.6	19	13.2	33	4.4	93	12.5	153	20.5
34	20	8.5	20	11.9	19	13.4	34	4.6	94	12.6	154	20.7
35	20	8.8	20	12.1	19	13.7	35	4.7	95	12.7	155	20.8
36	20	9.0	20	12.4	19	13.9	36	4.8	96	12.9	156	20.9
37	20	9.3	20	12.6	19	14.2	37	5.0	97	13.0	157	21.1
38	20	9.5	20	12.9	19	14.4	38	5.1	98	13.1	158	21.2
39	20	9.8	20	13.1	19	14.6	39	5.2	99	13.3	159	21.3
40	20	10.0	20	13.4	19	14.9	40	5.4	100	13.4	160	21.5
41	20	10.3	20	13.6	19	15.1	41	5.5	101	13.6	161	21.6
42	20	10.5	20	13.9	19	15.4	42	5.6	102	13.7	162	21.7
43	20	10.8	20	14.1	19	15.6	43	5.8	103	13.8	163	21.9
44	20	11.0	20	14.4	19	15.8	44	5.9	104	14.0	164	22.0
45	20	11.3	20	14.6	19	16.1	45	6.0	105	14.1	165	22.1
46	20	11.5	20	14.9	19	16.3	46	6.2	106	14.2	166	22.3
47	20	11.8	20	15.1	19	16.5	47	6.3	107	14.4	167	22.4
48	20	12.0	20	15.4	19	16.8	48	6.4	108	14.5	168	22.5
49	20	12.3	20	15.6	19	17.0	49	6.6	109	14.6	169	22.7
50	20	12.5	20	15.9	19	17.3	50	6.7	110	14.8	170	22.8
51	20	12.8	20	16.1	19	17.5	51	6.8	111	14.9	171	22.9
52	20	13.0	20	16.4	19	17.7	52	7.0	112	15.0	172	23.1
53	20	13.3	20	16.6	19	18.0	53	7.1	113	15.2	173	23.2
54	20	13.5	20	16.9	19	18.2	54	7.2	114	15.3	174	23.3
55	20	13.8	20	17.1	19	18.5	55	7.4	115	15.4	175	23.5
56	20	14.0	20	17.4	19	18.7	56	7.5	116	15.6	176	23.6
57	20	14.3	20	17.6	19	18.9	57	7.6	117	15.7	177	23.7
58	20	14.5	20	17.9	19	19.2	58	7.8	118	15.8	178	23.9
59	20	14.8	20	18.1	19	19.4	59	7.9	119	16.0	179	24.0
60	20	15.0	20	18.4	19	19.7	60	8.1	120	16.1	180	24.2

1 h 21 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.		Δ popr.		Δ popr.	
	°	'	°	'	°	'	'	"	'	"	'	"
0	20	15.0	20	18.4	19	19.7	0	.0	60	8.2	120	16.3
1	20	15.3	20	18.6	19	19.9	1	.1	61	8.3	121	16.4
2	20	15.5	20	18.9	19	20.1	2	.3	62	8.4	122	16.6
3	20	15.8	20	19.1	19	20.4	3	.4	63	8.6	123	16.7
4	20	16.0	20	19.4	19	20.6	4	.5	64	8.7	124	16.8
5	20	16.3	20	19.6	19	20.8	5	.7	65	8.8	125	17.0
6	20	16.5	20	19.9	19	21.1	6	.8	66	9.0	126	17.1
7	20	16.8	20	20.1	19	21.3	7	1.0	67	9.1	127	17.3
8	20	17.0	20	20.4	19	21.6	8	1.1	68	9.2	128	17.4
9	20	17.3	20	20.6	19	21.8	9	1.2	69	9.4	129	17.5
10	20	17.5	20	20.9	19	22.0	10	1.4	70	9.5	130	17.7
11	20	17.8	20	21.1	19	22.3	11	1.5	71	9.6	131	17.8
12	20	18.0	20	21.4	19	22.5	12	1.6	72	9.8	132	17.9
13	20	18.3	20	21.6	19	22.8	13	1.8	73	9.9	133	18.1
14	20	18.5	20	21.9	19	23.0	14	1.9	74	10.1	134	18.2
15	20	18.8	20	22.1	19	23.2	15	2.0	75	10.2	135	18.3
16	20	19.0	20	22.4	19	23.5	16	2.2	76	10.3	136	18.5
17	20	19.3	20	22.6	19	23.7	17	2.3	77	10.5	137	18.6
18	20	19.5	20	22.9	19	23.9	18	2.4	78	10.6	138	18.7
19	20	19.8	20	23.1	19	24.2	19	2.6	79	10.7	139	18.9
20	20	20.0	20	23.4	19	24.4	20	2.7	80	10.9	140	19.0
21	20	20.3	20	23.6	19	24.7	21	2.9	81	11.0	141	19.2
22	20	20.5	20	23.9	19	24.9	22	3.0	82	11.1	142	19.3
23	20	20.8	20	24.1	19	25.1	23	3.1	83	11.3	143	19.4
24	20	21.0	20	24.4	19	25.4	24	3.3	84	11.4	144	19.6
25	20	21.3	20	24.6	19	25.6	25	3.4	85	11.5	145	19.7
26	20	21.5	20	24.9	19	25.9	26	3.5	86	11.7	146	19.8
27	20	21.8	20	25.1	19	26.1	27	3.7	87	11.8	147	20.0
28	20	22.0	20	25.4	19	26.3	28	3.8	88	12.0	148	20.1
29	20	22.3	20	25.6	19	26.6	29	3.9	89	12.1	149	20.2
30	20	22.5	20	25.9	19	26.8	30	4.1	90	12.2	150	20.4
31	20	22.8	20	26.1	19	27.0	31	4.2	91	12.4	151	20.5
32	20	23.0	20	26.4	19	27.3	32	4.3	92	12.5	152	20.6
33	20	23.3	20	26.6	19	27.5	33	4.5	93	12.6	153	20.8
34	20	23.5	20	26.9	19	27.8	34	4.6	94	12.8	154	20.9
35	20	23.8	20	27.1	19	28.0	35	4.8	95	12.9	155	21.1
36	20	24.0	20	27.4	19	28.2	36	4.9	96	13.0	156	21.2
37	20	24.3	20	27.7	19	28.5	37	5.0	97	13.2	157	21.3
38	20	24.5	20	27.9	19	28.7	38	5.2	98	13.3	158	21.5
39	20	24.8	20	28.2	19	29.0	39	5.3	99	13.4	159	21.6
40	20	25.0	20	28.4	19	29.2	40	5.4	100	13.6	160	21.7
41	20	25.3	20	28.7	19	29.4	41	5.6	101	13.7	161	21.9
42	20	25.5	20	28.9	19	29.7	42	5.7	102	13.9	162	22.0
43	20	25.8	20	29.2	19	29.9	43	5.8	103	14.0	163	22.1
44	20	26.0	20	29.4	19	30.1	44	6.0	104	14.1	164	22.3
45	20	26.3	20	29.7	19	30.4	45	6.1	105	14.3	165	22.4
46	20	26.5	20	29.9	19	30.6	46	6.2	106	14.4	166	22.5
47	20	26.8	20	30.2	19	30.9	47	6.4	107	14.5	167	22.7
48	20	27.0	20	30.4	19	31.1	48	6.5	108	14.7	168	22.8</

1 h 22 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	20 30.0	20 33.4	19 34.0	0 .0	60 8.3	120 16.5
1	20 30.3	20 33.7	19 34.2	1 .1	61 8.4	121 16.6
2	20 30.5	20 33.9	19 34.4	2 .3	62 8.5	122 16.8
3	20 30.8	20 34.2	19 34.7	3 .4	63 8.7	123 16.9
4	20 31.0	20 34.4	19 34.9	4 .6	64 8.8	124 17.1
5	20 31.3	20 34.7	19 35.2	5 .7	65 8.9	125 17.2
6	20 31.5	20 34.9	19 35.4	6 .8	66 9.1	126 17.3
7	20 31.8	20 35.2	19 35.6	7 1.0	67 9.2	127 17.5
8	20 32.0	20 35.4	19 35.9	8 1.1	68 9.4	128 17.6
9	20 32.3	20 35.7	19 36.1	9 1.2	69 9.5	129 17.7
10	20 32.5	20 35.9	19 36.4	10 1.4	70 9.6	130 17.9
11	20 32.8	20 36.2	19 36.6	11 1.5	71 9.8	131 18.0
12	20 33.0	20 36.4	19 36.8	12 1.7	72 9.9	132 18.2
13	20 33.3	20 36.7	19 37.1	13 1.8	73 10.0	133 18.3
14	20 33.5	20 36.9	19 37.3	14 1.9	74 10.2	134 18.4
15	20 33.8	20 37.2	19 37.5	15 2.1	75 10.3	135 18.6
16	20 34.0	20 37.4	19 37.8	16 2.2	76 10.5	136 18.7
17	20 34.3	20 37.7	19 38.0	17 2.3	77 10.6	137 18.8
18	20 34.5	20 37.9	19 38.3	18 2.5	78 10.7	138 19.0
19	20 34.8	20 38.2	19 38.5	19 2.6	79 10.9	139 19.1
20	20 35.0	20 38.4	19 38.7	20 2.8	80 11.0	140 19.3
21	20 35.3	20 38.7	19 39.0	21 2.9	81 11.1	141 19.4
22	20 35.5	20 38.9	19 39.2	22 3.0	82 11.3	142 19.5
23	20 35.8	20 39.2	19 39.5	23 3.2	83 11.4	143 19.7
24	20 36.0	20 39.4	19 39.7	24 3.3	84 11.6	144 19.8
25	20 36.3	20 39.7	19 39.9	25 3.4	85 11.7	145 19.9
26	20 36.5	20 39.9	19 40.2	26 3.6	86 11.8	146 20.1
27	20 36.8	20 40.2	19 40.4	27 3.7	87 12.0	147 20.2
28	20 37.0	20 40.4	19 40.6	28 3.9	88 12.1	148 20.4
29	20 37.3	20 40.7	19 40.9	29 4.0	89 12.2	149 20.5
30	20 37.5	20 40.9	19 41.1	30 4.1	90 12.4	150 20.6
31	20 37.8	20 41.2	19 41.4	31 4.3	91 12.5	151 20.8
32	20 38.0	20 41.4	19 41.6	32 4.4	92 12.7	152 20.9
33	20 38.3	20 41.7	19 41.8	33 4.5	93 12.8	153 21.0
34	20 38.5	20 41.9	19 42.1	34 4.7	94 12.9	154 21.2
35	20 38.8	20 42.2	19 42.3	35 4.8	95 13.1	155 21.3
36	20 39.0	20 42.4	19 42.6	36 5.0	96 13.2	156 21.5
37	20 39.3	20 42.7	19 42.8	37 5.1	97 13.3	157 21.6
38	20 39.5	20 42.9	19 43.0	38 5.2	98 13.5	158 21.7
39	20 39.8	20 43.2	19 43.3	39 5.4	99 13.6	159 21.9
40	20 40.0	20 43.4	19 43.5	40 5.5	100 13.8	160 22.0
41	20 40.3	20 43.7	19 43.7	41 5.6	101 13.9	161 22.1
42	20 40.5	20 43.9	19 44.0	42 5.8	102 14.0	162 22.3
43	20 40.8	20 44.2	19 44.2	43 5.9	103 14.2	163 22.4
44	20 41.0	20 44.4	19 44.5	44 6.1	104 14.3	164 22.6
45	20 41.3	20 44.7	19 44.7	45 6.2	105 14.4	165 22.7
46	20 41.5	20 44.9	19 44.9	46 6.3	106 14.6	166 22.8
47	20 41.8	20 45.2	19 45.2	47 6.5	107 14.7	167 23.0
48	20 42.0	20 45.5	19 45.4	48 6.6	108 14.9	168 23.1
49	20 42.3	20 45.7	19 45.7	49 6.7	109 15.0	169 23.2
50	20 42.5	20 46.0	19 45.9	50 6.9	110 15.1	170 23.4
51	20 42.8	20 46.2	19 46.1	51 7.0	111 15.3	171 23.5
52	20 43.0	20 46.5	19 46.4	52 7.2	112 15.4	172 23.7
53	20 43.3	20 46.7	19 46.6	53 7.3	113 15.5	173 23.8
54	20 43.5	20 47.0	19 46.9	54 7.4	114 15.7	174 23.9
55	20 43.8	20 47.2	19 47.1	55 7.6	115 15.8	175 24.1
56	20 44.0	20 47.5	19 47.3	56 7.7	116 16.0	176 24.2
57	20 44.3	20 47.7	19 47.6	57 7.8	117 16.1	177 24.3
58	20 44.5	20 48.0	19 47.8	58 8.0	118 16.2	178 24.5
59	20 44.8	20 48.2	19 48.0	59 8.1	119 16.4	179 24.6
60	20 45.0	20 48.5	19 48.3	60 8.3	120 16.5	180 24.8

1 h 23 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	20 45.0	20 48.5	19 48.3	0 .0	60 8.4	120 16.7
1	20 45.3	20 48.7	19 48.5	1 .1	61 8.5	121 16.8
2	20 45.5	20 49.0	19 48.8	2 .3	62 8.6	122 17.0
3	20 45.8	20 49.2	19 49.0	3 .4	63 8.8	123 17.1
4	20 46.0	20 49.5	19 49.2	4 .6	64 8.9	124 17.3
5	20 46.3	20 49.7	19 49.5	5 .7	65 9.0	125 17.4
6	20 46.5	20 50.0	19 49.7	6 .8	66 9.2	126 17.5
7	20 46.8	20 50.2	19 50.0	7 1.0	67 9.3	127 17.7
8	20 47.0	20 50.5	19 50.2	8 1.1	68 9.5	128 17.8
9	20 47.3	20 50.7	19 50.4	9 1.3	69 9.6	129 18.0
10	20 47.5	20 51.0	19 50.7	10 1.4	70 9.7	130 18.1
11	20 47.8	20 51.2	19 50.9	11 1.5	71 9.9	131 18.2
12	20 48.0	20 51.5	19 51.1	12 1.7	72 10.0	132 18.4
13	20 48.3	20 51.7	19 51.4	13 1.8	73 10.2	133 18.5
14	20 48.5	20 52.0	19 51.6	14 1.9	74 10.3	134 18.6
15	20 48.8	20 52.2	19 51.9	15 2.1	75 10.4	135 18.8
16	20 49.0	20 52.5	19 52.1	16 2.2	76 10.6	136 18.9
17	20 49.3	20 52.7	19 52.3	17 2.4	77 10.7	137 19.1
18	20 49.5	20 53.0	19 52.6	18 2.5	78 10.9	138 19.2
19	20 49.8	20 53.2	19 52.8	19 2.6	79 11.0	139 19.3
20	20 50.0	20 53.5	19 53.1	20 2.8	80 11.1	140 19.5
21	20 50.3	20 53.7	19 53.3	21 2.9	81 11.3	141 19.6
22	20 50.5	20 54.0	19 53.5	22 3.1	82 11.4	142 19.8
23	20 50.8	20 54.2	19 53.8	23 3.2	83 11.6	143 19.9
24	20 51.0	20 54.5	19 54.0	24 3.3	84 11.7	144 20.0
25	20 51.3	20 54.7	19 54.2	25 3.5	85 11.8	145 20.2
26	20 51.5	20 55.0	19 54.5	26 3.6	86 12.0	146 20.3
27	20 51.8	20 55.2	19 54.7	27 3.8	87 12.1	147 20.5
28	20 52.0	20 55.5	19 55.0	28 3.9	88 12.2	148 20.6
29	20 52.3	20 55.7	19 55.2	29 4.0	89 12.4	149 20.7
30	20 52.5	20 56.0	19 55.4	30 4.2	90 12.5	150 20.9
31	20 52.8	20 56.2	19 55.7	31 4.3	91 12.7	151 21.0
32	20 53.0	20 56.5	19 55.9	32 4.5	92 12.8	152 21.2
33	20 53.3	20 56.7	19 56.2	33 4.6	93 12.9	153 21.3
34	20 53.5	20 57.0	19 56.4	34 4.7	94 13.1	154 21.4
35	20 53.8	20 57.2	19 56.6	35 4.9	95 13.2	155 21.6
36	20 54.0	20 57.5	19 56.9	36 5.0	96 13.4	156 21.7
37	20 54.3	20 57.7	19 57.1	37 5.1	97 13.5	157 21.8
38	20 54.5	20 58.0	19 57.4	38 5.3	98 13.6	158 22.0
39	20 54.8	20 58.2	19 57.6	39 5.4	99 13.8	159 22.1
40	20 55.0	20 58.5	19 57.8	40 5.6	100 13.9	160 22.3
41	20 55.3	20 58.7	19 58.1	41 5.7	101 14.1	161 22.4
42	20 55.5	20 59.0	19 58.3	42 5.8	102 14.2	162 22.5
43	20 55.8	20 59.2	19 58.5	43 6.0	103 14.3	163 22.7
44	20 56.0	20 59.5	19 58.8	44 6.1	104 14.5	164 22.8
45	20 56.3	20 59.7	19 59.0	45 6.3	105 14.6	165 23.0
46	20 56.5	20 60.0	19 59.3	46 6.4	106 14.8	166 23.1
47	20 56.8	21 .2	19 59.5	47 6.5	107 14.9	167 23.2
48	20 57.0	21 .5	19 59.7	48 6.7	108 15.0	168 23.4
49	20 57.3	21 .7	19 60.0	49 6.8	109 15.2	169 23.5
50	20 57.5	21 1.0	20 .2	50 7.0	110 15.3	170 23.7
51	20 57.8	21 1.2	20 .5	51 7.1	111 15.4	171 23.8
52	20 58.0	21 1.5	20 .7	52 7.2	112 15.6	172 23.9
53	20 58.3	21 1.7	20 .9	53 7.4	113 15.7	173 24.1
54	20 58.5	21 2.0	20 1.2	54 7.5	114 15.9	174 24.2
55	20 58.8	21 2.2	20 1.4	55 7.7	115 16.0	175 24.4
56	20 59.0	21 2.5	20 1.6	56 7.8	116 16.1	176 24.5
57	20 59.3	21 2.7	20 1.9	57 7.9	117 16.3	177 24.6
58	20 59.5	21 3.0	20 2.1	58 8.1	118 16.4	178 24.8
59	20 59.8	21 3.2	20 2.4	59 8.2	119 16.6	179 24.9
60	21 .0	21 3.5	20 2.6	60 8.4	120 16.7	180 25.1

1 h 24 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ	popr.	Δ	popr.	Δ	popr.
	o	'	o	'	o	'	'		'		'	
0	21	.0	21	3.5	20	2.6	0	.0	60	8.5	120	16.9
1	21	.3	21	3.8	20	2.8	1	.1	61	8.6	121	17.0
2	21	.5	21	4.0	20	3.1	2	.3	62	8.7	122	17.2
3	21	.8	21	4.3	20	3.3	3	.4	63	8.9	123	17.3
4	21	1.0	21	4.5	20	3.6	4	.6	64	9.0	124	17.5
5	21	1.3	21	4.8	20	3.8	5	.7	65	9.2	125	17.6
6	21	1.5	21	5.0	20	4.0	6	.8	66	9.3	126	17.7
7	21	1.8	21	5.3	20	4.3	7	1.0	67	9.4	127	17.9
8	21	2.0	21	5.5	20	4.5	8	1.1	68	9.6	128	18.0
9	21	2.3	21	5.8	20	4.7	9	1.3	69	9.7	129	18.2
10	21	2.5	21	6.0	20	5.0	10	1.4	70	9.9	130	18.3
11	21	2.8	21	6.3	20	5.2	11	1.5	71	10.0	131	18.4
12	21	3.0	21	6.5	20	5.5	12	1.7	72	10.1	132	18.6
13	21	3.3	21	6.8	20	5.7	13	1.8	73	10.3	133	18.7
14	21	3.5	21	7.0	20	5.9	14	2.0	74	10.4	134	18.9
15	21	3.8	21	7.3	20	6.2	15	2.1	75	10.6	135	19.0
16	21	4.0	21	7.5	20	6.4	16	2.3	76	10.7	136	19.2
17	21	4.3	21	7.8	20	6.7	17	2.4	77	10.8	137	19.3
18	21	4.5	21	8.0	20	6.9	18	2.5	78	11.0	138	19.4
19	21	4.8	21	8.3	20	7.1	19	2.7	79	11.1	139	19.6
20	21	5.0	21	8.5	20	7.4	20	2.8	80	11.3	140	19.7
21	21	5.3	21	8.8	20	7.6	21	3.0	81	11.4	141	19.9
22	21	5.5	21	9.0	20	7.8	22	3.1	82	11.5	142	20.0
23	21	5.8	21	9.3	20	8.1	23	3.2	83	11.7	143	20.1
24	21	6.0	21	9.5	20	8.3	24	3.4	84	11.8	144	20.3
25	21	6.3	21	9.8	20	8.6	25	3.5	85	12.0	145	20.4
26	21	6.5	21	10.0	20	8.8	26	3.7	86	12.1	146	20.6
27	21	6.8	21	10.3	20	9.0	27	3.8	87	12.3	147	20.7
28	21	7.0	21	10.5	20	9.3	28	3.9	88	12.4	148	20.8
29	21	7.3	21	10.8	20	9.5	29	4.1	89	12.5	149	21.0
30	21	7.5	21	11.0	20	9.8	30	4.2	90	12.7	150	21.1
31	21	7.8	21	11.3	20	10.0	31	4.4	91	12.8	151	21.3
32	21	8.0	21	11.5	20	10.2	32	4.5	92	13.0	152	21.4
33	21	8.3	21	11.8	20	10.5	33	4.6	93	13.1	153	21.5
34	21	8.5	21	12.0	20	10.7	34	4.8	94	13.2	154	21.7
35	21	8.8	21	12.3	20	11.0	35	4.9	95	13.4	155	21.8
36	21	9.0	21	12.5	20	11.2	36	5.1	96	13.5	156	22.0
37	21	9.3	21	12.8	20	11.4	37	5.2	97	13.7	157	22.1
38	21	9.5	21	13.0	20	11.7	38	5.4	98	13.8	158	22.3
39	21	9.8	21	13.3	20	11.9	39	5.5	99	13.9	159	22.4
40	21	10.0	21	13.5	20	12.1	40	5.6	100	14.1	160	22.5
41	21	10.3	21	13.8	20	12.4	41	5.8	101	14.2	161	22.7
42	21	10.5	21	14.0	20	12.6	42	5.9	102	14.4	162	22.8
43	21	10.8	21	14.3	20	12.9	43	6.1	103	14.5	163	23.0
44	21	11.0	21	14.5	20	13.1	44	6.2	104	14.6	164	23.1
45	21	11.3	21	14.8	20	13.3	45	6.3	105	14.8	165	23.2
46	21	11.5	21	15.0	20	13.6	46	6.5	106	14.9	166	23.4
47	21	11.8	21	15.3	20	13.8	47	6.6	107	15.1	167	23.5
48	21	12.0	21	15.5	20	14.1	48	6.8	108	15.2	168	23.7
49	21	12.3	21	15.8	20	14.3	49	6.9	109	15.4	169	23.8
50	21	12.5	21	16.0	20	14.5	50	7.0	110	15.5	170	23.9
51	21	12.8	21	16.3	20	14.8	51	7.2	111	15.6	171	24.1
52	21	13.0	21	16.5	20	15.0	52	7.3	112	15.8	172	24.2
53	21	13.3	21	16.8	20	15.2	53	7.5	113	15.9	173	24.4
54	21	13.5	21	17.0	20	15.5	54	7.6	114	16.1	174	24.5
55	21	13.8	21	17.3	20	15.7	55	7.7	115	16.2	175	24.6
56	21	14.0	21	17.5	20	16.0	56	7.9	116	16.3	176	24.8
57	21	14.3	21	17.8	20	16.2	57	8.0	117	16.5	177	24.9
58	21	14.5	21	18.0	20	16.4	58	8.2	118	16.6	178	25.1
59	21	14.8	21	18.3	20	16.7	59	8.3	119	16.8	179	25.2
60	21	15.0	21	18.5	20	16.9	60	8.5	120	16.9	180	25.4

1 h 25 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ	popr.	Δ	popr.	Δ	popr.
	o	'	o	'	o	'	'		'		'	
0	21	15.0	21	18.5	20	16.9	0	.0	60	8.6	120	17.1
1	21	15.3	21	18.8	20	17.2	1	.1	61	8.7	121	17.2
2	21	15.5	21	19.0	20	17.4	2	.3	62	8.8	122	17.4
3	21	15.8	21	19.3	20	17.6	3	.4	63	9.0	123	17.5
4	21	16.0	21	19.5	20	17.9	4	.6	64	9.1	124	17.7
5	21	16.3	21	19.8	20	18.1	5	.7	65	9.3	125	17.8
6	21	16.5	21	20.0	20	18.3	6	.9	66	9.4	126	18.0
7	21	16.8	21	20.3	20	18.6	7	1.0	67	9.5	127	18.1
8	21	17.0	21	20.5	20	18.8	8	1.1	68	9.7	128	18.2
9	21	17.3	21	20.8	20	19.1	9	1.3	69	9.8	129	18.4
10	21	17.5	21	21.0	20	19.3	10	1.4	70	10.0	130	18.5
11	21	17.8	21	21.3	20	19.5	11	1.6	71	10.1	131	18.7
12	21	18.0	21	21.6	20	19.8	12	1.7	72	10.3	132	18.8
13	21	18.3	21	21.8	20	20.0	13	1.9	73	10.4	133	19.0
14	21	18.5	21	22.1	20	20.3	14	2.0	74	10.5	134	19.1
15	21	18.8	21	22.3	20	20.5	15	2.1	75	10.7	135	19.2
16	21	19.0	21	22.6	20	20.7	16	2.3	76	10.8	136	19.4
17	21	19.3	21	22.8	20	21.0	17	2.4	77	11.0	137	19.5
18	21	19.5	21	23.1	20	21.2	18	2.6	78	11.1	138	19.7
19	21	19.8	21	23.3	20	21.5	19	2.7	79	11.3	139	19.8
20	21	20.0	21	23.6	20	21.7	20	2.9	80	11.4	140	20.0
21	21	20.3	21	23.8	20	21.9	21	3.0	81	11.5	141	20.1
22	21	20.5	21	24.1	20	22.2	22	3.1	82	11.7	142	20.2
23	21	20.8	21	24.3	20	22.4	23	3.3	83	11.8	143	20.4
24	21	21.0	21	24.6	20	22.6	24	3.4	84	12.0	144	20.5
25	21	21.3	21	24.8	20	22.9	25	3.6	85	12.1	145	20.7
26	21	21.5	21	25.1	20	23.1	26	3.7	86	12.3	146	20.8
27	21	21.8	21	25.3	20	23.4	27	3.8	87	12.4	147	20.9
28	21	22.0	21	25.6	20	23.6	28	4.0	88	12.5	148	21.1
29	21	22.3	21	25.8	20	23.8	29	4.1	89	12.7	149	21.2
30	21	22.5	21	26.1	20	24.1	30	4.3	90	12.8	150	21.4
31	21	22.8	21	26.3	20	24.3	31	4.4	91	13.0	151	21.5
32	21	23.0	21	26.6	20	24.6	32	4.6	92	13.1	152	21.7
33	21	23.3	21	26.8	20	24.8	33	4.7	93	13.3	153	21.8
34	21	23.5	21	27.1	20	25.0	34	4.8	94	13.4	154	21.9
35	21	23.8	21	27.3	20	25.3	35	5.0	95	13.5	155	22.1
36	21	24.0	21	27.6	20	25.5	36	5.1	96	13.7	156	22.2
37	21	24.3	21	27.8	20	25.7	37	5.3	97	13.8	157	22.4
38	21	24.5	21	28.1	20	26.0	38	5.4	98	14.0	158	22.5
39	21	24.8	21	28.3	20	26.2	39	5.6	99	14.1	159	22.7
40	21	25.0	21	28.6	20	26.5	40	5.7	100	14.3	160	22.8
41	21	25.3	21	28.8	20	26.7	41	5.8	101	14.4	161	22.9
42	21	25.5	21	29.1	20	26.9	42	6.0	102	14.5	162	23.1
43	21	25.8	21	29.3	20	27.2	43	6.1	103	14.7	163	23.2
44	21	26.0	21	29.6	20	27.4	44	6.3	104	14.8	164	23.4
45	21	26.3	21	29.8	20	27.7	45	6.4	105	15.0	165	23.5
46	21	26.5	21	30.1	20	27.9	46	6.6	106	15.1	166	23.7
47	21	26.8	21	30.3	20	28.1	47	6.7	107	15.2	167	23.8
48	21	27.0	21	30.6	20	28.4	48	6.8	108	15.4		

1 h 26 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	°	'	°	'	'	'	'		
0	21	30.0	21	33.6	20	31.2	0 .0	60 8.7	120 17.3
1	21	30.3	21	33.8	20	31.5	1 .1	61 8.8	121 17.4
2	21	30.5	21	34.1	20	31.7	2 .3	62 8.9	122 17.6
3	21	30.8	21	34.3	20	31.9	3 .4	63 9.1	123 17.7
4	21	31.0	21	34.6	20	32.2	4 .6	64 9.2	124 17.9
5	21	31.3	21	34.8	20	32.4	5 .7	65 9.4	125 18.0
6	21	31.5	21	35.1	20	32.7	6 .9	66 9.5	126 18.2
7	21	31.8	21	35.3	20	32.9	7 1.0	67 9.7	127 18.3
8	21	32.0	21	35.6	20	33.1	8 1.2	68 9.8	128 18.5
9	21	32.3	21	35.8	20	33.4	9 1.3	69 9.9	129 18.6
10	21	32.5	21	36.1	20	33.6	10 1.4	70 10.1	130 18.7
11	21	32.8	21	36.3	20	33.9	11 1.6	71 10.2	131 18.9
12	21	33.0	21	36.6	20	34.1	12 1.7	72 10.4	132 19.0
13	21	33.3	21	36.8	20	34.3	13 1.9	73 10.5	133 19.2
14	21	33.5	21	37.1	20	34.6	14 2.0	74 10.7	134 19.3
15	21	33.8	21	37.3	20	34.8	15 2.2	75 10.8	135 19.5
16	21	34.0	21	37.6	20	35.1	16 2.3	76 11.0	136 19.6
17	21	34.3	21	37.8	20	35.3	17 2.5	77 11.1	137 19.8
18	21	34.5	21	38.1	20	35.5	18 2.6	78 11.2	138 19.9
19	21	34.8	21	38.3	20	35.8	19 2.7	79 11.4	139 20.0
20	21	35.0	21	38.6	20	36.0	20 2.9	80 11.5	140 20.2
21	21	35.3	21	38.8	20	36.2	21 3.0	81 11.7	141 20.3
22	21	35.5	21	39.1	20	36.5	22 3.2	82 11.8	142 20.5
23	21	35.8	21	39.3	20	36.7	23 3.3	83 12.0	143 20.6
24	21	36.0	21	39.6	20	37.0	24 3.5	84 12.1	144 20.8
25	21	36.3	21	39.9	20	37.2	25 3.6	85 12.3	145 20.9
26	21	36.5	21	40.1	20	37.4	26 3.7	86 12.4	146 21.0
27	21	36.8	21	40.4	20	37.7	27 3.9	87 12.5	147 21.2
28	21	37.0	21	40.6	20	37.9	28 4.0	88 12.7	148 21.3
29	21	37.3	21	40.9	20	38.2	29 4.2	89 12.8	149 21.5
30	21	37.5	21	41.1	20	38.4	30 4.3	90 13.0	150 21.6
31	21	37.8	21	41.4	20	38.6	31 4.5	91 13.1	151 21.8
32	21	38.0	21	41.6	20	38.9	32 4.6	92 13.3	152 21.9
33	21	38.3	21	41.9	20	39.1	33 4.8	93 13.4	153 22.1
34	21	38.5	21	42.1	20	39.3	34 4.9	94 13.6	154 22.2
35	21	38.8	21	42.4	20	39.6	35 5.0	95 13.7	155 22.3
36	21	39.0	21	42.6	20	39.8	36 5.2	96 13.8	156 22.5
37	21	39.3	21	42.9	20	40.1	37 5.3	97 14.0	157 22.6
38	21	39.5	21	43.1	20	40.3	38 5.5	98 14.1	158 22.8
39	21	39.8	21	43.4	20	40.5	39 5.6	99 14.3	159 22.9
40	21	40.0	21	43.6	20	40.8	40 5.8	100 14.4	160 23.1
41	21	40.3	21	43.9	20	41.0	41 5.9	101 14.6	161 23.2
42	21	40.5	21	44.1	20	41.3	42 6.1	102 14.7	162 23.4
43	21	40.8	21	44.4	20	41.5	43 6.2	103 14.8	163 23.5
44	21	41.0	21	44.6	20	41.7	44 6.3	104 15.0	164 23.6
45	21	41.3	21	44.9	20	42.0	45 6.5	105 15.1	165 23.8
46	21	41.5	21	45.1	20	42.2	46 6.6	106 15.3	166 23.9
47	21	41.8	21	45.4	20	42.4	47 6.8	107 15.4	167 24.1
48	21	42.0	21	45.6	20	42.7	48 6.9	108 15.6	168 24.2
49	21	42.3	21	45.9	20	42.9	49 7.1	109 15.7	169 24.4
50	21	42.5	21	46.1	20	43.2	50 7.2	110 15.9	170 24.5
51	21	42.8	21	46.4	20	43.4	51 7.4	111 16.0	171 24.7
52	21	43.0	21	46.6	20	43.6	52 7.5	112 16.1	172 24.8
53	21	43.3	21	46.9	20	43.9	53 7.6	113 16.3	173 24.9
54	21	43.5	21	47.1	20	44.1	54 7.8	114 16.4	174 25.1
55	21	43.8	21	47.4	20	44.4	55 7.9	115 16.6	175 25.2
56	21	44.0	21	47.6	20	44.6	56 8.1	116 16.7	176 25.4
57	21	44.3	21	47.9	20	44.8	57 8.2	117 16.9	177 25.5
58	21	44.5	21	48.1	20	45.1	58 8.4	118 17.0	178 25.7
59	21	44.8	21	48.4	20	45.3	59 8.5	119 17.2	179 25.8
60	21	45.0	21	48.6	20	45.6	60 8.7	120 17.3	180 26.0

1 h 27 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	°	'	°	'	'	'	'		
0	21	45.0	21	48.6	20	45.6	0 .0	60 8.8	120 17.5
1	21	45.3	21	48.9	20	45.8	1 .1	61 8.9	121 17.6
2	21	45.5	21	49.1	20	46.0	2 .3	62 9.0	122 17.8
3	21	45.8	21	49.4	20	46.3	3 .4	63 9.2	123 17.9
4	21	46.0	21	49.6	20	46.5	4 .6	64 9.3	124 18.1
5	21	46.3	21	49.9	20	46.7	5 .7	65 9.5	125 18.2
6	21	46.5	21	50.1	20	47.0	6 .9	66 9.6	126 18.4
7	21	46.8	21	50.4	20	47.2	7 1.0	67 9.8	127 18.5
8	21	47.0	21	50.6	20	47.5	8 1.2	68 9.9	128 18.7
9	21	47.3	21	50.9	20	47.7	9 1.3	69 10.1	129 18.8
10	21	47.5	21	51.1	20	47.9	10 1.5	70 10.2	130 19.0
11	21	47.8	21	51.4	20	48.2	11 1.6	71 10.4	131 19.1
12	21	48.0	21	51.6	20	48.4	12 1.8	72 10.5	132 19.3
13	21	48.3	21	51.9	20	48.7	13 1.9	73 10.6	133 19.4
14	21	48.5	21	52.1	20	48.9	14 2.0	74 10.8	134 19.5
15	21	48.8	21	52.4	20	49.1	15 2.2	75 10.9	135 19.7
16	21	49.0	21	52.6	20	49.4	16 2.3	76 11.1	136 19.8
17	21	49.3	21	52.9	20	49.6	17 2.5	77 11.2	137 20.0
18	21	49.5	21	53.1	20	49.8	18 2.6	78 11.4	138 20.1
19	21	49.8	21	53.4	20	50.1	19 2.8	79 11.5	139 20.3
20	21	50.0	21	53.6	20	50.3	20 2.9	80 11.7	140 20.4
21	21	50.3	21	53.9	20	50.6	21 3.1	81 11.8	141 20.6
22	21	50.5	21	54.1	20	50.8	22 3.2	82 12.0	142 20.7
23	21	50.8	21	54.4	20	51.0	23 3.4	83 12.1	143 20.9
24	21	51.0	21	54.6	20	51.3	24 3.5	84 12.3	144 21.0
25	21	51.3	21	54.9	20	51.5	25 3.6	85 12.4	145 21.1
26	21	51.5	21	55.1	20	51.8	26 3.8	86 12.5	146 21.3
27	21	51.8	21	55.4	20	52.0	27 3.9	87 12.7	147 21.4
28	21	52.0	21	55.6	20	52.2	28 4.1	88 12.8	148 21.6
29	21	52.3	21	55.9	20	52.5	29 4.2	89 13.0	149 21.7
30	21	52.5	21	56.1	20	52.7	30 4.4	90 13.1	150 21.9
31	21	52.8	21	56.4	20	52.9	31 4.5	91 13.3	151 22.0
32	21	53.0	21	56.6	20	53.2	32 4.7	92 13.4	152 22.2
33	21	53.3	21	56.9	20	53.4	33 4.8	93 13.6	153 22.3
34	21	53.5	21	57.1	20	53.7	34 5.0	94 13.7	154 22.5
35	21	53.8	21	57.4	20	53.9	35 5.1	95 13.9	155 22.6
36	21	54.0	21	57.7	20	54.1	36 5.3	96 14.0	156 22.8
37	21	54.3	21	57.9	20	54.4	37 5.4	97 14.1	157 22.9
38	21	54.5	21	58.2	20	54.6	38 5.5	98 14.3	158 23.0
39	21	54.8	21	58.4	20	54.9	39 5.7	99 14.4	159 23.2
40	21	55.0	21	58.7	20	55.1	40 5.8	100 14.6	160 23.3
41	21	55.3	21	58.9	20	55.3	41 6.0	101 14.7	161 23.5
42	21	55.5	21	59.2	20	55.6	42 6.1	102 14.9	162 23.6
43	21	55.8	21	59.4	20	55.8	43 6.3	103 15.0	163 23.8
44	21	56.0	21	59.7	20	56.0	44 6.4	104 15.2	164 23.9
45	21	56.3	21	59.9	20	56.3	45 6.6	105 15.3	165 24.1
46	21	56.5	22	.2	20	56.5	46 6.7	106 15.5	166 24.2
47	21	56.8	22	.4	20	56.8	47 6.9	107 15.6	167 24.4
48	21	57.0	22	.7	20	57.0	48 7.0	108 15.8	168 24.5
49	21	57.3	22	.9	20	57.2	49 7.1	109 15.9	169 24.6
50	21	57.5	22	1.2	20	57.5	50 7.3	110 16.0	170 24.8
51	21	57.8	22	1.4	20	57.7	51 7.4	111 16.2	171 24.9
52	21	58.0	22	1.7	20	58.0	52 7.6	112 16.3	172 25.1
53	21	58.3	22	1.9	20	58.2	53 7.7	113 16.5	173 25.2
54	21	58.5	22	2.2	20	58.4	54 7.9	114 16.6	174 25.4
55	21	58.8	22	2.4	20	58.7	55 8.0	115 16.8	175 25.5
56	21	59.0	22	2.7	20	58.9	56 8.2	116 16.9	176 25.7
57	21	59.3	22	2.9	20	59.2	57 8.3	117 17.1	177 25.8
58	21	59.5	22	3.2	20	59.4	58 8.5	118 17.2	178 26.0
59	21	59.8	22	3.4	20	59.6	59 8.6	119 17.4	179 26.1
60	22	.0	22	3.7	20	59.9	60 8.8	120 17.5	180 26.3

1 h 28 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	22	.0	22	3.7	20	59.9	0 .0	60 8.9	120 17.7
1	22	.3	22	3.9	21	.1	1 .1	61 9.0	121 17.8
2	22	.5	22	4.2	21	.3	2 .3	62 9.1	122 18.0
3	22	.8	22	4.4	21	.6	3 .4	63 9.3	123 18.1
4	22	1.0	22	4.7	21	.8	4 .6	64 9.4	124 18.3
5	22	1.3	22	4.9	21	1.1	5 .7	65 9.6	125 18.4
6	22	1.5	22	5.2	21	1.3	6 .9	66 9.7	126 18.6
7	22	1.8	22	5.4	21	1.5	7 1.0	67 9.9	127 18.7
8	22	2.0	22	5.7	21	1.8	8 1.2	68 10.0	128 18.9
9	22	2.3	22	5.9	21	2.0	9 1.3	69 10.2	129 19.0
10	22	2.5	22	6.2	21	2.3	10 1.5	70 10.3	130 19.2
11	22	2.8	22	6.4	21	2.5	11 1.6	71 10.5	131 19.3
12	22	3.0	22	6.7	21	2.7	12 1.8	72 10.6	132 19.5
13	22	3.3	22	6.9	21	3.0	13 1.9	73 10.8	133 19.6
14	22	3.5	22	7.2	21	3.2	14 2.1	74 10.9	134 19.8
15	22	3.8	22	7.4	21	3.4	15 2.2	75 11.1	135 19.9
16	22	4.0	22	7.7	21	3.7	16 2.4	76 11.2	136 20.1
17	22	4.3	22	7.9	21	3.9	17 2.5	77 11.4	137 20.2
18	22	4.5	22	8.2	21	4.2	18 2.7	78 11.5	138 20.4
19	22	4.8	22	8.4	21	4.4	19 2.8	79 11.7	139 20.5
20	22	5.0	22	8.7	21	4.6	20 3.0	80 11.8	140 20.7
21	22	5.3	22	8.9	21	4.9	21 3.1	81 11.9	141 20.8
22	22	5.5	22	9.2	21	5.1	22 3.2	82 12.1	142 20.9
23	22	5.8	22	9.4	21	5.4	23 3.4	83 12.2	143 21.1
24	22	6.0	22	9.7	21	5.6	24 3.5	84 12.4	144 21.2
25	22	6.3	22	9.9	21	5.8	25 3.7	85 12.5	145 21.4
26	22	6.5	22	10.2	21	6.1	26 3.8	86 12.7	146 21.5
27	22	6.8	22	10.4	21	6.3	27 4.0	87 12.8	147 21.7
28	22	7.0	22	10.7	21	6.5	28 4.1	88 13.0	148 21.8
29	22	7.3	22	10.9	21	6.8	29 4.3	89 13.1	149 22.0
30	22	7.5	22	11.2	21	7.0	30 4.4	90 13.3	150 22.1
31	22	7.8	22	11.4	21	7.3	31 4.6	91 13.4	151 22.3
32	22	8.0	22	11.7	21	7.5	32 4.7	92 13.6	152 22.4
33	22	8.3	22	11.9	21	7.7	33 4.9	93 13.7	153 22.6
34	22	8.5	22	12.2	21	8.0	34 5.0	94 13.9	154 22.7
35	22	8.8	22	12.4	21	8.2	35 5.2	95 14.0	155 22.9
36	22	9.0	22	12.7	21	8.5	36 5.3	96 14.2	156 23.0
37	22	9.3	22	12.9	21	8.7	37 5.5	97 14.3	157 23.2
38	22	9.5	22	13.2	21	8.9	38 5.6	98 14.5	158 23.3
39	22	9.8	22	13.4	21	9.2	39 5.8	99 14.6	159 23.5
40	22	10.0	22	13.7	21	9.4	40 5.9	100 14.8	160 23.6
41	22	10.3	22	13.9	21	9.6	41 6.0	101 14.9	161 23.7
42	22	10.5	22	14.2	21	9.9	42 6.2	102 15.0	162 23.9
43	22	10.8	22	14.4	21	10.1	43 6.3	103 15.2	163 24.0
44	22	11.0	22	14.7	21	10.4	44 6.5	104 15.3	164 24.2
45	22	11.3	22	14.9	21	10.6	45 6.6	105 15.5	165 24.3
46	22	11.5	22	15.2	21	10.8	46 6.8	106 15.6	166 24.5
47	22	11.8	22	15.4	21	11.1	47 6.9	107 15.8	167 24.6
48	22	12.0	22	15.7	21	11.3	48 7.1	108 15.9	168 24.8
49	22	12.3	22	16.0	21	11.6	49 7.2	109 16.1	169 24.9
50	22	12.5	22	16.2	21	11.8	50 7.4	110 16.2	170 25.1
51	22	12.8	22	16.5	21	12.0	51 7.5	111 16.4	171 25.2
52	22	13.0	22	16.7	21	12.3	52 7.7	112 16.5	172 25.4
53	22	13.3	22	17.0	21	12.5	53 7.8	113 16.7	173 25.5
54	22	13.5	22	17.2	21	12.8	54 8.0	114 16.8	174 25.7
55	22	13.8	22	17.5	21	13.0	55 8.1	115 17.0	175 25.8
56	22	14.0	22	17.7	21	13.2	56 8.3	116 17.1	176 26.0
57	22	14.3	22	18.0	21	13.5	57 8.4	117 17.3	177 26.1
58	22	14.5	22	18.2	21	13.7	58 8.6	118 17.4	178 26.3
59	22	14.8	22	18.5	21	13.9	59 8.7	119 17.6	179 26.4
60	22	15.0	22	18.7	21	14.2	60 8.9	120 17.7	180 26.6

1 h 29 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	22	15.0	22	18.7	21	14.2	0 .0	60 9.0	120 17.9
1	22	15.3	22	19.0	21	14.4	1 .1	61 9.1	121 18.0
2	22	15.5	22	19.2	21	14.7	2 .3	62 9.2	122 18.2
3	22	15.8	22	19.5	21	14.9	3 .4	63 9.4	123 18.3
4	22	16.0	22	19.7	21	15.1	4 .6	64 9.5	124 18.5
5	22	16.3	22	20.0	21	15.4	5 .7	65 9.7	125 18.6
6	22	16.5	22	20.2	21	15.6	6 .9	66 9.8	126 18.8
7	22	16.8	22	20.5	21	15.9	7 1.0	67 10.0	127 18.9
8	22	17.0	22	20.7	21	16.1	8 1.2	68 10.1	128 19.1
9	22	17.3	22	21.0	21	16.3	9 1.3	69 10.3	129 19.2
10	22	17.5	22	21.2	21	16.6	10 1.5	70 10.4	130 19.4
11	22	17.8	22	21.5	21	16.8	11 1.6	71 10.6	131 19.5
12	22	18.0	22	21.7	21	17.0	12 1.8	72 10.7	132 19.7
13	22	18.3	22	22.0	21	17.3	13 1.9	73 10.9	133 19.8
14	22	18.5	22	22.2	21	17.5	14 2.1	74 11.0	134 20.0
15	22	18.8	22	22.5	21	17.8	15 2.2	75 11.2	135 20.1
16	22	19.0	22	22.7	21	18.0	16 2.4	76 11.3	136 20.3
17	22	19.3	22	23.0	21	18.2	17 2.5	77 11.5	137 20.4
18	22	19.5	22	23.2	21	18.5	18 2.7	78 11.6	138 20.6
19	22	19.8	22	23.5	21	18.7	19 2.8	79 11.8	139 20.7
20	22	20.0	22	23.7	21	19.0	20 3.0	80 11.9	140 20.9
21	22	20.3	22	24.0	21	19.2	21 3.1	81 12.1	141 21.0
22	22	20.5	22	24.2	21	19.4	22 3.3	82 12.2	142 21.2
23	22	20.8	22	24.5	21	19.7	23 3.4	83 12.4	143 21.3
24	22	21.0	22	24.7	21	19.9	24 3.6	84 12.5	144 21.5
25	22	21.3	22	25.0	21	20.1	25 3.7	85 12.7	145 21.6
26	22	21.5	22	25.2	21	20.4	26 3.9	86 12.8	146 21.8
27	22	21.8	22	25.5	21	20.6	27 4.0	87 13.0	147 21.9
28	22	22.0	22	25.7	21	20.9	28 4.2	88 13.1	148 22.1
29	22	22.3	22	26.0	21	21.1	29 4.3	89 13.3	149 22.2
30	22	22.5	22	26.2	21	21.3	30 4.5	90 13.4	150 22.4
31	22	22.8	22	26.5	21	21.6	31 4.6	91 13.6	151 22.5
32	22	23.0	22	26.7	21	21.8	32 4.8	92 13.7	152 22.7
33	22	23.3	22	27.0	21	22.1	33 4.9	93 13.9	153 22.8
34	22	23.5	22	27.2	21	22.3	34 5.1	94 14.0	154 23.0
35	22	23.8	22	27.5	21	22.5	35 5.2	95 14.2	155 23.1
36	22	24.0	22	27.7	21	22.8	36 5.4	96 14.3	156 23.3
37	22	24.3	22	28.0	21	23.0	37 5.5	97 14.5	157 23.4
38	22	24.5	22	28.2	21	23.3	38 5.7	98 14.6	158 23.6
39	22	24.8	22	28.5	21	23.5	39 5.8	99 14.8	159 23.7
40	22	25.0	22	28.7	21	23.7	40 6.0	100 14.9	160 23.9
41	22	25.3	22	29.0	21	24.0	41 6.1	101 15.1	161 24.0
42	22	25.5	22	29.2	21	24.2	42 6.3	102 15.2	162 24.2
43	22	25.8	22	29.5	21	24.4	43 6.4	103 15.4	163 24.3
44	22	26.0	22	29.7	21	24.7	44 6.6	104 15.5	164 24.5
45	22	26.3	22	30.0	21	24.9	45 6.7	105 15.7	165 24.6
46	22	26.5	22	30.2	21	25.2	46 6.9	106 15.8	166 24.8
47	22	26.8	22	30.5	21	25.4	47 7.0	107 16.0	167 24.9
48	22	27.0	22	30.7	21	25.6	48 7.2	108 16.1	168 25.1
49	22	27.3	22	31.0	21	25.9	49 7.3	109 16.3	169 25.2
50	22	27.5	22	31.2	21	26.1	50 7.5	110 16.4	170 25.4
51	22	27.8	22	31.5	21	26.4	51 7.6	111 16.6	171 25.5
52	22	28.0	22	31.7	21	26.6	52 7.8	112 16.7	172 25.7
53	22	28.3	22	32.0	21	26.8	53 7.9	113 16.9	173 25.8
54	22	28.5	22	32.2	21	27.1	54 8.1	114 17.0	174 26.0
55	22	28.8	22	32.5	21	27.3	55 8.2	115 17.2	175 26.1
56	22	29.0	22	32.7	21	27.5	56 8.4	116 17.3	176 26.3
57	22	29.3	22	33.0	21	27.8	57 8.5	117 17.5	177 26.4
58	22	29.5	22	33.2	21	28.0	58 8.7	118 17.6	178 26.6
59	22	29.8	22	33.5	21	28.3	59 8.8	119 17.8	179 26.7
60	22	30.0	22	33.8	21	28.5	60 9.0	120 17.9	180 26.9

1 h 30 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ	popr.	Δ	popr.	Δ	popr.
	o /	o /	o /	/	/	/	/	/	/
0	22 30.0	22 33.8	21 28.5	0	.0	60	9.1	120	18.1
1	22 30.3	22 34.0	21 28.7	1	.2	61	9.2	121	18.3
2	22 30.5	22 34.3	21 29.0	2	.3	62	9.4	122	18.4
3	22 30.8	22 34.5	21 29.2	3	.5	63	9.5	123	18.6
4	22 31.0	22 34.8	21 29.5	4	.6	64	9.7	124	18.7
5	22 31.3	22 35.0	21 29.7	5	.8	65	9.8	125	18.9
6	22 31.5	22 35.3	21 29.9	6	.9	66	10.0	126	19.0
7	22 31.8	22 35.5	21 30.2	7	1.1	67	10.1	127	19.2
8	22 32.0	22 35.8	21 30.4	8	1.2	68	10.3	128	19.3
9	22 32.3	22 36.0	21 30.6	9	1.4	69	10.4	129	19.5
10	22 32.5	22 36.3	21 30.9	10	1.5	70	10.6	130	19.6
11	22 32.8	22 36.5	21 31.1	11	1.7	71	10.7	131	19.8
12	22 33.0	22 36.8	21 31.4	12	1.8	72	10.9	132	19.9
13	22 33.3	22 37.0	21 31.6	13	2.0	73	11.0	133	20.1
14	22 33.5	22 37.3	21 31.8	14	2.1	74	11.2	134	20.2
15	22 33.8	22 37.5	21 32.1	15	2.3	75	11.3	135	20.4
16	22 34.0	22 37.8	21 32.3	16	2.4	76	11.5	136	20.5
17	22 34.3	22 38.0	21 32.6	17	2.6	77	11.6	137	20.7
18	22 34.5	22 38.3	21 32.8	18	2.7	78	11.8	138	20.8
19	22 34.8	22 38.5	21 33.0	19	2.9	79	11.9	139	21.0
20	22 35.0	22 38.8	21 33.3	20	3.0	80	12.1	140	21.1
21	22 35.3	22 39.0	21 33.5	21	3.2	81	12.2	141	21.3
22	22 35.5	22 39.3	21 33.7	22	3.3	82	12.4	142	21.4
23	22 35.8	22 39.5	21 34.0	23	3.5	83	12.5	143	21.6
24	22 36.0	22 39.8	21 34.2	24	3.6	84	12.7	144	21.7
25	22 36.3	22 40.0	21 34.5	25	3.8	85	12.8	145	21.9
26	22 36.5	22 40.3	21 34.7	26	3.9	86	13.0	146	22.0
27	22 36.8	22 40.5	21 34.9	27	4.1	87	13.1	147	22.2
28	22 37.0	22 40.8	21 35.2	28	4.2	88	13.3	148	22.3
29	22 37.3	22 41.0	21 35.4	29	4.4	89	13.4	149	22.5
30	22 37.5	22 41.3	21 35.7	30	4.5	90	13.6	150	22.6
31	22 37.8	22 41.5	21 35.9	31	4.7	91	13.7	151	22.8
32	22 38.0	22 41.8	21 36.1	32	4.8	92	13.9	152	22.9
33	22 38.3	22 42.0	21 36.4	33	5.0	93	14.0	153	23.1
34	22 38.5	22 42.3	21 36.6	34	5.1	94	14.2	154	23.2
35	22 38.8	22 42.5	21 36.9	35	5.3	95	14.3	155	23.4
36	22 39.0	22 42.8	21 37.1	36	5.4	96	14.5	156	23.5
37	22 39.3	22 43.0	21 37.3	37	5.6	97	14.6	157	23.7
38	22 39.5	22 43.3	21 37.6	38	5.7	98	14.8	158	23.8
39	22 39.8	22 43.5	21 37.8	39	5.9	99	14.9	159	24.0
40	22 40.0	22 43.8	21 38.0	40	6.0	100	15.1	160	24.1
41	22 40.3	22 44.0	21 38.3	41	6.2	101	15.2	161	24.3
42	22 40.5	22 44.3	21 38.5	42	6.3	102	15.4	162	24.4
43	22 40.8	22 44.5	21 38.8	43	6.5	103	15.5	163	24.6
44	22 41.0	22 44.8	21 39.0	44	6.6	104	15.7	164	24.7
45	22 41.3	22 45.0	21 39.2	45	6.8	105	15.8	165	24.9
46	22 41.5	22 45.3	21 39.5	46	6.9	106	16.0	166	25.0
47	22 41.8	22 45.5	21 39.7	47	7.1	107	16.1	167	25.2
48	22 42.0	22 45.8	21 40.0	48	7.2	108	16.3	168	25.3
49	22 42.3	22 46.0	21 40.2	49	7.4	109	16.4	169	25.5
50	22 42.5	22 46.3	21 40.4	50	7.5	110	16.6	170	25.6
51	22 42.8	22 46.5	21 40.7	51	7.7	111	16.7	171	25.8
52	22 43.0	22 46.8	21 40.9	52	7.8	112	16.9	172	25.9
53	22 43.3	22 47.0	21 41.1	53	8.0	113	17.0	173	26.1
54	22 43.5	22 47.3	21 41.4	54	8.1	114	17.2	174	26.2
55	22 43.8	22 47.5	21 41.6	55	8.3	115	17.3	175	26.4
56	22 44.0	22 47.8	21 41.9	56	8.4	116	17.5	176	26.5
57	22 44.3	22 48.0	21 42.1	57	8.6	117	17.6	177	26.7
58	22 44.5	22 48.3	21 42.3	58	8.7	118	17.8	178	26.8
59	22 44.8	22 48.5	21 42.6	59	8.9	119	17.9	179	27.0
60	22 45.0	22 48.8	21 42.8	60	9.1	120	18.1	180	27.2

1 h 31 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ	popr.	Δ	popr.	Δ	popr.
	o /	o /	o /	/	/	/	/	/	/
0	22 45.0	22 48.8	21 42.8	0	.0	60	9.2	120	18.3
1	22 45.3	22 49.0	21 43.1	1	.2	61	9.3	121	18.5
2	22 45.5	22 49.3	21 43.3	2	.3	62	9.5	122	18.6
3	22 45.8	22 49.5	21 43.5	3	.5	63	9.6	123	18.8
4	22 46.0	22 49.8	21 43.8	4	.6	64	9.8	124	18.9
5	22 46.3	22 50.0	21 44.0	5	.8	65	9.9	125	19.1
6	22 46.5	22 50.3	21 44.2	6	.9	66	10.1	126	19.2
7	22 46.8	22 50.5	21 44.5	7	1.1	67	10.2	127	19.4
8	22 47.0	22 50.8	21 44.7	8	1.2	68	10.4	128	19.5
9	22 47.3	22 51.0	21 45.0	9	1.4	69	10.5	129	19.7
10	22 47.5	22 51.3	21 45.2	10	1.5	70	10.7	130	19.8
11	22 47.8	22 51.5	21 45.4	11	1.7	71	10.8	131	20.0
12	22 48.0	22 51.8	21 45.7	12	1.8	72	11.0	132	20.1
13	22 48.3	22 52.1	21 45.9	13	2.0	73	11.1	133	20.3
14	22 48.5	22 52.3	21 46.2	14	2.1	74	11.3	134	20.4
15	22 48.8	22 52.6	21 46.4	15	2.3	75	11.4	135	20.6
16	22 49.0	22 52.8	21 46.6	16	2.4	76	11.6	136	20.7
17	22 49.3	22 53.1	21 46.9	17	2.6	77	11.7	137	20.9
18	22 49.5	22 53.3	21 47.1	18	2.7	78	11.9	138	21.0
19	22 49.8	22 53.6	21 47.4	19	2.9	79	12.0	139	21.2
20	22 50.0	22 53.8	21 47.6	20	3.1	80	12.2	140	21.4
21	22 50.3	22 54.1	21 47.8	21	3.2	81	12.4	141	21.5
22	22 50.5	22 54.3	21 48.1	22	3.4	82	12.5	142	21.7
23	22 50.8	22 54.6	21 48.3	23	3.5	83	12.7	143	21.8
24	22 51.0	22 54.8	21 48.5	24	3.7	84	12.8	144	22.0
25	22 51.3	22 55.1	21 48.8	25	3.8	85	13.0	145	22.1
26	22 51.5	22 55.3	21 49.0	26	4.0	86	13.1	146	22.3
27	22 51.8	22 55.6	21 49.3	27	4.1	87	13.3	147	22.4
28	22 52.0	22 55.8	21 49.5	28	4.3	88	13.4	148	22.6
29	22 52.3	22 56.1	21 49.7	29	4.4	89	13.6	149	22.7
30	22 52.5	22 56.3	21 50.0	30	4.6	90	13.7	150	22.9
31	22 52.8	22 56.6	21 50.2	31	4.7	91	13.9	151	23.0
32	22 53.0	22 56.8	21 50.5	32	4.9	92	14.0	152	23.2
33	22 53.3	22 57.1	21 50.7	33	5.0	93	14.2	153	23.3
34	22 53.5	22 57.3	21 50.9	34	5.2	94	14.3	154	23.5
35	22 53.8	22 57.6	21 51.2	35	5.3	95	14.5	155	23.6
36	22 54.0	22 57.8	21 51.4	36	5.5	96	14.6	156	23.8
37	22 54.3	22 58.1	21 51.6	37	5.6	97	14.8	157	23.9
38	22 54.5	22 58.3	21 51.9	38	5.8	98	14.9	158	24.1
39	22 54.8	22 58.6	21 52.1	39	5.9	99	15.1	159	24.2
40	22 55.0	22 58.8	21 52.4	40	6.1	100	15.3	160	24.4
41	22 55.3	22 59.1	21 52.6	41	6.3	101	15.4	161	24.6
42	22 55.5	22 59.3	21 52.8	42	6.4	102	15.6	162	24.7
43	22 55.8	22 59.6	21 53.1	43	6.6	103	15.7	163	24.9
44	22 56.0	22 59.8	21 53.3	44	6.7	104	15.9	164	25.0
45	22 56.3	23 .1	21 53.6	45	6.9	105	16.0	165	25.2
46	22 56.5	23 .3	21 53.8	46	7.0	106	16.2	166	25.3
47	22 56.8	23 .6	21 54.0	47	7.2	107	16.3	167	25.5
48	22 57.0	23 .8	21 54.3	48	7.3	108	16.5	168	25.6
49	22 57.3	23 1.1	21 54.5	49	7.5	109	16.6	169	25.8
50	22 57.5	23 1.3	21 54.7	50	7.6	110	16.8	170	25.9
51	22 57.8	23 1.6	21 55.0	51	7.8	111	16.9	171	26.1
52	22 58.0	23 1.8	21 55.2	52	7.9	112	17.1	172	26.2
53	22 58.3	23 2.1	21 55.5	53	8.1	113	17.2	173	26.4
54	22 58.5	23 2.3	21 55.7	54	8.2	114	17.4	174	26.5
55	22 58.8	23 2.6	21 55.9	55	8.4	115	17.5	175	26.7
56	22 59.0	23 2.8	21 56.2	56	8.5	116	17.7	176	26.8
57	22 59.3	23 3.1	21 56.4	57	8.7	117	17.8	177	27.0
58	22 59.5	23 3.3	21 56.7	58	8.8	118	18.0	178	27.1
59	22 59.8	23 3.6	21 56.9	59	9.0	119	18.1	179	27.3
60	23 .0	23 3.8	21 57.1	60	9.2	120	18.3	180	27.5

1 h 32 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	23	.0	23	3.8	21	57.1	0	.0	60	9.3	120	18.5
1	23	.3	23	4.1	21	57.4	1	.2	61	9.4	121	18.7
2	23	.5	23	4.3	21	57.6	2	.3	62	9.6	122	18.8
3	23	.8	23	4.6	21	57.8	3	.5	63	9.7	123	19.0
4	23	1.0	23	4.8	21	58.1	4	.6	64	9.9	124	19.1
5	23	1.3	23	5.1	21	58.3	5	.8	65	10.0	125	19.3
6	23	1.5	23	5.3	21	58.6	6	.9	66	10.2	126	19.4
7	23	1.8	23	5.6	21	58.8	7	1.1	67	10.3	127	19.6
8	23	2.0	23	5.8	21	59.0	8	1.2	68	10.5	128	19.7
9	23	2.3	23	6.1	21	59.3	9	1.4	69	10.6	129	19.9
10	23	2.5	23	6.3	21	59.5	10	1.5	70	10.8	130	20.0
11	23	2.8	23	6.6	21	59.8	11	1.7	71	10.9	131	20.2
12	23	3.0	23	6.8	21	60.0	12	1.9	72	11.1	132	20.4
13	23	3.3	23	7.1	22	.2	13	2.0	73	11.3	133	20.5
14	23	3.5	23	7.3	22	.5	14	2.2	74	11.4	134	20.7
15	23	3.8	23	7.6	22	.7	15	2.3	75	11.6	135	20.8
16	23	4.0	23	7.8	22	1.0	16	2.5	76	11.7	136	21.0
17	23	4.3	23	8.1	22	1.2	17	2.6	77	11.9	137	21.1
18	23	4.5	23	8.3	22	1.4	18	2.8	78	12.0	138	21.3
19	23	4.8	23	8.6	22	1.7	19	2.9	79	12.2	139	21.4
20	23	5.0	23	8.8	22	1.9	20	3.1	80	12.3	140	21.6
21	23	5.3	23	9.1	22	2.1	21	3.2	81	12.5	141	21.7
22	23	5.5	23	9.3	22	2.4	22	3.4	82	12.6	142	21.9
23	23	5.8	23	9.6	22	2.6	23	3.5	83	12.8	143	22.0
24	23	6.0	23	9.9	22	2.9	24	3.7	84	13.0	144	22.2
25	23	6.3	23	10.1	22	3.1	25	3.9	85	13.1	145	22.4
26	23	6.5	23	10.4	22	3.3	26	4.0	86	13.3	146	22.5
27	23	6.8	23	10.6	22	3.6	27	4.2	87	13.4	147	22.7
28	23	7.0	23	10.9	22	3.8	28	4.3	88	13.6	148	22.8
29	23	7.3	23	11.1	22	4.1	29	4.5	89	13.7	149	23.0
30	23	7.5	23	11.4	22	4.3	30	4.6	90	13.9	150	23.1
31	23	7.8	23	11.6	22	4.5	31	4.8	91	14.0	151	23.3
32	23	8.0	23	11.9	22	4.8	32	4.9	92	14.2	152	23.4
33	23	8.3	23	12.1	22	5.0	33	5.1	93	14.3	153	23.6
34	23	8.5	23	12.4	22	5.2	34	5.2	94	14.5	154	23.7
35	23	8.8	23	12.6	22	5.5	35	5.4	95	14.6	155	23.9
36	23	9.0	23	12.9	22	5.7	36	5.6	96	14.8	156	24.1
37	23	9.3	23	13.1	22	6.0	37	5.7	97	15.0	157	24.2
38	23	9.5	23	13.4	22	6.2	38	5.9	98	15.1	158	24.4
39	23	9.8	23	13.6	22	6.4	39	6.0	99	15.3	159	24.5
40	23	10.0	23	13.9	22	6.7	40	6.2	100	15.4	160	24.7
41	23	10.3	23	14.1	22	6.9	41	6.3	101	15.6	161	24.8
42	23	10.5	23	14.4	22	7.2	42	6.5	102	15.7	162	25.0
43	23	10.8	23	14.6	22	7.4	43	6.6	103	15.9	163	25.1
44	23	11.0	23	14.9	22	7.6	44	6.8	104	16.0	164	25.3
45	23	11.3	23	15.1	22	7.9	45	6.9	105	16.2	165	25.4
46	23	11.5	23	15.4	22	8.1	46	7.1	106	16.3	166	25.6
47	23	11.8	23	15.6	22	8.3	47	7.2	107	16.5	167	25.7
48	23	12.0	23	15.9	22	8.6	48	7.4	108	16.7	168	25.9
49	23	12.3	23	16.1	22	8.8	49	7.6	109	16.8	169	26.1
50	23	12.5	23	16.4	22	9.1	50	7.7	110	17.0	170	26.2
51	23	12.8	23	16.6	22	9.3	51	7.9	111	17.1	171	26.4
52	23	13.0	23	16.9	22	9.5	52	8.0	112	17.3	172	26.5
53	23	13.3	23	17.1	22	9.8	53	8.2	113	17.4	173	26.7
54	23	13.5	23	17.4	22	10.0	54	8.3	114	17.6	174	26.8
55	23	13.8	23	17.6	22	10.3	55	8.5	115	17.7	175	27.0
56	23	14.0	23	17.9	22	10.5	56	8.6	116	17.9	176	27.1
57	23	14.3	23	18.1	22	10.7	57	8.8	117	18.0	177	27.3
58	23	14.5	23	18.4	22	11.0	58	8.9	118	18.2	178	27.4
59	23	14.8	23	18.6	22	11.2	59	9.1	119	18.3	179	27.6
60	23	15.0	23	18.9	22	11.5	60	9.3	120	18.5	180	27.8

1 h 33 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	23	15.0	23	18.9	22	11.5	0	.0	60	9.4	120	18.7
1	23	15.3	23	19.1	22	11.7	1	.2	61	9.5	121	18.9
2	23	15.5	23	19.4	22	11.9	2	.3	62	9.7	122	19.0
3	23	15.8	23	19.6	22	12.2	3	.5	63	9.8	123	19.2
4	23	16.0	23	19.9	22	12.4	4	.6	64	10.0	124	19.3
5	23	16.3	23	20.1	22	12.6	5	.8	65	10.1	125	19.5
6	23	16.5	23	20.4	22	12.9	6	.9	66	10.3	126	19.6
7	23	16.8	23	20.6	22	13.1	7	1.1	67	10.4	127	19.8
8	23	17.0	23	20.9	22	13.4	8	1.2	68	10.6	128	19.9
9	23	17.3	23	21.1	22	13.6	9	1.4	69	10.8	129	20.1
10	23	17.5	23	21.4	22	13.8	10	1.6	70	10.9	130	20.3
11	23	17.8	23	21.6	22	14.1	11	1.7	71	11.1	131	20.4
12	23	18.0	23	21.9	22	14.3	12	1.9	72	11.2	132	20.6
13	23	18.3	23	22.1	22	14.6	13	2.0	73	11.4	133	20.7
14	23	18.5	23	22.4	22	14.8	14	2.2	74	11.5	134	20.9
15	23	18.8	23	22.6	22	15.0	15	2.3	75	11.7	135	21.0
16	23	19.0	23	22.9	22	15.3	16	2.5	76	11.8	136	21.2
17	23	19.3	23	23.1	22	15.5	17	2.6	77	12.0	137	21.3
18	23	19.5	23	23.4	22	15.7	18	2.8	78	12.2	138	21.5
19	23	19.8	23	23.6	22	16.0	19	3.0	79	12.3	139	21.7
20	23	20.0	23	23.9	22	16.2	20	3.1	80	12.5	140	21.8
21	23	20.3	23	24.1	22	16.5	21	3.3	81	12.6	141	22.0
22	23	20.5	23	24.4	22	16.7	22	3.4	82	12.8	142	22.1
23	23	20.8	23	24.6	22	16.9	23	3.6	83	12.9	143	22.3
24	23	21.0	23	24.9	22	17.2	24	3.7	84	13.1	144	22.4
25	23	21.3	23	25.1	22	17.4	25	3.9	85	13.2	145	22.6
26	23	21.5	23	25.4	22	17.7	26	4.1	86	13.4	146	22.8
27	23	21.8	23	25.6	22	17.9	27	4.2	87	13.6	147	22.9
28	23	22.0	23	25.9	22	18.1	28	4.4	88	13.7	148	23.1
29	23	22.3	23	26.1	22	18.4	29	4.5	89	13.9	149	23.2
30	23	22.5	23	26.4	22	18.6	30	4.7	90	14.0	150	23.4
31	23	22.8	23	26.6	22	18.8	31	4.8	91	14.2	151	23.5
32	23	23.0	23	26.9	22	19.1	32	5.0	92	14.3	152	23.7
33	23	23.3	23	27.1	22	19.3	33	5.1	93	14.5	153	23.8
34	23	23.5	23	27.4	22	19.6	34	5.3	94	14.6	154	24.0
35	23	23.8	23	27.6	22	19.8	35	5.5	95	14.8	155	24.2
36	23	24.0	23	27.9	22	20.0	36	5.6	96	15.0	156	24.3
37	23	24.3	23	28.2	22	20.3	37	5.8	97	15.1	157	24.5
38	23	24.5	23	28.4	22	20.5	38	5.9	98	15.3	158	24.6
39	23	24.8	23	28.7	22	20.8	39	6.1	99	15.4	159	24.8
40	23	25.0	23	28.9	22	21.0	40	6.2	100	15.6	160	24.9
41	23	25.3	23	29.2	22	21.2	41	6.4	101	15.7	161	25.1
42	23	25.5	23	29.4	22	21.5	42	6.5	102	15.9	162	25.2
43	23	25.8	23	29.7	22	21.7	43	6.7	103	16.1	163	25.4
44	23	26.0	23	29.9	22	21.9	44	6.9	104	16.2	164	25.6
45	23	26.3	23	30.2	22	22.2	45	7.0	105	16.4	165	25.7
46	23	26.5	23	30.4	22	22.4	46	7.2	106	16.5	166	25.9
47	23	26.8	23	30.7	22	22.7	47	7.3	107	16.7	167	26.0
48	23	27.0	23	30.9	22	22.9	48	7.5	108	16.8	168	26.2
49	23	27.3	23	31.2	22	23.1	49	7.6	10			

1 h 34 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	23 30.0	23 33.9	22 25.8	0 .0	60 9.5	120 18.9
1	23 30.3	23 34.2	22 26.0	1 .2	61 9.6	121 19.1
2	23 30.5	23 34.4	22 26.2	2 .3	62 9.8	122 19.2
3	23 30.8	23 34.7	22 26.5	3 .5	63 9.9	123 19.4
4	23 31.0	23 34.9	22 26.7	4 .6	64 10.1	124 19.5
5	23 31.3	23 35.2	22 27.0	5 .8	65 10.2	125 19.7
6	23 31.5	23 35.4	22 27.2	6 .9	66 10.4	126 19.8
7	23 31.8	23 35.7	22 27.4	7 1.1	67 10.6	127 20.0
8	23 32.0	23 35.9	22 27.7	8 1.3	68 10.7	128 20.2
9	23 32.3	23 36.2	22 27.9	9 1.4	69 10.9	129 20.3
10	23 32.5	23 36.4	22 28.2	10 1.6	70 11.0	130 20.5
11	23 32.8	23 36.7	22 28.4	11 1.7	71 11.2	131 20.6
12	23 33.0	23 36.9	22 28.6	12 1.9	72 11.3	132 20.8
13	23 33.3	23 37.2	22 28.9	13 2.0	73 11.5	133 20.9
14	23 33.5	23 37.4	22 29.1	14 2.2	74 11.7	134 21.1
15	23 33.8	23 37.7	22 29.3	15 2.4	75 11.8	135 21.3
16	23 34.0	23 37.9	22 29.6	16 2.5	76 12.0	136 21.4
17	23 34.3	23 38.2	22 29.8	17 2.7	77 12.1	137 21.6
18	23 34.5	23 38.4	22 30.1	18 2.8	78 12.3	138 21.7
19	23 34.8	23 38.7	22 30.3	19 3.0	79 12.4	139 21.9
20	23 35.0	23 38.9	22 30.5	20 3.2	80 12.6	140 22.1
21	23 35.3	23 39.2	22 30.8	21 3.3	81 12.8	141 22.2
22	23 35.5	23 39.4	22 31.0	22 3.5	82 12.9	142 22.4
23	23 35.8	23 39.7	22 31.3	23 3.6	83 13.1	143 22.5
24	23 36.0	23 39.9	22 31.5	24 3.8	84 13.2	144 22.7
25	23 36.3	23 40.2	22 31.7	25 3.9	85 13.4	145 22.8
26	23 36.5	23 40.4	22 32.0	26 4.1	86 13.5	146 23.0
27	23 36.8	23 40.7	22 32.2	27 4.3	87 13.7	147 23.2
28	23 37.0	23 40.9	22 32.4	28 4.4	88 13.9	148 23.3
29	23 37.3	23 41.2	22 32.7	29 4.6	89 14.0	149 23.5
30	23 37.5	23 41.4	22 32.9	30 4.7	90 14.2	150 23.6
31	23 37.8	23 41.7	22 33.2	31 4.9	91 14.3	151 23.8
32	23 38.0	23 41.9	22 33.4	32 5.0	92 14.5	152 23.9
33	23 38.3	23 42.2	22 33.6	33 5.2	93 14.6	153 24.1
34	23 38.5	23 42.4	22 33.9	34 5.4	94 14.8	154 24.3
35	23 38.8	23 42.7	22 34.1	35 5.5	95 15.0	155 24.4
36	23 39.0	23 42.9	22 34.4	36 5.7	96 15.1	156 24.6
37	23 39.3	23 43.2	22 34.6	37 5.8	97 15.3	157 24.7
38	23 39.5	23 43.4	22 34.8	38 6.0	98 15.4	158 24.9
39	23 39.8	23 43.7	22 35.1	39 6.1	99 15.6	159 25.0
40	23 40.0	23 43.9	22 35.3	40 6.3	100 15.8	160 25.2
41	23 40.3	23 44.2	22 35.5	41 6.5	101 15.9	161 25.4
42	23 40.5	23 44.4	22 35.8	42 6.6	102 16.1	162 25.5
43	23 40.8	23 44.7	22 36.0	43 6.8	103 16.2	163 25.7
44	23 41.0	23 44.9	22 36.3	44 6.9	104 16.4	164 25.8
45	23 41.3	23 45.2	22 36.5	45 7.1	105 16.5	165 26.0
46	23 41.5	23 45.4	22 36.7	46 7.2	106 16.7	166 26.1
47	23 41.8	23 45.7	22 37.0	47 7.4	107 16.9	167 26.3
48	23 42.0	23 46.0	22 37.2	48 7.6	108 17.0	168 26.5
49	23 42.3	23 46.2	22 37.5	49 7.7	109 17.2	169 26.6
50	23 42.5	23 46.5	22 37.7	50 7.9	110 17.3	170 26.8
51	23 42.8	23 46.7	22 37.9	51 8.0	111 17.5	171 26.9
52	23 43.0	23 47.0	22 38.2	52 8.2	112 17.6	172 27.1
53	23 43.3	23 47.2	22 38.4	53 8.3	113 17.8	173 27.2
54	23 43.5	23 47.5	22 38.7	54 8.5	114 18.0	174 27.4
55	23 43.8	23 47.7	22 38.9	55 8.7	115 18.1	175 27.6
56	23 44.0	23 48.0	22 39.1	56 8.8	116 18.3	176 27.7
57	23 44.3	23 48.2	22 39.4	57 9.0	117 18.4	177 27.9
58	23 44.5	23 48.5	22 39.6	58 9.1	118 18.6	178 28.0
59	23 44.8	23 48.7	22 39.8	59 9.3	119 18.7	179 28.2
60	23 45.0	23 49.0	22 40.1	60 9.5	120 18.9	180 28.4

1 h 35 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	23 45.0	23 49.0	22 40.1	0 .0	60 9.6	120 19.1
1	23 45.3	23 49.2	22 40.3	1 .2	61 9.7	121 19.3
2	23 45.5	23 49.5	22 40.6	2 .3	62 9.9	122 19.4
3	23 45.8	23 49.7	22 40.8	3 .5	63 10.0	123 19.6
4	23 46.0	23 50.0	22 41.0	4 .6	64 10.2	124 19.7
5	23 46.3	23 50.2	22 41.3	5 .8	65 10.3	125 19.9
6	23 46.5	23 50.5	22 41.5	6 1.0	66 10.5	126 20.1
7	23 46.8	23 50.7	22 41.8	7 1.1	67 10.7	127 20.2
8	23 47.0	23 51.0	22 42.0	8 1.3	68 10.8	128 20.4
9	23 47.3	23 51.2	22 42.2	9 1.4	69 11.0	129 20.5
10	23 47.5	23 51.5	22 42.5	10 1.6	70 11.1	130 20.7
11	23 47.8	23 51.7	22 42.7	11 1.8	71 11.3	131 20.9
12	23 48.0	23 52.0	22 42.9	12 1.9	72 11.5	132 21.0
13	23 48.3	23 52.2	22 43.2	13 2.1	73 11.6	133 21.2
14	23 48.5	23 52.5	22 43.4	14 2.2	74 11.8	134 21.3
15	23 48.8	23 52.7	22 43.7	15 2.4	75 11.9	135 21.5
16	23 49.0	23 53.0	22 43.9	16 2.5	76 12.1	136 21.6
17	23 49.3	23 53.2	22 44.1	17 2.7	77 12.3	137 21.8
18	23 49.5	23 53.5	22 44.4	18 2.9	78 12.4	138 22.0
19	23 49.8	23 53.7	22 44.6	19 3.0	79 12.6	139 22.1
20	23 50.0	23 54.0	22 44.9	20 3.2	80 12.7	140 22.3
21	23 50.3	23 54.2	22 45.1	21 3.3	81 12.9	141 22.4
22	23 50.5	23 54.5	22 45.3	22 3.5	82 13.1	142 22.6
23	23 50.8	23 54.7	22 45.6	23 3.7	83 13.2	143 22.8
24	23 51.0	23 55.0	22 45.8	24 3.8	84 13.4	144 22.9
25	23 51.3	23 55.2	22 46.0	25 4.0	85 13.5	145 23.1
26	23 51.5	23 55.5	22 46.3	26 4.1	86 13.7	146 23.2
27	23 51.8	23 55.7	22 46.5	27 4.3	87 13.8	147 23.4
28	23 52.0	23 56.0	22 46.8	28 4.5	88 14.0	148 23.6
29	23 52.3	23 56.2	22 47.0	29 4.6	89 14.2	149 23.7
30	23 52.5	23 56.5	22 47.2	30 4.8	90 14.3	150 23.9
31	23 52.8	23 56.7	22 47.5	31 4.9	91 14.5	151 24.0
32	23 53.0	23 57.0	22 47.7	32 5.1	92 14.6	152 24.2
33	23 53.3	23 57.2	22 48.0	33 5.3	93 14.8	153 24.4
34	23 53.5	23 57.5	22 48.2	34 5.4	94 15.0	154 24.5
35	23 53.8	23 57.7	22 48.4	35 5.6	95 15.1	155 24.7
36	23 54.0	23 58.0	22 48.7	36 5.7	96 15.3	156 24.8
37	23 54.3	23 58.2	22 48.9	37 5.9	97 15.4	157 25.0
38	23 54.5	23 58.5	22 49.2	38 6.0	98 15.6	158 25.1
39	23 54.8	23 58.7	22 49.4	39 6.2	99 15.8	159 25.3
40	23 55.0	23 59.0	22 49.6	40 6.4	100 15.9	160 25.5
41	23 55.3	23 59.2	22 49.9	41 6.5	101 16.1	161 25.6
42	23 55.5	23 59.5	22 50.1	42 6.7	102 16.2	162 25.8
43	23 55.8	23 59.7	22 50.3	43 6.8	103 16.4	163 25.9
44	23 56.0	23 60.0	22 50.6	44 7.0	104 16.6	164 26.1
45	23 56.3	24 .2	22 50.8	45 7.2	105 16.7	165 26.3
46	23 56.5	24 .5	22 51.1	46 7.3	106 16.9	166 26.4
47	23 56.8	24 .7	22 51.3	47 7.5	107 17.0	167 26.6
48	23 57.0	24 1.0	22 51.5	48 7.6	108 17.2	168 26.7
49	23 57.3	24 1.2	22 51.8	49 7.8	109 17.3	169 26.9
50	23 57.5	24 1.5	22 52.0	50 8.0	110 17.5	170 27.1
51	23 57.8	24 1.7	22 52.3	51 8.1	111 17.7	171 27.2
52	23 58.0	24 2.0	22 52.5	52 8.3	112 17.8	172 27.4
53	23 58.3	24 2.2	22 52.7	53 8.4	113 18.0	173 27.5
54	23 58.5	24 2.5	22 53.0	54 8.6	114 18.1	174 27.7
55	23 58.8	24 2.7	22 53.2	55 8.8	115 18.3	175 27.9
56	23 59.0	24 3.0	22 53.4	56 8.9	116 18.5	176 28.0
57	23 59.3	24 3.2	22 53.7	57 9.1	117 18.6	177 28.2
58	23 59.5	24 3.5	22 53.9	58 9.2	118 18.8	178 28.3
59	23 59.8	24 3.7	22 54.2	59 9.4	119 18.9	179 28.5
60	24 .0	24 4.0	22 54.4	60 9.6	120 19.1	180 28.7

1 h 36 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	24 .0	24 4.0	22 54.4	0 .0	60 9.7	120 19.3
1	24 .3	24 4.3	22 54.6	1 .2	61 9.8	121 19.5
2	24 .5	24 4.5	22 54.9	2 .3	62 10.0	122 19.6
3	24 .8	24 4.8	22 55.1	3 .5	63 10.1	123 19.8
4	24 1.0	24 5.0	22 55.4	4 .6	64 10.3	124 19.9
5	24 1.3	24 5.3	22 55.6	5 .8	65 10.5	125 20.1
6	24 1.5	24 5.5	22 55.8	6 1.0	66 10.6	126 20.3
7	24 1.8	24 5.8	22 56.1	7 1.1	67 10.8	127 20.4
8	24 2.0	24 6.0	22 56.3	8 1.3	68 10.9	128 20.6
9	24 2.3	24 6.3	22 56.5	9 1.4	69 11.1	129 20.7
10	24 2.5	24 6.5	22 56.8	10 1.6	70 11.3	130 20.9
11	24 2.8	24 6.8	22 57.0	11 1.8	71 11.4	131 21.1
12	24 3.0	24 7.0	22 57.3	12 1.9	72 11.6	132 21.2
13	24 3.3	24 7.3	22 57.5	13 2.1	73 11.7	133 21.4
14	24 3.5	24 7.5	22 57.7	14 2.3	74 11.9	134 21.6
15	24 3.8	24 7.8	22 58.0	15 2.4	75 12.1	135 21.7
16	24 4.0	24 8.0	22 58.2	16 2.6	76 12.2	136 21.9
17	24 4.3	24 8.3	22 58.5	17 2.7	77 12.4	137 22.0
18	24 4.5	24 8.5	22 58.7	18 2.9	78 12.5	138 22.2
19	24 4.8	24 8.8	22 58.9	19 3.1	79 12.7	139 22.4
20	24 5.0	24 9.0	22 59.2	20 3.2	80 12.9	140 22.5
21	24 5.3	24 9.3	22 59.4	21 3.4	81 13.0	141 22.7
22	24 5.5	24 9.5	22 59.6	22 3.5	82 13.2	142 22.8
23	24 5.8	24 9.8	22 59.9	23 3.7	83 13.3	143 23.0
24	24 6.0	24 10.0	23 .1	24 3.9	84 13.5	144 23.2
25	24 6.3	24 10.3	23 .4	25 4.0	85 13.7	145 23.3
26	24 6.5	24 10.5	23 .6	26 4.2	86 13.8	146 23.5
27	24 6.8	24 10.8	23 .8	27 4.3	87 14.0	147 23.6
28	24 7.0	24 11.0	23 1.1	28 4.5	88 14.2	148 23.8
29	24 7.3	24 11.3	23 1.3	29 4.7	89 14.3	149 24.0
30	24 7.5	24 11.5	23 1.6	30 4.8	90 14.5	150 24.1
31	24 7.8	24 11.8	23 1.8	31 5.0	91 14.6	151 24.3
32	24 8.0	24 12.0	23 2.0	32 5.1	92 14.8	152 24.4
33	24 8.3	24 12.3	23 2.3	33 5.3	93 15.0	153 24.6
34	24 8.5	24 12.5	23 2.5	34 5.5	94 15.1	154 24.8
35	24 8.8	24 12.8	23 2.8	35 5.6	95 15.3	155 24.9
36	24 9.0	24 13.0	23 3.0	36 5.8	96 15.4	156 25.1
37	24 9.3	24 13.3	23 3.2	37 6.0	97 15.6	157 25.3
38	24 9.5	24 13.5	23 3.5	38 6.1	98 15.8	158 25.4
39	24 9.8	24 13.8	23 3.7	39 6.3	99 15.9	159 25.6
40	24 10.0	24 14.0	23 3.9	40 6.4	100 16.1	160 25.7
41	24 10.3	24 14.3	23 4.2	41 6.6	101 16.2	161 25.9
42	24 10.5	24 14.5	23 4.4	42 6.8	102 16.4	162 26.1
43	24 10.8	24 14.8	23 4.7	43 6.9	103 16.6	163 26.2
44	24 11.0	24 15.0	23 4.9	44 7.1	104 16.7	164 26.4
45	24 11.3	24 15.3	23 5.1	45 7.2	105 16.9	165 26.5
46	24 11.5	24 15.5	23 5.4	46 7.4	106 17.0	166 26.7
47	24 11.8	24 15.8	23 5.6	47 7.6	107 17.2	167 26.9
48	24 12.0	24 16.0	23 5.9	48 7.7	108 17.4	168 27.0
49	24 12.3	24 16.3	23 6.1	49 7.9	109 17.5	169 27.2
50	24 12.5	24 16.5	23 6.3	50 8.0	110 17.7	170 27.3
51	24 12.8	24 16.8	23 6.6	51 8.2	111 17.9	171 27.5
52	24 13.0	24 17.0	23 6.8	52 8.4	112 18.0	172 27.7
53	24 13.3	24 17.3	23 7.0	53 8.5	113 18.2	173 27.8
54	24 13.5	24 17.5	23 7.3	54 8.7	114 18.3	174 28.0
55	24 13.8	24 17.8	23 7.5	55 8.8	115 18.5	175 28.1
56	24 14.0	24 18.0	23 7.8	56 9.0	116 18.7	176 28.3
57	24 14.3	24 18.3	23 8.0	57 9.2	117 18.8	177 28.5
58	24 14.5	24 18.5	23 8.2	58 9.3	118 19.0	178 28.6
59	24 14.8	24 18.8	23 8.5	59 9.5	119 19.1	179 28.8
60	24 15.0	24 19.0	23 8.7	60 9.7	120 19.3	180 29.0

1 h 37 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	24 15.0	24 19.0	23 8.7	0 .0	60 9.8	120 19.5
1	24 15.3	24 19.3	23 9.0	1 .2	61 9.9	121 19.7
2	24 15.5	24 19.5	23 9.2	2 .3	62 10.1	122 19.8
3	24 15.8	24 19.8	23 9.4	3 .5	63 10.2	123 20.0
4	24 16.0	24 20.0	23 9.7	4 .7	64 10.4	124 20.2
5	24 16.3	24 20.3	23 9.9	5 .8	65 10.6	125 20.3
6	24 16.5	24 20.5	23 10.1	6 1.0	66 10.7	126 20.5
7	24 16.8	24 20.8	23 10.4	7 1.1	67 10.9	127 20.6
8	24 17.0	24 21.0	23 10.6	8 1.3	68 11.1	128 20.8
9	24 17.3	24 21.3	23 10.9	9 1.5	69 11.2	129 21.0
10	24 17.5	24 21.5	23 11.1	10 1.6	70 11.4	130 21.1
11	24 17.8	24 21.8	23 11.3	11 1.8	71 11.5	131 21.3
12	24 18.0	24 22.1	23 11.6	12 2.0	72 11.7	132 21.5
13	24 18.3	24 22.3	23 11.8	13 2.1	73 11.9	133 21.6
14	24 18.5	24 22.6	23 12.1	14 2.3	74 12.0	134 21.8
15	24 18.8	24 22.8	23 12.3	15 2.4	75 12.2	135 21.9
16	24 19.0	24 23.1	23 12.5	16 2.6	76 12.4	136 22.1
17	24 19.3	24 23.3	23 12.8	17 2.8	77 12.5	137 22.3
18	24 19.5	24 23.6	23 13.0	18 2.9	78 12.7	138 22.4
19	24 19.8	24 23.8	23 13.3	19 3.1	79 12.8	139 22.6
20	24 20.0	24 24.1	23 13.5	20 3.3	80 13.0	140 22.8
21	24 20.3	24 24.3	23 13.7	21 3.4	81 13.2	141 22.9
22	24 20.5	24 24.6	23 14.0	22 3.6	82 13.3	142 23.1
23	24 20.8	24 24.8	23 14.2	23 3.7	83 13.5	143 23.2
24	24 21.0	24 25.1	23 14.4	24 3.9	84 13.7	144 23.4
25	24 21.3	24 25.3	23 14.7	25 4.1	85 13.8	145 23.6
26	24 21.5	24 25.6	23 14.9	26 4.2	86 14.0	146 23.7
27	24 21.8	24 25.8	23 15.2	27 4.4	87 14.1	147 23.9
28	24 22.0	24 26.1	23 15.4	28 4.6	88 14.3	148 24.1
29	24 22.3	24 26.3	23 15.6	29 4.7	89 14.5	149 24.2
30	24 22.5	24 26.6	23 15.9	30 4.9	90 14.6	150 24.4
31	24 22.8	24 26.8	23 16.1	31 5.0	91 14.8	151 24.5
32	24 23.0	24 27.1	23 16.4	32 5.2	92 15.0	152 24.7
33	24 23.3	24 27.3	23 16.6	33 5.4	93 15.1	153 24.9
34	24 23.5	24 27.6	23 16.8	34 5.5	94 15.3	154 25.0
35	24 23.8	24 27.8	23 17.1	35 5.7	95 15.4	155 25.2
36	24 24.0	24 28.1	23 17.3	36 5.9	96 15.6	156 25.4
37	24 24.3	24 28.3	23 17.5	37 6.0	97 15.8	157 25.5
38	24 24.5	24 28.6	23 17.8	38 6.2	98 15.9	158 25.7
39	24 24.8	24 28.8	23 18.0	39 6.3	99 16.1	159 25.8
40	24 25.0	24 29.1	23 18.3	40 6.5	100 16.3	160 26.0
41	24 25.3	24 29.3	23 18.5	41 6.7	101 16.4	161 26.2
42	24 25.5	24 29.6	23 18.7	42 6.8	102 16.6	162 26.3
43	24 25.8	24 29.8	23 19.0	43 7.0	103 16.7	163 26.5
44	24 26.0	24 30.1	23 19.2	44 7.2	104 16.9	164 26.7
45	24 26.3	24 30.3	23 19.5	45 7.3	105 17.1	165 26.8
46	24 26.5	24 30.6	23 19.7	46 7.5	106 17.2	166 27.0
47	24 26.8	24 30.8	23 19.9	47 7.6	107 17.4	167 27.1
48	24 27.0	24 31.1	23 20.2	48 7.8	108 17.6	168 27.3
49	24 27.3	24 31.3	23 20.4	49 8.0	109 17.7	169 27.5
50	24 27.5	24 31.6	23 20.6	50 8.1	110 17.9	170 27.6
51	24 27.8	24 31.8	23 20.9	51 8.3	111 18.0	171 27.8
52	24 28.0	24 32.1	23 21.1	52 8.5	112 18.2	172 28.0
53	24 28.3	24 32.3	23 21.4	53 8.6	113 18.4	173 28.1
54	24 28.5	24 32.6	23 21.6	54 8.8	114 18.5	174 28.3
55	24 28.8	24 32.8	23 21.8	55 8.9	115 18.7	175 28.4
56	24 29.0	24 33.1	23 22.1	56 9.1	116 18.9	176 28.6
57	24 29.3	24 33.3	23 22.3	57 9.3	117 19.0	177 28.8
58	24 29.5	24 33.6	23 22.6	58 9.4	118 19.2	178 28.9
59	24 29.8	24 33.8	23 22.8	59 9.6	119 19.3	179 29.1
60	24 30.0	24 34.1	23 23.0	60 9.8	120 19.5	180 29.3

1 h 38 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	24 30.0	24 34.1	23 23.0	0 .0	60 9.9	120 19.7
1	24 30.3	24 34.3	23 23.3	1 .2	61 10.0	121 19.9
2	24 30.5	24 34.6	23 23.5	2 .3	62 10.2	122 20.0
3	24 30.8	24 34.8	23 23.7	3 .5	63 10.3	123 20.2
4	24 31.0	24 35.1	23 24.0	4 .7	64 10.5	124 20.4
5	24 31.3	24 35.3	23 24.2	5 .8	65 10.7	125 20.5
6	24 31.5	24 35.6	23 24.5	6 1.0	66 10.8	126 20.7
7	24 31.8	24 35.8	23 24.7	7 1.1	67 11.0	127 20.8
8	24 32.0	24 36.1	23 24.9	8 1.3	68 11.2	128 21.0
9	24 32.3	24 36.3	23 25.2	9 1.5	69 11.3	129 21.2
10	24 32.5	24 36.6	23 25.4	10 1.6	70 11.5	130 21.3
11	24 32.8	24 36.8	23 25.7	11 1.8	71 11.7	131 21.5
12	24 33.0	24 37.1	23 25.9	12 2.0	72 11.8	132 21.7
13	24 33.3	24 37.3	23 26.1	13 2.1	73 12.0	133 21.8
14	24 33.5	24 37.6	23 26.4	14 2.3	74 12.1	134 22.0
15	24 33.8	24 37.8	23 26.6	15 2.5	75 12.3	135 22.2
16	24 34.0	24 38.1	23 26.9	16 2.6	76 12.5	136 22.3
17	24 34.3	24 38.3	23 27.1	17 2.8	77 12.6	137 22.5
18	24 34.5	24 38.6	23 27.3	18 3.0	78 12.8	138 22.7
19	24 34.8	24 38.8	23 27.6	19 3.1	79 13.0	139 22.8
20	24 35.0	24 39.1	23 27.8	20 3.3	80 13.1	140 23.0
21	24 35.3	24 39.3	23 28.0	21 3.4	81 13.3	141 23.1
22	24 35.5	24 39.6	23 28.3	22 3.6	82 13.5	142 23.3
23	24 35.8	24 39.8	23 28.5	23 3.8	83 13.6	143 23.5
24	24 36.0	24 40.1	23 28.8	24 3.9	84 13.8	144 23.6
25	24 36.3	24 40.4	23 29.0	25 4.1	85 14.0	145 23.8
26	24 36.5	24 40.6	23 29.2	26 4.3	86 14.1	146 24.0
27	24 36.8	24 40.9	23 29.5	27 4.4	87 14.3	147 24.1
28	24 37.0	24 41.1	23 29.7	28 4.6	88 14.4	148 24.3
29	24 37.3	24 41.4	23 30.0	29 4.8	89 14.6	149 24.5
30	24 37.5	24 41.6	23 30.2	30 4.9	90 14.8	150 24.6
31	24 37.8	24 41.9	23 30.4	31 5.1	91 14.9	151 24.8
32	24 38.0	24 42.1	23 30.7	32 5.3	92 15.1	152 25.0
33	24 38.3	24 42.4	23 30.9	33 5.4	93 15.3	153 25.1
34	24 38.5	24 42.6	23 31.1	34 5.6	94 15.4	154 25.3
35	24 38.8	24 42.9	23 31.4	35 5.7	95 15.6	155 25.4
36	24 39.0	24 43.1	23 31.6	36 5.9	96 15.8	156 25.6
37	24 39.3	24 43.4	23 31.9	37 6.1	97 15.9	157 25.8
38	24 39.5	24 43.6	23 32.1	38 6.2	98 16.1	158 25.9
39	24 39.8	24 43.9	23 32.3	39 6.4	99 16.3	159 26.1
40	24 40.0	24 44.1	23 32.6	40 6.6	100 16.4	160 26.3
41	24 40.3	24 44.4	23 32.8	41 6.7	101 16.6	161 26.4
42	24 40.5	24 44.6	23 33.1	42 6.9	102 16.7	162 26.6
43	24 40.8	24 44.9	23 33.3	43 7.1	103 16.9	163 26.8
44	24 41.0	24 45.1	23 33.5	44 7.2	104 17.1	164 26.9
45	24 41.3	24 45.4	23 33.8	45 7.4	105 17.2	165 27.1
46	24 41.5	24 45.6	23 34.0	46 7.6	106 17.4	166 27.3
47	24 41.8	24 45.9	23 34.2	47 7.7	107 17.6	167 27.4
48	24 42.0	24 46.1	23 34.5	48 7.9	108 17.7	168 27.6
49	24 42.3	24 46.4	23 34.7	49 8.0	109 17.9	169 27.7
50	24 42.5	24 46.6	23 35.0	50 8.2	110 18.1	170 27.9
51	24 42.8	24 46.9	23 35.2	51 8.4	111 18.2	171 28.1
52	24 43.0	24 47.1	23 35.4	52 8.5	112 18.4	172 28.2
53	24 43.3	24 47.4	23 35.7	53 8.7	113 18.6	173 28.4
54	24 43.5	24 47.6	23 35.9	54 8.9	114 18.7	174 28.6
55	24 43.8	24 47.9	23 36.2	55 9.0	115 18.9	175 28.7
56	24 44.0	24 48.1	23 36.4	56 9.2	116 19.0	176 28.9
57	24 44.3	24 48.4	23 36.6	57 9.4	117 19.2	177 29.1
58	24 44.5	24 48.6	23 36.9	58 9.5	118 19.4	178 29.2
59	24 44.8	24 48.9	23 37.1	59 9.7	119 19.5	179 29.4
60	24 45.0	24 49.1	23 37.4	60 9.9	120 19.7	180 29.6

1 h 39 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	24 45.0	24 49.1	23 37.4	0 .0	60 10.0	120 19.9
1	24 45.3	24 49.4	23 37.6	1 .2	61 10.1	121 20.1
2	24 45.5	24 49.6	23 37.8	2 .3	62 10.3	122 20.2
3	24 45.8	24 49.9	23 38.1	3 .5	63 10.4	123 20.4
4	24 46.0	24 50.1	23 38.3	4 .7	64 10.6	124 20.6
5	24 46.3	24 50.4	23 38.5	5 .8	65 10.8	125 20.7
6	24 46.5	24 50.6	23 38.8	6 1.0	66 10.9	126 20.9
7	24 46.8	24 50.9	23 39.0	7 1.2	67 11.1	127 21.1
8	24 47.0	24 51.1	23 39.3	8 1.3	68 11.3	128 21.2
9	24 47.3	24 51.4	23 39.5	9 1.5	69 11.4	129 21.4
10	24 47.5	24 51.6	23 39.7	10 1.7	70 11.6	130 21.6
11	24 47.8	24 51.9	23 40.0	11 1.8	71 11.8	131 21.7
12	24 48.0	24 52.1	23 40.2	12 2.0	72 11.9	132 21.9
13	24 48.3	24 52.4	23 40.5	13 2.2	73 12.1	133 22.1
14	24 48.5	24 52.6	23 40.7	14 2.3	74 12.3	134 22.2
15	24 48.8	24 52.9	23 40.9	15 2.5	75 12.4	135 22.4
16	24 49.0	24 53.1	23 41.2	16 2.7	76 12.6	136 22.6
17	24 49.3	24 53.4	23 41.4	17 2.8	77 12.8	137 22.7
18	24 49.5	24 53.6	23 41.6	18 3.0	78 12.9	138 22.9
19	24 49.8	24 53.9	23 41.9	19 3.2	79 13.1	139 23.1
20	24 50.0	24 54.1	23 42.1	20 3.3	80 13.3	140 23.2
21	24 50.3	24 54.4	23 42.4	21 3.5	81 13.4	141 23.4
22	24 50.5	24 54.6	23 42.6	22 3.6	82 13.6	142 23.5
23	24 50.8	24 54.9	23 42.8	23 3.8	83 13.8	143 23.7
24	24 51.0	24 55.1	23 43.1	24 4.0	84 13.9	144 23.9
25	24 51.3	24 55.4	23 43.3	25 4.1	85 14.1	145 24.0
26	24 51.5	24 55.6	23 43.6	26 4.3	86 14.3	146 24.2
27	24 51.8	24 55.9	23 43.8	27 4.5	87 14.4	147 24.4
28	24 52.0	24 56.1	23 44.0	28 4.6	88 14.6	148 24.5
29	24 52.3	24 56.4	23 44.3	29 4.8	89 14.8	149 24.7
30	24 52.5	24 56.6	23 44.5	30 5.0	90 14.9	150 24.9
31	24 52.8	24 56.9	23 44.7	31 5.1	91 15.1	151 25.0
32	24 53.0	24 57.1	23 45.0	32 5.3	92 15.3	152 25.2
33	24 53.3	24 57.4	23 45.2	33 5.5	93 15.4	153 25.4
34	24 53.5	24 57.6	23 45.5	34 5.6	94 15.6	154 25.5
35	24 53.8	24 57.9	23 45.7	35 5.8	95 15.8	155 25.7
36	24 54.0	24 58.2	23 45.9	36 6.0	96 15.9	156 25.9
37	24 54.3	24 58.4	23 46.2	37 6.1	97 16.1	157 26.0
38	24 54.5	24 58.7	23 46.4	38 6.3	98 16.3	158 26.2
39	24 54.8	24 58.9	23 46.7	39 6.5	99 16.4	159 26.4
40	24 55.0	24 59.2	23 46.9	40 6.6	100 16.6	160 26.5
41	24 55.3	24 59.4	23 47.1	41 6.8	101 16.7	161 26.7
42	24 55.5	24 59.7	23 47.4	42 7.0	102 16.9	162 26.9
43	24 55.8	24 59.9	23 47.6	43 7.1	103 17.1	163 27.0
44	24 56.0	25 .2	23 47.8	44 7.3	104 17.2	164 27.2
45	24 56.3	25 .4	23 48.1	45 7.5	105 17.4	165 27.4
46	24 56.5	25 .7	23 48.3	46 7.6	106 17.6	166 27.5
47	24 56.8	25 .9	23 48.6	47 7.8	107 17.7	167 27.7
48	24 57.0	25 1.2	23 48.8	48 8.0	108 17.9	168 27.9
49	24 57.3	25 1.4	23 49.0	49 8.1	109 18.1	169 28.0
50	24 57.5	25 1.7	23 49.3	50 8.3	110 18.2	170 28.2
51	24 57.8	25 1.9	23 49.5	51 8.5	111 18.4	171 28.4
52	24 58.0	25 2.2	23 49.8	52 8.6	112 18.6	172 28.5
53	24 58.3	25 2.4	23 50.0	53 8.8	113 18.7	173 28.7
54	24 58.5	25 2.7	23 50.2	54 9.0	114 18.9	174 28.9
55	24 58.8	25 2.9	23 50.5	55 9.1	115 19.1	175 29.0
56	24 59.0	25 3.2	23 50.7	56 9.3	116 19.2	176 29.2
57	24 59.3	25 3.4	23 51.0	57 9.5	117 19.4	177 29.4
58	24 59.5	25 3.7	23 51.2	58 9.6	118 19.6	178 29.5
59	24 59.8	25 3.9	23 51.4	59 9.8	119 19.7	179 29.7
60	25 .0	25 4.2	23 51.7	60 10.0	120 19.9	180 29.9

1 h 40 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	25	.0	25	4.2	23	51.7	0 .0	60 10.1	120 20.1
1	25	.3	25	4.4	23	51.9	1 .2	61 10.2	121 20.3
2	25	.5	25	4.7	23	52.1	2 .3	62 10.4	122 20.4
3	25	.8	25	4.9	23	52.4	3 .5	63 10.6	123 20.6
4	25	1.0	25	5.2	23	52.6	4 .7	64 10.7	124 20.8
5	25	1.3	25	5.4	23	52.9	5 .8	65 10.9	125 20.9
6	25	1.5	25	5.7	23	53.1	6 1.0	66 11.1	126 21.1
7	25	1.8	25	5.9	23	53.3	7 1.2	67 11.2	127 21.3
8	25	2.0	25	6.2	23	53.6	8 1.3	68 11.4	128 21.4
9	25	2.3	25	6.4	23	53.8	9 1.5	69 11.6	129 21.6
10	25	2.5	25	6.7	23	54.1	10 1.7	70 11.7	130 21.8
11	25	2.8	25	6.9	23	54.3	11 1.8	71 11.9	131 21.9
12	25	3.0	25	7.2	23	54.5	12 2.0	72 12.1	132 22.1
13	25	3.3	25	7.4	23	54.8	13 2.2	73 12.2	133 22.3
14	25	3.5	25	7.7	23	55.0	14 2.3	74 12.4	134 22.4
15	25	3.8	25	7.9	23	55.2	15 2.5	75 12.6	135 22.6
16	25	4.0	25	8.2	23	55.5	16 2.7	76 12.7	136 22.8
17	25	4.3	25	8.4	23	55.7	17 2.8	77 12.9	137 22.9
18	25	4.5	25	8.7	23	56.0	18 3.0	78 13.1	138 23.1
19	25	4.8	25	8.9	23	56.2	19 3.2	79 13.2	139 23.3
20	25	5.0	25	9.2	23	56.4	20 3.4	80 13.4	140 23.5
21	25	5.3	25	9.4	23	56.7	21 3.5	81 13.6	141 23.6
22	25	5.5	25	9.7	23	56.9	22 3.7	82 13.7	142 23.8
23	25	5.8	25	9.9	23	57.2	23 3.9	83 13.9	143 24.0
24	25	6.0	25	10.2	23	57.4	24 4.0	84 14.1	144 24.1
25	25	6.3	25	10.4	23	57.6	25 4.2	85 14.2	145 24.3
26	25	6.5	25	10.7	23	57.9	26 4.4	86 14.4	146 24.5
27	25	6.8	25	10.9	23	58.1	27 4.5	87 14.6	147 24.6
28	25	7.0	25	11.2	23	58.3	28 4.7	88 14.7	148 24.8
29	25	7.3	25	11.4	23	58.6	29 4.9	89 14.9	149 25.0
30	25	7.5	25	11.7	23	58.8	30 5.0	90 15.1	150 25.1
31	25	7.8	25	11.9	23	59.1	31 5.2	91 15.2	151 25.3
32	25	8.0	25	12.2	23	59.3	32 5.4	92 15.4	152 25.5
33	25	8.3	25	12.4	23	59.5	33 5.5	93 15.6	153 25.6
34	25	8.5	25	12.7	23	59.8	34 5.7	94 15.7	154 25.8
35	25	8.8	25	12.9	24	.0	35 5.9	95 15.9	155 26.0
36	25	9.0	25	13.2	24	.3	36 6.0	96 16.1	156 26.1
37	25	9.3	25	13.4	24	.5	37 6.2	97 16.2	157 26.3
38	25	9.5	25	13.7	24	.7	38 6.4	98 16.4	158 26.5
39	25	9.8	25	13.9	24	1.0	39 6.5	99 16.6	159 26.6
40	25	10.0	25	14.2	24	1.2	40 6.7	100 16.8	160 26.8
41	25	10.3	25	14.4	24	1.4	41 6.9	101 16.9	161 27.0
42	25	10.5	25	14.7	24	1.7	42 7.0	102 17.1	162 27.1
43	25	10.8	25	14.9	24	1.9	43 7.2	103 17.3	163 27.3
44	25	11.0	25	15.2	24	2.2	44 7.4	104 17.4	164 27.5
45	25	11.3	25	15.4	24	2.4	45 7.5	105 17.6	165 27.6
46	25	11.5	25	15.7	24	2.6	46 7.7	106 17.8	166 27.8
47	25	11.8	25	15.9	24	2.9	47 7.9	107 17.9	167 28.0
48	25	12.0	25	16.2	24	3.1	48 8.0	108 18.1	168 28.1
49	25	12.3	25	16.5	24	3.4	49 8.2	109 18.3	169 28.3
50	25	12.5	25	16.7	24	3.6	50 8.4	110 18.4	170 28.5
51	25	12.8	25	17.0	24	3.8	51 8.5	111 18.6	171 28.6
52	25	13.0	25	17.2	24	4.1	52 8.7	112 18.8	172 28.8
53	25	13.3	25	17.5	24	4.3	53 8.9	113 18.9	173 29.0
54	25	13.5	25	17.7	24	4.6	54 9.0	114 19.1	174 29.1
55	25	13.8	25	18.0	24	4.8	55 9.2	115 19.3	175 29.3
56	25	14.0	25	18.2	24	5.0	56 9.4	116 19.4	176 29.5
57	25	14.3	25	18.5	24	5.3	57 9.5	117 19.6	177 29.6
58	25	14.5	25	18.7	24	5.5	58 9.7	118 19.8	178 29.8
59	25	14.8	25	19.0	24	5.7	59 9.9	119 19.9	179 30.0
60	25	15.0	25	19.2	24	6.0	60 10.1	120 20.1	180 30.2

1 h 41 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	25	15.0	25	19.2	24	6.0	0 .0	60 10.2	120 20.3
1	25	15.3	25	19.5	24	6.2	1 .2	61 10.3	121 20.5
2	25	15.5	25	19.7	24	6.5	2 .3	62 10.5	122 20.6
3	25	15.8	25	20.0	24	6.7	3 .5	63 10.7	123 20.8
4	25	16.0	25	20.2	24	6.9	4 .7	64 10.8	124 21.0
5	25	16.3	25	20.5	24	7.2	5 .8	65 11.0	125 21.1
6	25	16.5	25	20.7	24	7.4	6 1.0	66 11.2	126 21.3
7	25	16.8	25	21.0	24	7.7	7 1.2	67 11.3	127 21.5
8	25	17.0	25	21.2	24	7.9	8 1.4	68 11.5	128 21.7
9	25	17.3	25	21.5	24	8.1	9 1.5	69 11.7	129 21.8
10	25	17.5	25	21.7	24	8.4	10 1.7	70 11.8	130 22.0
11	25	17.8	25	22.0	24	8.6	11 1.9	71 12.0	131 22.2
12	25	18.0	25	22.2	24	8.8	12 2.0	72 12.2	132 22.3
13	25	18.3	25	22.5	24	9.1	13 2.2	73 12.3	133 22.5
14	25	18.5	25	22.7	24	9.3	14 2.4	74 12.5	134 22.7
15	25	18.8	25	23.0	24	9.6	15 2.5	75 12.7	135 22.8
16	25	19.0	25	23.2	24	9.8	16 2.7	76 12.9	136 23.0
17	25	19.3	25	23.5	24	10.0	17 2.9	77 13.0	137 23.2
18	25	19.5	25	23.7	24	10.3	18 3.0	78 13.2	138 23.3
19	25	19.8	25	24.0	24	10.5	19 3.2	79 13.4	139 23.5
20	25	20.0	25	24.2	24	10.8	20 3.4	80 13.5	140 23.7
21	25	20.3	25	24.5	24	11.0	21 3.6	81 13.7	141 23.9
22	25	20.5	25	24.7	24	11.2	22 3.7	82 13.9	142 24.0
23	25	20.8	25	25.0	24	11.5	23 3.9	83 14.0	143 24.2
24	25	21.0	25	25.2	24	11.7	24 4.1	84 14.2	144 24.4
25	25	21.3	25	25.5	24	11.9	25 4.2	85 14.4	145 24.5
26	25	21.5	25	25.7	24	12.2	26 4.4	86 14.5	146 24.7
27	25	21.8	25	26.0	24	12.4	27 4.6	87 14.7	147 24.9
28	25	22.0	25	26.2	24	12.7	28 4.7	88 14.9	148 25.0
29	25	22.3	25	26.5	24	12.9	29 4.9	89 15.1	149 25.2
30	25	22.5	25	26.7	24	13.1	30 5.1	90 15.2	150 25.4
31	25	22.8	25	27.0	24	13.4	31 5.2	91 15.4	151 25.5
32	25	23.0	25	27.2	24	13.6	32 5.4	92 15.6	152 25.7
33	25	23.3	25	27.5	24	13.9	33 5.6	93 15.7	153 25.9
34	25	23.5	25	27.7	24	14.1	34 5.8	94 15.9	154 26.1
35	25	23.8	25	28.0	24	14.3	35 5.9	95 16.1	155 26.2
36	25	24.0	25	28.2	24	14.6	36 6.1	96 16.2	156 26.4
37	25	24.3	25	28.5	24	14.8	37 6.3	97 16.4	157 26.6
38	25	24.5	25	28.7	24	15.1	38 6.4	98 16.6	158 26.7
39	25	24.8	25	29.0	24	15.3	39 6.6	99 16.7	159 26.9
40	25	25.0	25	29.2	24	15.5	40 6.8	100 16.9	160 27.1
41	25	25.3	25	29.5	24	15.8	41 6.9	101 17.1	161 27.2
42	25	25.5	25	29.7	24	16.0	42 7.1	102 17.3	162 27.4
43	25	25.8	25	30.0	24	16.2	43 7.3	103 17.4	163 27.6
44	25	26.0	25	30.2	24	16.5	44 7.4	104 17.6	164 27.7
45	25	26.3	25	30.5	24	16.7	45 7.6	105 17.8	165 27.9
46	25	26.5	25	30.7	24	17.0	46 7.8	106 17.9	166 28.1
47	25	26.8	25	31.0	24	17.2	47 8.0	107 18.1	167 28.3
48	25	27.0	25	31.2	24	17.4	48 8.1	108 18.3	168 28.4
49	25	27.3	25	31.5	24	17.7	49 8.3	109 18.4	169 28.6
50	25	27.5	25	31.7	24	17.9	50 8.5	110 18.6	170 28.8
51	25	27.8	25	32.0	24	18.2	51 8.6	111 18.8	171 28.9
52	25	28.0	25	32.2	24	18.4	52 8.8	112 18.9	172 29.1
53	25	28.3	25	32.5	24	18.6	53 9.0	113 19.1	173 29.3
54	25	28.5	25	32.7	24	18.9	54 9.1	114 19.3	174 29.4
55	25	28.8	25	33.0	24	19.1	55 9.3	115 19.5	175 29.6
56	25	29.0	25	33.2	24	19.3	56 9.5	116 19.6	176 29.8
57	25	29.3	25	33.5	24	19.6	57 9.6	117 19.8	177 29.9
58	25	29.5	25	33.7	24	19.8	58 9.8	118 20.0	178 30.1
59	25	29.8	25	34.0	24	20.1	59 10.0	119 20.1	179 30.3
60	25	30.0	25	34.3	24	20.3	60 10.2	120 20.3	180 30.5

1 h 42 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	25 30.0	25 34.3	24 20.3	0 .0	60 10.3	120 20.5
1	25 30.3	25 34.5	24 20.5	1 .2	61 10.4	121 20.7
2	25 30.5	25 34.8	24 20.8	2 .3	62 10.6	122 20.8
3	25 30.8	25 35.0	24 21.0	3 .5	63 10.8	123 21.0
4	25 31.0	25 35.3	24 21.3	4 .7	64 10.9	124 21.2
5	25 31.3	25 35.5	24 21.5	5 .9	65 11.1	125 21.4
6	25 31.5	25 35.8	24 21.7	6 1.0	66 11.3	126 21.5
7	25 31.8	25 36.0	24 22.0	7 1.2	67 11.4	127 21.7
8	25 32.0	25 36.3	24 22.2	8 1.4	68 11.6	128 21.9
9	25 32.3	25 36.5	24 22.4	9 1.5	69 11.8	129 22.0
10	25 32.5	25 36.8	24 22.7	10 1.7	70 12.0	130 22.2
11	25 32.8	25 37.0	24 22.9	11 1.9	71 12.1	131 22.4
12	25 33.0	25 37.3	24 23.2	12 2.1	72 12.3	132 22.6
13	25 33.3	25 37.5	24 23.4	13 2.2	73 12.5	133 22.7
14	25 33.5	25 37.8	24 23.6	14 2.4	74 12.6	134 22.9
15	25 33.8	25 38.0	24 23.9	15 2.6	75 12.8	135 23.1
16	25 34.0	25 38.3	24 24.1	16 2.7	76 13.0	136 23.2
17	25 34.3	25 38.5	24 24.4	17 2.9	77 13.2	137 23.4
18	25 34.5	25 38.8	24 24.6	18 3.1	78 13.3	138 23.6
19	25 34.8	25 39.0	24 24.8	19 3.2	79 13.5	139 23.7
20	25 35.0	25 39.3	24 25.1	20 3.4	80 13.7	140 23.9
21	25 35.3	25 39.5	24 25.3	21 3.6	81 13.8	141 24.1
22	25 35.5	25 39.8	24 25.5	22 3.8	82 14.0	142 24.3
23	25 35.8	25 40.0	24 25.8	23 3.9	83 14.2	143 24.4
24	25 36.0	25 40.3	24 26.0	24 4.1	84 14.4	144 24.6
25	25 36.3	25 40.5	24 26.3	25 4.3	85 14.5	145 24.8
26	25 36.5	25 40.8	24 26.5	26 4.4	86 14.7	146 24.9
27	25 36.8	25 41.0	24 26.7	27 4.6	87 14.9	147 25.1
28	25 37.0	25 41.3	24 27.0	28 4.8	88 15.0	148 25.3
29	25 37.3	25 41.5	24 27.2	29 5.0	89 15.2	149 25.5
30	25 37.5	25 41.8	24 27.5	30 5.1	90 15.4	150 25.6
31	25 37.8	25 42.0	24 27.7	31 5.3	91 15.5	151 25.8
32	25 38.0	25 42.3	24 27.9	32 5.5	92 15.7	152 26.0
33	25 38.3	25 42.5	24 28.2	33 5.6	93 15.9	153 26.1
34	25 38.5	25 42.8	24 28.4	34 5.8	94 16.1	154 26.3
35	25 38.8	25 43.0	24 28.7	35 6.0	95 16.2	155 26.5
36	25 39.0	25 43.3	24 28.9	36 6.2	96 16.4	156 26.7
37	25 39.3	25 43.5	24 29.1	37 6.3	97 16.6	157 26.8
38	25 39.5	25 43.8	24 29.4	38 6.5	98 16.7	158 27.0
39	25 39.8	25 44.0	24 29.6	39 6.7	99 16.9	159 27.2
40	25 40.0	25 44.3	24 29.8	40 6.8	100 17.1	160 27.3
41	25 40.3	25 44.5	24 30.1	41 7.0	101 17.3	161 27.5
42	25 40.5	25 44.8	24 30.3	42 7.2	102 17.4	162 27.7
43	25 40.8	25 45.0	24 30.6	43 7.3	103 17.6	163 27.8
44	25 41.0	25 45.3	24 30.8	44 7.5	104 17.8	164 28.0
45	25 41.3	25 45.5	24 31.0	45 7.7	105 17.9	165 28.2
46	25 41.5	25 45.8	24 31.3	46 7.9	106 18.1	166 28.4
47	25 41.8	25 46.0	24 31.5	47 8.0	107 18.3	167 28.5
48	25 42.0	25 46.3	24 31.8	48 8.2	108 18.5	168 28.7
49	25 42.3	25 46.5	24 32.0	49 8.4	109 18.6	169 28.9
50	25 42.5	25 46.8	24 32.2	50 8.5	110 18.8	170 29.0
51	25 42.8	25 47.0	24 32.5	51 8.7	111 19.0	171 29.2
52	25 43.0	25 47.3	24 32.7	52 8.9	112 19.1	172 29.4
53	25 43.3	25 47.5	24 32.9	53 9.1	113 19.3	173 29.6
54	25 43.5	25 47.8	24 33.2	54 9.2	114 19.5	174 29.7
55	25 43.8	25 48.0	24 33.4	55 9.4	115 19.6	175 29.9
56	25 44.0	25 48.3	24 33.7	56 9.6	116 19.8	176 30.1
57	25 44.3	25 48.5	24 33.9	57 9.7	117 20.0	177 30.2
58	25 44.5	25 48.8	24 34.1	58 9.9	118 20.2	178 30.4
59	25 44.8	25 49.0	24 34.4	59 10.1	119 20.3	179 30.6
60	25 45.0	25 49.3	24 34.6	60 10.3	120 20.5	180 30.8

1 h 43 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	25 45.0	25 49.3	24 34.6	0 .0	60 10.4	120 20.7
1	25 45.3	25 49.5	24 34.9	1 .2	61 10.5	121 20.9
2	25 45.5	25 49.8	24 35.1	2 .3	62 10.7	122 21.0
3	25 45.8	25 50.0	24 35.3	3 .5	63 10.9	123 21.2
4	25 46.0	25 50.3	24 35.6	4 .7	64 11.0	124 21.4
5	25 46.3	25 50.5	24 35.8	5 .9	65 11.2	125 21.6
6	25 46.5	25 50.8	24 36.0	6 1.0	66 11.4	126 21.7
7	25 46.8	25 51.0	24 36.3	7 1.2	67 11.6	127 21.9
8	25 47.0	25 51.3	24 36.5	8 1.4	68 11.7	128 22.1
9	25 47.3	25 51.5	24 36.8	9 1.6	69 11.9	129 22.3
10	25 47.5	25 51.8	24 37.0	10 1.7	70 12.1	130 22.4
11	25 47.8	25 52.0	24 37.2	11 1.9	71 12.2	131 22.6
12	25 48.0	25 52.3	24 37.5	12 2.1	72 12.4	132 22.8
13	25 48.3	25 52.6	24 37.7	13 2.2	73 12.6	133 22.9
14	25 48.5	25 52.8	24 38.0	14 2.4	74 12.8	134 23.1
15	25 48.8	25 53.1	24 38.2	15 2.6	75 12.9	135 23.3
16	25 49.0	25 53.3	24 38.4	16 2.8	76 13.1	136 23.5
17	25 49.3	25 53.6	24 38.7	17 2.9	77 13.3	137 23.6
18	25 49.5	25 53.8	24 38.9	18 3.1	78 13.5	138 23.8
19	25 49.8	25 54.1	24 39.2	19 3.3	79 13.6	139 24.0
20	25 50.0	25 54.3	24 39.4	20 3.5	80 13.8	140 24.2
21	25 50.3	25 54.6	24 39.6	21 3.6	81 14.0	141 24.3
22	25 50.5	25 54.8	24 39.9	22 3.8	82 14.1	142 24.5
23	25 50.8	25 55.1	24 40.1	23 4.0	83 14.3	143 24.7
24	25 51.0	25 55.3	24 40.3	24 4.1	84 14.5	144 24.8
25	25 51.3	25 55.6	24 40.6	25 4.3	85 14.7	145 25.0
26	25 51.5	25 55.8	24 40.8	26 4.5	86 14.8	146 25.2
27	25 51.8	25 56.1	24 41.1	27 4.7	87 15.0	147 25.4
28	25 52.0	25 56.3	24 41.3	28 4.8	88 15.2	148 25.5
29	25 52.3	25 56.6	24 41.5	29 5.0	89 15.4	149 25.7
30	25 52.5	25 56.8	24 41.8	30 5.2	90 15.5	150 25.9
31	25 52.8	25 57.1	24 42.0	31 5.3	91 15.7	151 26.0
32	25 53.0	25 57.3	24 42.3	32 5.5	92 15.9	152 26.2
33	25 53.3	25 57.6	24 42.5	33 5.7	93 16.0	153 26.4
34	25 53.5	25 57.8	24 42.7	34 5.9	94 16.2	154 26.6
35	25 53.8	25 58.1	24 43.0	35 6.0	95 16.4	155 26.7
36	25 54.0	25 58.3	24 43.2	36 6.2	96 16.6	156 26.9
37	25 54.3	25 58.6	24 43.4	37 6.4	97 16.7	157 27.1
38	25 54.5	25 58.8	24 43.7	38 6.6	98 16.9	158 27.3
39	25 54.8	25 59.1	24 43.9	39 6.7	99 17.1	159 27.4
40	25 55.0	25 59.3	24 44.2	40 6.9	100 17.3	160 27.6
41	25 55.3	25 59.6	24 44.4	41 7.1	101 17.4	161 27.8
42	25 55.5	25 59.8	24 44.6	42 7.2	102 17.6	162 27.9
43	25 55.8	26 .1	24 44.9	43 7.4	103 17.8	163 28.1
44	25 56.0	26 .3	24 45.1	44 7.6	104 17.9	164 28.3
45	25 56.3	26 .6	24 45.4	45 7.8	105 18.1	165 28.5
46	25 56.5	26 .8	24 45.6	46 7.9	106 18.3	166 28.6
47	25 56.8	26 1.1	24 45.8	47 8.1	107 18.5	167 28.8
48	25 57.0	26 1.3	24 46.1	48 8.3	108 18.6	168 29.0
49	25 57.3	26 1.6	24 46.3	49 8.5	109 18.8	169 29.2
50	25 57.5	26 1.8	24 46.5	50 8.6	110 19.0	170 29.3
51	25 57.8	26 2.1	24 46.8	51 8.8	111 19.1	171 29.5
52	25 58.0	26 2.3	24 47.0	52 9.0	112 19.3	172 29.7
53	25 58.3	26 2.6	24 47.3	53 9.1	113 19.5	173 29.8
54	25 58.5	26 2.8	24 47.5	54 9.3	114 19.7	174 30.0
55	25 58.8	26 3.1	24 47.7	55 9.5	115 19.8	175 30.2
56	25 59.0	26 3.3	24 48.0	56 9.7	116 20.0	176 30.4
57	25 59.3	26 3.6	24 48.2	57 9.8	117 20.2	177 30.5
58	25 59.5	26 3.8	24 48.5	58 10.0	118 20.4	178 30.7
59	25 59.8	26 4.1	24 48.7	59 10.2	119 20.5	179 30.9
60	26 .0	26 4.3	24 48.9	60 10.4	120 20.7	180 31.1

1 h 44 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	26	.0	26	4.3	24	48.9	0 .0	60 10.5	120 20.9
1	26	.3	26	4.6	24	49.2	1 .2	61 10.6	121 21.1
2	26	.5	26	4.8	24	49.4	2 .3	62 10.8	122 21.2
3	26	.8	26	5.1	24	49.6	3 .5	63 11.0	123 21.4
4	26	1.0	26	5.3	24	49.9	4 .7	64 11.1	124 21.6
5	26	1.3	26	5.6	24	50.1	5 .9	65 11.3	125 21.8
6	26	1.5	26	5.8	24	50.4	6 1.0	66 11.5	126 21.9
7	26	1.8	26	6.1	24	50.6	7 1.2	67 11.7	127 22.1
8	26	2.0	26	6.3	24	50.8	8 1.4	68 11.8	128 22.3
9	26	2.3	26	6.6	24	51.1	9 1.6	69 12.0	129 22.5
10	26	2.5	26	6.8	24	51.3	10 1.7	70 12.2	130 22.6
11	26	2.8	26	7.1	24	51.6	11 1.9	71 12.4	131 22.8
12	26	3.0	26	7.3	24	51.8	12 2.1	72 12.5	132 23.0
13	26	3.3	26	7.6	24	52.0	13 2.3	73 12.7	133 23.2
14	26	3.5	26	7.8	24	52.3	14 2.4	74 12.9	134 23.3
15	26	3.8	26	8.1	24	52.5	15 2.6	75 13.1	135 23.5
16	26	4.0	26	8.3	24	52.8	16 2.8	76 13.2	136 23.7
17	26	4.3	26	8.6	24	53.0	17 3.0	77 13.4	137 23.9
18	26	4.5	26	8.8	24	53.2	18 3.1	78 13.6	138 24.0
19	26	4.8	26	9.1	24	53.5	19 3.3	79 13.8	139 24.2
20	26	5.0	26	9.3	24	53.7	20 3.5	80 13.9	140 24.4
21	26	5.3	26	9.6	24	53.9	21 3.7	81 14.1	141 24.6
22	26	5.5	26	9.8	24	54.2	22 3.8	82 14.3	142 24.7
23	26	5.8	26	10.1	24	54.4	23 4.0	83 14.5	143 24.9
24	26	6.0	26	10.4	24	54.7	24 4.2	84 14.6	144 25.1
25	26	6.3	26	10.6	24	54.9	25 4.4	85 14.8	145 25.3
26	26	6.5	26	10.9	24	55.1	26 4.5	86 15.0	146 25.4
27	26	6.8	26	11.1	24	55.4	27 4.7	87 15.2	147 25.6
28	26	7.0	26	11.4	24	55.6	28 4.9	88 15.3	148 25.8
29	26	7.3	26	11.6	24	55.9	29 5.1	89 15.5	149 26.0
30	26	7.5	26	11.9	24	56.1	30 5.2	90 15.7	150 26.1
31	26	7.8	26	12.1	24	56.3	31 5.4	91 15.8	151 26.3
32	26	8.0	26	12.4	24	56.6	32 5.6	92 16.0	152 26.5
33	26	8.3	26	12.6	24	56.8	33 5.7	93 16.2	153 26.6
34	26	8.5	26	12.9	24	57.0	34 5.9	94 16.4	154 26.8
35	26	8.8	26	13.1	24	57.3	35 6.1	95 16.5	155 27.0
36	26	9.0	26	13.4	24	57.5	36 6.3	96 16.7	156 27.2
37	26	9.3	26	13.6	24	57.8	37 6.4	97 16.9	157 27.3
38	26	9.5	26	13.9	24	58.0	38 6.6	98 17.1	158 27.5
39	26	9.8	26	14.1	24	58.2	39 6.8	99 17.2	159 27.7
40	26	10.0	26	14.4	24	58.5	40 7.0	100 17.4	160 27.9
41	26	10.3	26	14.6	24	58.7	41 7.1	101 17.6	161 28.0
42	26	10.5	26	14.9	24	59.0	42 7.3	102 17.8	162 28.2
43	26	10.8	26	15.1	24	59.2	43 7.5	103 17.9	163 28.4
44	26	11.0	26	15.4	24	59.4	44 7.7	104 18.1	164 28.6
45	26	11.3	26	15.6	24	59.7	45 7.8	105 18.3	165 28.7
46	26	11.5	26	15.9	24	59.9	46 8.0	106 18.5	166 28.9
47	26	11.8	26	16.1	25	.1	47 8.2	107 18.6	167 29.1
48	26	12.0	26	16.4	25	.4	48 8.4	108 18.8	168 29.3
49	26	12.3	26	16.6	25	.6	49 8.5	109 19.0	169 29.4
50	26	12.5	26	16.9	25	.9	50 8.7	110 19.2	170 29.6
51	26	12.8	26	17.1	25	1.1	51 8.9	111 19.3	171 29.8
52	26	13.0	26	17.4	25	1.3	52 9.1	112 19.5	172 30.0
53	26	13.3	26	17.6	25	1.6	53 9.2	113 19.7	173 30.1
54	26	13.5	26	17.9	25	1.8	54 9.4	114 19.9	174 30.3
55	26	13.8	26	18.1	25	2.1	55 9.6	115 20.0	175 30.5
56	26	14.0	26	18.4	25	2.3	56 9.8	116 20.2	176 30.7
57	26	14.3	26	18.6	25	2.5	57 9.9	117 20.4	177 30.8
58	26	14.5	26	18.9	25	2.8	58 10.1	118 20.6	178 31.0
59	26	14.8	26	19.1	25	3.0	59 10.3	119 20.7	179 31.2
60	26	15.0	26	19.4	25	3.3	60 10.5	120 20.9	180 31.4

1 h 45 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	26	15.0	26	19.4	25	3.3	0 .0	60 10.6	120 21.1
1	26	15.3	26	19.6	25	3.5	1 .2	61 10.7	121 21.3
2	26	15.5	26	19.9	25	3.7	2 .4	62 10.9	122 21.5
3	26	15.8	26	20.1	25	4.0	3 .5	63 11.1	123 21.6
4	26	16.0	26	20.4	25	4.2	4 .7	64 11.3	124 21.8
5	26	16.3	26	20.6	25	4.4	5 .9	65 11.4	125 22.0
6	26	16.5	26	20.9	25	4.7	6 1.1	66 11.6	126 22.2
7	26	16.8	26	21.1	25	4.9	7 1.2	67 11.8	127 22.3
8	26	17.0	26	21.4	25	5.2	8 1.4	68 12.0	128 22.5
9	26	17.3	26	21.6	25	5.4	9 1.6	69 12.1	129 22.7
10	26	17.5	26	21.9	25	5.6	10 1.8	70 12.3	130 22.9
11	26	17.8	26	22.1	25	5.9	11 1.9	71 12.5	131 23.0
12	26	18.0	26	22.4	25	6.1	12 2.1	72 12.7	132 23.2
13	26	18.3	26	22.6	25	6.4	13 2.3	73 12.8	133 23.4
14	26	18.5	26	22.9	25	6.6	14 2.5	74 13.0	134 23.6
15	26	18.8	26	23.1	25	6.8	15 2.6	75 13.2	135 23.7
16	26	19.0	26	23.4	25	7.1	16 2.8	76 13.4	136 23.9
17	26	19.3	26	23.6	25	7.3	17 3.0	77 13.5	137 24.1
18	26	19.5	26	23.9	25	7.5	18 3.2	78 13.7	138 24.3
19	26	19.8	26	24.1	25	7.8	19 3.3	79 13.9	139 24.4
20	26	20.0	26	24.4	25	8.0	20 3.5	80 14.1	140 24.6
21	26	20.3	26	24.6	25	8.3	21 3.7	81 14.2	141 24.8
22	26	20.5	26	24.9	25	8.5	22 3.9	82 14.4	142 25.0
23	26	20.8	26	25.1	25	8.7	23 4.0	83 14.6	143 25.1
24	26	21.0	26	25.4	25	9.0	24 4.2	84 14.8	144 25.3
25	26	21.3	26	25.6	25	9.2	25 4.4	85 14.9	145 25.5
26	26	21.5	26	25.9	25	9.5	26 4.6	86 15.1	146 25.7
27	26	21.8	26	26.1	25	9.7	27 4.7	87 15.3	147 25.8
28	26	22.0	26	26.4	25	9.9	28 4.9	88 15.5	148 26.0
29	26	22.3	26	26.6	25	10.2	29 5.1	89 15.6	149 26.2
30	26	22.5	26	26.9	25	10.4	30 5.3	90 15.8	150 26.4
31	26	22.8	26	27.1	25	10.6	31 5.5	91 16.0	151 26.6
32	26	23.0	26	27.4	25	10.9	32 5.6	92 16.2	152 26.7
33	26	23.3	26	27.6	25	11.1	33 5.8	93 16.4	153 26.9
34	26	23.5	26	27.9	25	11.4	34 6.0	94 16.5	154 27.1
35	26	23.8	26	28.1	25	11.6	35 6.2	95 16.7	155 27.3
36	26	24.0	26	28.4	25	11.8	36 6.3	96 16.9	156 27.4
37	26	24.3	26	28.7	25	12.1	37 6.5	97 17.1	157 27.6
38	26	24.5	26	28.9	25	12.3	38 6.7	98 17.2	158 27.8
39	26	24.8	26	29.2	25	12.6	39 6.9	99 17.4	159 28.0
40	26	25.0	26	29.4	25	12.8	40 7.0	100 17.6	160 28.1
41	26	25.3	26	29.7	25	13.0	41 7.2	101 17.8	161 28.3
42	26	25.5	26	29.9	25	13.3	42 7.4	102 17.9	162 28.5
43	26	25.8	26	30.2	25	13.5	43 7.6	103 18.1	163 28.7
44	26	26.0	26	30.4	25	13.7	44 7.7	104 18.3	164 28.8
45	26	26.3	26	30.7	25	14.0	45 7.9	105 18.5	165 29.0
46	26	26.5	26	30.9	25	14.2	46 8.1	106 18.6	166 29.2
47	26	26.8	26	31.2	25	14.5	47 8.3	107 18.8	167 29.4
48	26	27.0	26	31.4	25	14.7	48 8.4	108 19.0	168 29.5
49	26	27.3	26	31.7	25	14.9	49 8.6	109 19.2	169 29.7
50	26	27.5	26	31.9	25	15.2	50 8.8	110 19.3	170 29.9
51	26	27.8	26	32.2	25	15.4	51 9.0	111 19.5	171 30.1
52	26	28.0	26	32.4	25	15.7	52 9.1	112 19.7	172 30.2
53	26	28.3	26	32.7	25	15.9	53 9.3	113 19.9	173 30.4
54	26	28.5	26	32.9	25	16.1	54 9.5	114 20.0	174 30.6
55	26	28.8	26	33.2	25	16.4	55 9.7	115 20.2	175 30.8
56	26	29.0	26	33.4	25	16.6	56 9.8	116 20.4	176 30.9
57	26	29.3	26	33.7	25	16.9	57 10.0	117 20.6	177 31.1
58	26	29.5	26	33.9	25	17.1	58 10.2	118 20.7	178 31.3
59	26	29.8	26	34.2	25	17.3	59 10.4	119 20.9	179 31.5
60	26	30.0	26	34.4	25	17.6	60 10.6	120 21.1	180 31.7

1 h 46 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	26	30.0	26	34.4	25	17.6	0 .0	60 10.7	120 21.3
1	26	30.3	26	34.7	25	17.8	1 .2	61 10.8	121 21.5
2	26	30.5	26	34.9	25	18.0	2 .4	62 11.0	122 21.7
3	26	30.8	26	35.2	25	18.3	3 .5	63 11.2	123 21.8
4	26	31.0	26	35.4	25	18.5	4 .7	64 11.4	124 22.0
5	26	31.3	26	35.7	25	18.8	5 .9	65 11.5	125 22.2
6	26	31.5	26	35.9	25	19.0	6 1.1	66 11.7	126 22.4
7	26	31.8	26	36.2	25	19.2	7 1.2	67 11.9	127 22.5
8	26	32.0	26	36.4	25	19.5	8 1.4	68 12.1	128 22.7
9	26	32.3	26	36.7	25	19.7	9 1.6	69 12.2	129 22.9
10	26	32.5	26	36.9	25	20.0	10 1.8	70 12.4	130 23.1
11	26	32.8	26	37.2	25	20.2	11 2.0	71 12.6	131 23.3
12	26	33.0	26	37.4	25	20.4	12 2.1	72 12.8	132 23.4
13	26	33.3	26	37.7	25	20.7	13 2.3	73 13.0	133 23.6
14	26	33.5	26	37.9	25	20.9	14 2.5	74 13.1	134 23.8
15	26	33.8	26	38.2	25	21.1	15 2.7	75 13.3	135 24.0
16	26	34.0	26	38.4	25	21.4	16 2.8	76 13.5	136 24.1
17	26	34.3	26	38.7	25	21.6	17 3.0	77 13.7	137 24.3
18	26	34.5	26	38.9	25	21.9	18 3.2	78 13.8	138 24.5
19	26	34.8	26	39.2	25	22.1	19 3.4	79 14.0	139 24.7
20	26	35.0	26	39.4	25	22.3	20 3.6	80 14.2	140 24.9
21	26	35.3	26	39.7	25	22.6	21 3.7	81 14.4	141 25.0
22	26	35.5	26	39.9	25	22.8	22 3.9	82 14.6	142 25.2
23	26	35.8	26	40.2	25	23.1	23 4.1	83 14.7	143 25.4
24	26	36.0	26	40.4	25	23.3	24 4.3	84 14.9	144 25.6
25	26	36.3	26	40.7	25	23.5	25 4.4	85 15.1	145 25.7
26	26	36.5	26	40.9	25	23.8	26 4.6	86 15.3	146 25.9
27	26	36.8	26	41.2	25	24.0	27 4.8	87 15.4	147 26.1
28	26	37.0	26	41.4	25	24.2	28 5.0	88 15.6	148 26.3
29	26	37.3	26	41.7	25	24.5	29 5.1	89 15.8	149 26.4
30	26	37.5	26	41.9	25	24.7	30 5.3	90 16.0	150 26.6
31	26	37.8	26	42.2	25	25.0	31 5.5	91 16.2	151 26.8
32	26	38.0	26	42.4	25	25.2	32 5.7	92 16.3	152 27.0
33	26	38.3	26	42.7	25	25.4	33 5.9	93 16.5	153 27.2
34	26	38.5	26	42.9	25	25.7	34 6.0	94 16.7	154 27.3
35	26	38.8	26	43.2	25	25.9	35 6.2	95 16.9	155 27.5
36	26	39.0	26	43.4	25	26.2	36 6.4	96 17.0	156 27.7
37	26	39.3	26	43.7	25	26.4	37 6.6	97 17.2	157 27.9
38	26	39.5	26	43.9	25	26.6	38 6.7	98 17.4	158 28.0
39	26	39.8	26	44.2	25	26.9	39 6.9	99 17.6	159 28.2
40	26	40.0	26	44.4	25	27.1	40 7.1	100 17.8	160 28.4
41	26	40.3	26	44.7	25	27.3	41 7.3	101 17.9	161 28.6
42	26	40.5	26	44.9	25	27.6	42 7.5	102 18.1	162 28.8
43	26	40.8	26	45.2	25	27.8	43 7.6	103 18.3	163 28.9
44	26	41.0	26	45.4	25	28.1	44 7.8	104 18.5	164 29.1
45	26	41.3	26	45.7	25	28.3	45 8.0	105 18.6	165 29.3
46	26	41.5	26	45.9	25	28.5	46 8.2	106 18.8	166 29.5
47	26	41.8	26	46.2	25	28.8	47 8.3	107 19.0	167 29.6
48	26	42.0	26	46.5	25	29.0	48 8.5	108 19.2	168 29.8
49	26	42.3	26	46.7	25	29.3	49 8.7	109 19.3	169 30.0
50	26	42.5	26	47.0	25	29.5	50 8.9	110 19.5	170 30.2
51	26	42.8	26	47.2	25	29.7	51 9.1	111 19.7	171 30.4
52	26	43.0	26	47.5	25	30.0	52 9.2	112 19.9	172 30.5
53	26	43.3	26	47.7	25	30.2	53 9.4	113 20.1	173 30.7
54	26	43.5	26	48.0	25	30.5	54 9.6	114 20.2	174 30.9
55	26	43.8	26	48.2	25	30.7	55 9.8	115 20.4	175 31.1
56	26	44.0	26	48.5	25	30.9	56 9.9	116 20.6	176 31.2
57	26	44.3	26	48.7	25	31.2	57 10.1	117 20.8	177 31.4
58	26	44.5	26	49.0	25	31.4	58 10.3	118 20.9	178 31.6
59	26	44.8	26	49.2	25	31.6	59 10.5	119 21.1	179 31.8
60	26	45.0	26	49.5	25	31.9	60 10.7	120 21.3	180 32.0

1 h 47 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	26	45.0	26	49.5	25	31.9	0 .0	60 10.8	120 21.5
1	26	45.3	26	49.7	25	32.1	1 .2	61 10.9	121 21.7
2	26	45.5	26	50.0	25	32.4	2 .4	62 11.1	122 21.9
3	26	45.8	26	50.2	25	32.6	3 .5	63 11.3	123 22.0
4	26	46.0	26	50.5	25	32.8	4 .7	64 11.5	124 22.2
5	26	46.3	26	50.7	25	33.1	5 .9	65 11.6	125 22.4
6	26	46.5	26	51.0	25	33.3	6 1.1	66 11.8	126 22.6
7	26	46.8	26	51.2	25	33.6	7 1.3	67 12.0	127 22.8
8	26	47.0	26	51.5	25	33.8	8 1.4	68 12.2	128 22.9
9	26	47.3	26	51.7	25	34.0	9 1.6	69 12.4	129 23.1
10	26	47.5	26	52.0	25	34.3	10 1.8	70 12.5	130 23.3
11	26	47.8	26	52.2	25	34.5	11 2.0	71 12.7	131 23.5
12	26	48.0	26	52.5	25	34.7	12 2.2	72 12.9	132 23.7
13	26	48.3	26	52.7	25	35.0	13 2.3	73 13.1	133 23.8
14	26	48.5	26	53.0	25	35.2	14 2.5	74 13.3	134 24.0
15	26	48.8	26	53.2	25	35.5	15 2.7	75 13.4	135 24.2
16	26	49.0	26	53.5	25	35.7	16 2.9	76 13.6	136 24.4
17	26	49.3	26	53.7	25	35.9	17 3.0	77 13.8	137 24.5
18	26	49.5	26	54.0	25	36.2	18 3.2	78 14.0	138 24.7
19	26	49.8	26	54.2	25	36.4	19 3.4	79 14.2	139 24.9
20	26	50.0	26	54.5	25	36.7	20 3.6	80 14.3	140 25.1
21	26	50.3	26	54.7	25	36.9	21 3.8	81 14.5	141 25.3
22	26	50.5	26	55.0	25	37.1	22 3.9	82 14.7	142 25.4
23	26	50.8	26	55.2	25	37.4	23 4.1	83 14.9	143 25.6
24	26	51.0	26	55.5	25	37.6	24 4.3	84 15.1	144 25.8
25	26	51.3	26	55.7	25	37.8	25 4.5	85 15.2	145 26.0
26	26	51.5	26	56.0	25	38.1	26 4.7	86 15.4	146 26.2
27	26	51.8	26	56.2	25	38.3	27 4.8	87 15.6	147 26.3
28	26	52.0	26	56.5	25	38.6	28 5.0	88 15.8	148 26.5
29	26	52.3	26	56.7	25	38.8	29 5.2	89 15.9	149 26.7
30	26	52.5	26	57.0	25	39.0	30 5.4	90 16.1	150 26.9
31	26	52.8	26	57.2	25	39.3	31 5.6	91 16.3	151 27.1
32	26	53.0	26	57.5	25	39.5	32 5.7	92 16.5	152 27.2
33	26	53.3	26	57.7	25	39.8	33 5.9	93 16.7	153 27.4
34	26	53.5	26	58.0	25	40.0	34 6.1	94 16.8	154 27.6
35	26	53.8	26	58.2	25	40.2	35 6.3	95 17.0	155 27.8
36	26	54.0	26	58.5	25	40.5	36 6.5	96 17.2	156 28.0
37	26	54.3	26	58.7	25	40.7	37 6.6	97 17.4	157 28.1
38	26	54.5	26	59.0	25	41.0	38 6.8	98 17.6	158 28.3
39	26	54.8	26	59.2	25	41.2	39 7.0	99 17.7	159 28.5
40	26	55.0	26	59.5	25	41.4	40 7.2	100 17.9	160 28.7
41	26	55.3	26	59.7	25	41.7	41 7.3	101 18.1	161 28.8
42	26	55.5	26	60.0	25	41.9	42 7.5	102 18.3	162 29.0
43	26	55.8	27	.2	25	42.1	43 7.7	103 18.5	163 29.2
44	26	56.0	27	.5	25	42.4	44 7.9	104 18.6	164 29.4
45	26	56.3	27	.7	25	42.6	45 8.1	105 18.8	165 29.6
46	26	56.5	27	1.0	25	42.9	46 8.2	106 19.0	166 29.7
47	26	56.8	27	1.2	25	43.1	47 8.4	107 19.2	167 29.9
48	26	57.0	27	1.5	25	43.3	48 8.6	108 19.4	168 30.1
49	26	57.3	27	1.7	25	43.6	49 8.8	109 19.5	169 30.3
50	26	57.5	27	2.0	25	43.8	50 9.0	110 19.7	170 30.5
51	26	57.8	27	2.2	25	44.1	51 9.1	111 19.9	171 30.6
52	26	58.0	27	2.5	25	44.3	52 9.3	112 20.1	172 30.8
53	26	58.3	27	2.7	25	44.5	53 9.5	113 20.2	173 31.0
54	26	58.5	27	3.0	25	44.8	54 9.7	114 20.4	174 31.2
55	26	58.8	27	3.2	25	45.0	55 9.9	115 20.6	175 31.4
56	26	59.0	27	3.5	25	45.2	56 10.0	116 20.8	176 31.5
57	26	59.3	27	3.7	25	45.5	57 10.2	117 21.0	177 31.7
58	26	59.5	27	4.0	25	45.7	58 10.4	118 21.1	178 31.9
59	26	59.8	27	4.2	25	46.0	59 10.6	119 21.3	179 32.1
60	27	.0	27	4.5	25	46.2	60 10.8	120 21.5	180 32.3

1 h 48 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	27	.0	27	4.5	25	46.2	0 .0	60 10.9	120 21.7
1	27	.3	27	4.8	25	46.4	1 .2	61 11.0	121 21.9
2	27	.5	27	5.0	25	46.7	2 .4	62 11.2	122 22.1
3	27	.8	27	5.3	25	46.9	3 .5	63 11.4	123 22.2
4	27	1.0	27	5.5	25	47.2	4 .7	64 11.6	124 22.4
5	27	1.3	27	5.8	25	47.4	5 .9	65 11.8	125 22.6
6	27	1.5	27	6.0	25	47.6	6 1.1	66 11.9	126 22.8
7	27	1.8	27	6.3	25	47.9	7 1.3	67 12.1	127 23.0
8	27	2.0	27	6.5	25	48.1	8 1.4	68 12.3	128 23.1
9	27	2.3	27	6.8	25	48.3	9 1.6	69 12.5	129 23.3
10	27	2.5	27	7.0	25	48.6	10 1.8	70 12.7	130 23.5
11	27	2.8	27	7.3	25	48.8	11 2.0	71 12.8	131 23.7
12	27	3.0	27	7.5	25	49.1	12 2.2	72 13.0	132 23.9
13	27	3.3	27	7.8	25	49.3	13 2.4	73 13.2	133 24.1
14	27	3.5	27	8.0	25	49.5	14 2.5	74 13.4	134 24.2
15	27	3.8	27	8.3	25	49.8	15 2.7	75 13.6	135 24.4
16	27	4.0	27	8.5	25	50.0	16 2.9	76 13.7	136 24.6
17	27	4.3	27	8.8	25	50.3	17 3.1	77 13.9	137 24.8
18	27	4.5	27	9.0	25	50.5	18 3.3	78 14.1	138 25.0
19	27	4.8	27	9.3	25	50.7	19 3.4	79 14.3	139 25.1
20	27	5.0	27	9.5	25	51.0	20 3.6	80 14.5	140 25.3
21	27	5.3	27	9.8	25	51.2	21 3.8	81 14.6	141 25.5
22	27	5.5	27	10.0	25	51.4	22 4.0	82 14.8	142 25.7
23	27	5.8	27	10.3	25	51.7	23 4.2	83 15.0	143 25.9
24	27	6.0	27	10.5	25	51.9	24 4.3	84 15.2	144 26.0
25	27	6.3	27	10.8	25	52.2	25 4.5	85 15.4	145 26.2
26	27	6.5	27	11.0	25	52.4	26 4.7	86 15.6	146 26.4
27	27	6.8	27	11.3	25	52.6	27 4.9	87 15.7	147 26.6
28	27	7.0	27	11.5	25	52.9	28 5.1	88 15.9	148 26.8
29	27	7.3	27	11.8	25	53.1	29 5.2	89 16.1	149 26.9
30	27	7.5	27	12.0	25	53.4	30 5.4	90 16.3	150 27.1
31	27	7.8	27	12.3	25	53.6	31 5.6	91 16.5	151 27.3
32	27	8.0	27	12.5	25	53.8	32 5.8	92 16.6	152 27.5
33	27	8.3	27	12.8	25	54.1	33 6.0	93 16.8	153 27.7
34	27	8.5	27	13.0	25	54.3	34 6.1	94 17.0	154 27.8
35	27	8.8	27	13.3	25	54.6	35 6.3	95 17.2	155 28.0
36	27	9.0	27	13.5	25	54.8	36 6.5	96 17.4	156 28.2
37	27	9.3	27	13.8	25	55.0	37 6.7	97 17.5	157 28.4
38	27	9.5	27	14.0	25	55.3	38 6.9	98 17.7	158 28.6
39	27	9.8	27	14.3	25	55.5	39 7.1	99 17.9	159 28.8
40	27	10.0	27	14.5	25	55.7	40 7.2	100 18.1	160 28.9
41	27	10.3	27	14.8	25	56.0	41 7.4	101 18.3	161 29.1
42	27	10.5	27	15.0	25	56.2	42 7.6	102 18.4	162 29.3
43	27	10.8	27	15.3	25	56.5	43 7.8	103 18.6	163 29.5
44	27	11.0	27	15.5	25	56.7	44 8.0	104 18.8	164 29.7
45	27	11.3	27	15.8	25	56.9	45 8.1	105 19.0	165 29.8
46	27	11.5	27	16.0	25	57.2	46 8.3	106 19.2	166 30.0
47	27	11.8	27	16.3	25	57.4	47 8.5	107 19.3	167 30.2
48	27	12.0	27	16.5	25	57.7	48 8.7	108 19.5	168 30.4
49	27	12.3	27	16.8	25	57.9	49 8.9	109 19.7	169 30.6
50	27	12.5	27	17.0	25	58.1	50 9.0	110 19.9	170 30.7
51	27	12.8	27	17.3	25	58.4	51 9.2	111 20.1	171 30.9
52	27	13.0	27	17.5	25	58.6	52 9.4	112 20.3	172 31.1
53	27	13.3	27	17.8	25	58.8	53 9.6	113 20.4	173 31.3
54	27	13.5	27	18.0	25	59.1	54 9.8	114 20.6	174 31.5
55	27	13.8	27	18.3	25	59.3	55 9.9	115 20.8	175 31.6
56	27	14.0	27	18.5	25	59.6	56 10.1	116 21.0	176 31.8
57	27	14.3	27	18.8	25	59.8	57 10.3	117 21.2	177 32.0
58	27	14.5	27	19.0	26	.0	58 10.5	118 21.3	178 32.2
59	27	14.8	27	19.3	26	.3	59 10.7	119 21.5	179 32.4
60	27	15.0	27	19.5	26	.5	60 10.9	120 21.7	180 32.6

1 h 49 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	27	15.0	27	19.5	26	.5	0 .0	60 11.0	120 21.9
1	27	15.3	27	19.8	26	.8	1 .2	61 11.1	121 22.1
2	27	15.5	27	20.0	26	1.0	2 .4	62 11.3	122 22.3
3	27	15.8	27	20.3	26	1.2	3 .5	63 11.5	123 22.4
4	27	16.0	27	20.5	26	1.5	4 .7	64 11.7	124 22.6
5	27	16.3	27	20.8	26	1.7	5 .9	65 11.9	125 22.8
6	27	16.5	27	21.0	26	1.9	6 1.1	66 12.0	126 23.0
7	27	16.8	27	21.3	26	2.2	7 1.3	67 12.2	127 23.2
8	27	17.0	27	21.5	26	2.4	8 1.5	68 12.4	128 23.4
9	27	17.3	27	21.8	26	2.7	9 1.6	69 12.6	129 23.5
10	27	17.5	27	22.0	26	2.9	10 1.8	70 12.8	130 23.7
11	27	17.8	27	22.3	26	3.1	11 2.0	71 13.0	131 23.9
12	27	18.0	27	22.6	26	3.4	12 2.2	72 13.1	132 24.1
13	27	18.3	27	22.8	26	3.6	13 2.4	73 13.3	133 24.3
14	27	18.5	27	23.1	26	3.9	14 2.6	74 13.5	134 24.5
15	27	18.8	27	23.3	26	4.1	15 2.7	75 13.7	135 24.6
16	27	19.0	27	23.6	26	4.3	16 2.9	76 13.9	136 24.8
17	27	19.3	27	23.8	26	4.6	17 3.1	77 14.1	137 25.0
18	27	19.5	27	24.1	26	4.8	18 3.3	78 14.2	138 25.2
19	27	19.8	27	24.3	26	5.1	19 3.5	79 14.4	139 25.4
20	27	20.0	27	24.6	26	5.3	20 3.7	80 14.6	140 25.6
21	27	20.3	27	24.8	26	5.5	21 3.8	81 14.8	141 25.7
22	27	20.5	27	25.1	26	5.8	22 4.0	82 15.0	142 25.9
23	27	20.8	27	25.3	26	6.0	23 4.2	83 15.1	143 26.1
24	27	21.0	27	25.6	26	6.2	24 4.4	84 15.3	144 26.3
25	27	21.3	27	25.8	26	6.5	25 4.6	85 15.5	145 26.5
26	27	21.5	27	26.1	26	6.7	26 4.7	86 15.7	146 26.6
27	27	21.8	27	26.3	26	7.0	27 4.9	87 15.9	147 26.8
28	27	22.0	27	26.6	26	7.2	28 5.1	88 16.1	148 27.0
29	27	22.3	27	26.8	26	7.4	29 5.3	89 16.2	149 27.2
30	27	22.5	27	27.1	26	7.7	30 5.5	90 16.4	150 27.4
31	27	22.8	27	27.3	26	7.9	31 5.7	91 16.6	151 27.6
32	27	23.0	27	27.6	26	8.2	32 5.8	92 16.8	152 27.7
33	27	23.3	27	27.8	26	8.4	33 6.0	93 17.0	153 27.9
34	27	23.5	27	28.1	26	8.6	34 6.2	94 17.2	154 28.1
35	27	23.8	27	28.3	26	8.9	35 6.4	95 17.3	155 28.3
36	27	24.0	27	28.6	26	9.1	36 6.6	96 17.5	156 28.5
37	27	24.3	27	28.8	26	9.3	37 6.8	97 17.7	157 28.7
38	27	24.5	27	29.1	26	9.6	38 6.9	98 17.9	158 28.8
39	27	24.8	27	29.3	26	9.8	39 7.1	99 18.1	159 29.0
40	27	25.0	27	29.6	26	10.1	40 7.3	100 18.3	160 29.2
41	27	25.3	27	29.8	26	10.3	41 7.5	101 18.4	161 29.4
42	27	25.5	27	30.1	26	10.5	42 7.7	102 18.6	162 29.6
43	27	25.8	27	30.3	26	10.8	43 7.8	103 18.8	163 29.7
44	27	26.0	27	30.6	26	11.0	44 8.0	104 19.0	164 29.9
45	27	26.3	27	30.8	26	11.3	45 8.2	105 19.2	165 30.1
46	27	26.5	27	31.1	26	11.5	46 8.4	106 19.3	166 30.3
47	27	26.8	27	31.3	26	11.7	47 8.6	107 19.5	167 30.5
48	27	27.0	27	31.6	26	12.0	48 8.8	108 19.7	168 30.7
49	27	27.3	27	31.8	26	12.2	49 8.9	109 19.9	169 30.8
50	27	27.5	27	32.1	26	12.4	50 9.1	110 20.1	170 31.0
51	27	27.8	27	32.3	26	12.7	51 9.3	111 20.3	171 31.2
52	27	28.0	27	32.6	26	12.9	52 9.5	112 20.4	172 31.4
53	27	28.3	27	32.8	26	13.2	53 9.7	113 20.6	173 31.6
54	27	28.5	27	33.1	26	13.4	54 9.9	114 20.8	174 31.8
55	27	28.8	27	33.3	26	13.6	55 10.0	115 21.0	175 31.9
56	27	29.0	27	33.6	26	13.9	56 10.2	116 21.2	176 32.1
57	27	29.3	27	33.8	26	14.1	57 10.4	117 21.4	177 32.3
58	27	29.5	27	34.1	26	14.4	58 10.6	118 21.5	178 32.5
59	27	29.8	27	34.3	26	14.6	59 10.8	119 21.7	179 32.7
60	27	30.0	27	34.6	26	14.8	60 11.0	120 21.9	180 32.9

1 h 50 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	27 30.0	27 34.6	26 14.8	0 .0	60 11.1	120 22.1
1	27 30.3	27 34.8	26 15.1	1 .2	61 11.2	121 22.3
2	27 30.5	27 35.1	26 15.3	2 .4	62 11.4	122 22.5
3	27 30.8	27 35.3	26 15.5	3 .6	63 11.6	123 22.7
4	27 31.0	27 35.6	26 15.8	4 .7	64 11.8	124 22.8
5	27 31.3	27 35.8	26 16.0	5 .9	65 12.0	125 23.0
6	27 31.5	27 36.1	26 16.3	6 1.1	66 12.2	126 23.2
7	27 31.8	27 36.3	26 16.5	7 1.3	67 12.3	127 23.4
8	27 32.0	27 36.6	26 16.7	8 1.5	68 12.5	128 23.6
9	27 32.3	27 36.8	26 17.0	9 1.7	69 12.7	129 23.8
10	27 32.5	27 37.1	26 17.2	10 1.8	70 12.9	130 23.9
11	27 32.8	27 37.3	26 17.5	11 2.0	71 13.1	131 24.1
12	27 33.0	27 37.6	26 17.7	12 2.2	72 13.3	132 24.3
13	27 33.3	27 37.8	26 17.9	13 2.4	73 13.4	133 24.5
14	27 33.5	27 38.1	26 18.2	14 2.6	74 13.6	134 24.7
15	27 33.8	27 38.3	26 18.4	15 2.8	75 13.8	135 24.9
16	27 34.0	27 38.6	26 18.7	16 2.9	76 14.0	136 25.0
17	27 34.3	27 38.8	26 18.9	17 3.1	77 14.2	137 25.2
18	27 34.5	27 39.1	26 19.1	18 3.3	78 14.4	138 25.4
19	27 34.8	27 39.3	26 19.4	19 3.5	79 14.5	139 25.6
20	27 35.0	27 39.6	26 19.6	20 3.7	80 14.7	140 25.8
21	27 35.3	27 39.8	26 19.8	21 3.9	81 14.9	141 26.0
22	27 35.5	27 40.1	26 20.1	22 4.1	82 15.1	142 26.2
23	27 35.8	27 40.3	26 20.3	23 4.2	83 15.3	143 26.3
24	27 36.0	27 40.6	26 20.6	24 4.4	84 15.5	144 26.5
25	27 36.3	27 40.9	26 20.8	25 4.6	85 15.7	145 26.7
26	27 36.5	27 41.1	26 21.0	26 4.8	86 15.8	146 26.9
27	27 36.8	27 41.4	26 21.3	27 5.0	87 16.0	147 27.1
28	27 37.0	27 41.6	26 21.5	28 5.2	88 16.2	148 27.3
29	27 37.3	27 41.9	26 21.8	29 5.3	89 16.4	149 27.4
30	27 37.5	27 42.1	26 22.0	30 5.5	90 16.6	150 27.6
31	27 37.8	27 42.4	26 22.2	31 5.7	91 16.8	151 27.8
32	27 38.0	27 42.6	26 22.5	32 5.9	92 16.9	152 28.0
33	27 38.3	27 42.9	26 22.7	33 6.1	93 17.1	153 28.2
34	27 38.5	27 43.1	26 22.9	34 6.3	94 17.3	154 28.4
35	27 38.8	27 43.4	26 23.2	35 6.4	95 17.5	155 28.5
36	27 39.0	27 43.6	26 23.4	36 6.6	96 17.7	156 28.7
37	27 39.3	27 43.9	26 23.7	37 6.8	97 17.9	157 28.9
38	27 39.5	27 44.1	26 23.9	38 7.0	98 18.0	158 29.1
39	27 39.8	27 44.4	26 24.1	39 7.2	99 18.2	159 29.3
40	27 40.0	27 44.6	26 24.4	40 7.4	100 18.4	160 29.5
41	27 40.3	27 44.9	26 24.6	41 7.6	101 18.6	161 29.7
42	27 40.5	27 45.1	26 24.9	42 7.7	102 18.8	162 29.8
43	27 40.8	27 45.4	26 25.1	43 7.9	103 19.0	163 30.0
44	27 41.0	27 45.6	26 25.3	44 8.1	104 19.2	164 30.2
45	27 41.3	27 45.9	26 25.6	45 8.3	105 19.3	165 30.4
46	27 41.5	27 46.1	26 25.8	46 8.5	106 19.5	166 30.6
47	27 41.8	27 46.4	26 26.0	47 8.7	107 19.7	167 30.8
48	27 42.0	27 46.6	26 26.3	48 8.8	108 19.9	168 30.9
49	27 42.3	27 46.9	26 26.5	49 9.0	109 20.1	169 31.1
50	27 42.5	27 47.1	26 26.8	50 9.2	110 20.3	170 31.3
51	27 42.8	27 47.4	26 27.0	51 9.4	111 20.4	171 31.5
52	27 43.0	27 47.6	26 27.2	52 9.6	112 20.6	172 31.7
53	27 43.3	27 47.9	26 27.5	53 9.8	113 20.8	173 31.9
54	27 43.5	27 48.1	26 27.7	54 9.9	114 21.0	174 32.0
55	27 43.8	27 48.4	26 28.0	55 10.1	115 21.2	175 32.2
56	27 44.0	27 48.6	26 28.2	56 10.3	116 21.4	176 32.4
57	27 44.3	27 48.9	26 28.4	57 10.5	117 21.5	177 32.6
58	27 44.5	27 49.1	26 28.7	58 10.7	118 21.7	178 32.8
59	27 44.8	27 49.4	26 28.9	59 10.9	119 21.9	179 33.0
60	27 45.0	27 49.6	26 29.2	60 11.1	120 22.1	180 33.2

1 h 51 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	27 45.0	27 49.6	26 29.2	0 .0	60 11.2	120 22.3
1	27 45.3	27 49.9	26 29.4	1 .2	61 11.3	121 22.5
2	27 45.5	27 50.1	26 29.6	2 .4	62 11.5	122 22.7
3	27 45.8	27 50.4	26 29.9	3 .6	63 11.7	123 22.9
4	27 46.0	27 50.6	26 30.1	4 .7	64 11.9	124 23.0
5	27 46.3	27 50.9	26 30.3	5 .9	65 12.1	125 23.2
6	27 46.5	27 51.1	26 30.6	6 1.1	66 12.3	126 23.4
7	27 46.8	27 51.4	26 30.8	7 1.3	67 12.5	127 23.6
8	27 47.0	27 51.6	26 31.1	8 1.5	68 12.6	128 23.8
9	27 47.3	27 51.9	26 31.3	9 1.7	69 12.8	129 24.0
10	27 47.5	27 52.1	26 31.5	10 1.9	70 13.0	130 24.2
11	27 47.8	27 52.4	26 31.8	11 2.0	71 13.2	131 24.3
12	27 48.0	27 52.6	26 32.0	12 2.2	72 13.4	132 24.5
13	27 48.3	27 52.9	26 32.3	13 2.4	73 13.6	133 24.7
14	27 48.5	27 53.1	26 32.5	14 2.6	74 13.8	134 24.9
15	27 48.8	27 53.4	26 32.7	15 2.8	75 13.9	135 25.1
16	27 49.0	27 53.6	26 33.0	16 3.0	76 14.1	136 25.3
17	27 49.3	27 53.9	26 33.2	17 3.2	77 14.3	137 25.5
18	27 49.5	27 54.1	26 33.4	18 3.3	78 14.5	138 25.6
19	27 49.8	27 54.4	26 33.7	19 3.5	79 14.7	139 25.8
20	27 50.0	27 54.6	26 33.9	20 3.7	80 14.9	140 26.0
21	27 50.3	27 54.9	26 34.2	21 3.9	81 15.1	141 26.2
22	27 50.5	27 55.1	26 34.4	22 4.1	82 15.2	142 26.4
23	27 50.8	27 55.4	26 34.6	23 4.3	83 15.4	143 26.6
24	27 51.0	27 55.6	26 34.9	24 4.5	84 15.6	144 26.8
25	27 51.3	27 55.9	26 35.1	25 4.6	85 15.8	145 26.9
26	27 51.5	27 56.1	26 35.4	26 4.8	86 16.0	146 27.1
27	27 51.8	27 56.4	26 35.6	27 5.0	87 16.2	147 27.3
28	27 52.0	27 56.6	26 35.8	28 5.2	88 16.4	148 27.5
29	27 52.3	27 56.9	26 36.1	29 5.4	89 16.5	149 27.7
30	27 52.5	27 57.1	26 36.3	30 5.6	90 16.7	150 27.9
31	27 52.8	27 57.4	26 36.5	31 5.8	91 16.9	151 28.1
32	27 53.0	27 57.6	26 36.8	32 5.9	92 17.1	152 28.2
33	27 53.3	27 57.9	26 37.0	33 6.1	93 17.3	153 28.4
34	27 53.5	27 58.1	26 37.3	34 6.3	94 17.5	154 28.6
35	27 53.8	27 58.4	26 37.5	35 6.5	95 17.7	155 28.8
36	27 54.0	27 58.7	26 37.7	36 6.7	96 17.8	156 29.0
37	27 54.3	27 58.9	26 38.0	37 6.9	97 18.0	157 29.2
38	27 54.5	27 59.2	26 38.2	38 7.1	98 18.2	158 29.4
39	27 54.8	27 59.4	26 38.5	39 7.2	99 18.4	159 29.5
40	27 55.0	27 59.7	26 38.7	40 7.4	100 18.6	160 29.7
41	27 55.3	27 59.9	26 38.9	41 7.6	101 18.8	161 29.9
42	27 55.5	28 .2	26 39.2	42 7.8	102 19.0	162 30.1
43	27 55.8	28 .4	26 39.4	43 8.0	103 19.1	163 30.3
44	27 56.0	28 .7	26 39.6	44 8.2	104 19.3	164 30.5
45	27 56.3	28 .9	26 39.9	45 8.4	105 19.5	165 30.7
46	27 56.5	28 1.2	26 40.1	46 8.5	106 19.7	166 30.8
47	27 56.8	28 1.4	26 40.4	47 8.7	107 19.9	167 31.0
48	27 57.0	28 1.7	26 40.6	48 8.9	108 20.1	168 31.2
49	27 57.3	28 1.9	26 40.8	49 9.1	109 20.3	169 31.4
50	27 57.5	28 2.2	26 41.1	50 9.3	110 20.4	170 31.6
51	27 57.8	28 2.4	26 41.3	51 9.5	111 20.6	171 31.8
52	27 58.0	28 2.7	26 41.6	52 9.7	112 20.8	172 32.0
53	27 58.3	28 2.9	26 41.8	53 9.8	113 21.0	173 32.1
54	27 58.5	28 3.2	26 42.0	54 10.0	114 21.2	174 32.3
55	27 58.8	28 3.4	26 42.3	55 10.2	115 21.4	175 32.5
56	27 59.0	28 3.7	26 42.5	56 10.4	116 21.6	176 32.7
57	27 59.3	28 3.9	26 42.8	57 10.6	117 21.7	177 32.9
58	27 59.5	28 4.2	26 43.0	58 10.8	118 21.9	178 33.1
59	27 59.8	28 4.4	26 43.2	59 11.0	119 22.1	179 33.3
60	28 .0	28 4.7	26 43.5	60 11.2	120 22.3	180 33.5

1 h 52 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	28	.0	28	4.7	26	43.5	0 .0	60 11.3	120 22.5
1	28	.3	28	4.9	26	43.7	1 .2	61 11.4	121 22.7
2	28	.5	28	5.2	26	43.9	2 .4	62 11.6	122 22.9
3	28	.8	28	5.4	26	44.2	3 .6	63 11.8	123 23.1
4	28	1.0	28	5.7	26	44.4	4 .8	64 12.0	124 23.3
5	28	1.3	28	5.9	26	44.7	5 .9	65 12.2	125 23.4
6	28	1.5	28	6.2	26	44.9	6 1.1	66 12.4	126 23.6
7	28	1.8	28	6.4	26	45.1	7 1.3	67 12.6	127 23.8
8	28	2.0	28	6.7	26	45.4	8 1.5	68 12.8	128 24.0
9	28	2.3	28	6.9	26	45.6	9 1.7	69 12.9	129 24.2
10	28	2.5	28	7.2	26	45.9	10 1.9	70 13.1	130 24.4
11	28	2.8	28	7.4	26	46.1	11 2.1	71 13.3	131 24.6
12	28	3.0	28	7.7	26	46.3	12 2.3	72 13.5	132 24.8
13	28	3.3	28	7.9	26	46.6	13 2.4	73 13.7	133 24.9
14	28	3.5	28	8.2	26	46.8	14 2.6	74 13.9	134 25.1
15	28	3.8	28	8.4	26	47.0	15 2.8	75 14.1	135 25.3
16	28	4.0	28	8.7	26	47.3	16 3.0	76 14.3	136 25.5
17	28	4.3	28	8.9	26	47.5	17 3.2	77 14.4	137 25.7
18	28	4.5	28	9.2	26	47.8	18 3.4	78 14.6	138 25.9
19	28	4.8	28	9.4	26	48.0	19 3.6	79 14.8	139 26.1
20	28	5.0	28	9.7	26	48.2	20 3.8	80 15.0	140 26.3
21	28	5.3	28	9.9	26	48.5	21 3.9	81 15.2	141 26.4
22	28	5.5	28	10.2	26	48.7	22 4.1	82 15.4	142 26.6
23	28	5.8	28	10.4	26	49.0	23 4.3	83 15.6	143 26.8
24	28	6.0	28	10.7	26	49.2	24 4.5	84 15.8	144 27.0
25	28	6.3	28	10.9	26	49.4	25 4.7	85 15.9	145 27.2
26	28	6.5	28	11.2	26	49.7	26 4.9	86 16.1	146 27.4
27	28	6.8	28	11.4	26	49.9	27 5.1	87 16.3	147 27.6
28	28	7.0	28	11.7	26	50.1	28 5.3	88 16.5	148 27.8
29	28	7.3	28	11.9	26	50.4	29 5.4	89 16.7	149 27.9
30	28	7.5	28	12.2	26	50.6	30 5.6	90 16.9	150 28.1
31	28	7.8	28	12.4	26	50.9	31 5.8	91 17.1	151 28.3
32	28	8.0	28	12.7	26	51.1	32 6.0	92 17.3	152 28.5
33	28	8.3	28	12.9	26	51.3	33 6.2	93 17.4	153 28.7
34	28	8.5	28	13.2	26	51.6	34 6.4	94 17.6	154 28.9
35	28	8.8	28	13.4	26	51.8	35 6.6	95 17.8	155 29.1
36	28	9.0	28	13.7	26	52.1	36 6.8	96 18.0	156 29.3
37	28	9.3	28	13.9	26	52.3	37 6.9	97 18.2	157 29.4
38	28	9.5	28	14.2	26	52.5	38 7.1	98 18.4	158 29.6
39	28	9.8	28	14.4	26	52.8	39 7.3	99 18.6	159 29.8
40	28	10.0	28	14.7	26	53.0	40 7.5	100 18.8	160 30.0
41	28	10.3	28	14.9	26	53.2	41 7.7	101 18.9	161 30.2
42	28	10.5	28	15.2	26	53.5	42 7.9	102 19.1	162 30.4
43	28	10.8	28	15.4	26	53.7	43 8.1	103 19.3	163 30.6
44	28	11.0	28	15.7	26	54.0	44 8.3	104 19.5	164 30.8
45	28	11.3	28	15.9	26	54.2	45 8.4	105 19.7	165 30.9
46	28	11.5	28	16.2	26	54.4	46 8.6	106 19.9	166 31.1
47	28	11.8	28	16.4	26	54.7	47 8.8	107 20.1	167 31.3
48	28	12.0	28	16.7	26	54.9	48 9.0	108 20.3	168 31.5
49	28	12.3	28	17.0	26	55.2	49 9.2	109 20.4	169 31.7
50	28	12.5	28	17.2	26	55.4	50 9.4	110 20.6	170 31.9
51	28	12.8	28	17.5	26	55.6	51 9.6	111 20.8	171 32.1
52	28	13.0	28	17.7	26	55.9	52 9.8	112 21.0	172 32.3
53	28	13.3	28	18.0	26	56.1	53 9.9	113 21.2	173 32.4
54	28	13.5	28	18.2	26	56.4	54 10.1	114 21.4	174 32.6
55	28	13.8	28	18.5	26	56.6	55 10.3	115 21.6	175 32.8
56	28	14.0	28	18.7	26	56.8	56 10.5	116 21.8	176 33.0
57	28	14.3	28	19.0	26	57.1	57 10.7	117 21.9	177 33.2
58	28	14.5	28	19.2	26	57.3	58 10.9	118 22.1	178 33.4
59	28	14.8	28	19.5	26	57.5	59 11.1	119 22.3	179 33.6
60	28	15.0	28	19.7	26	57.8	60 11.3	120 22.5	180 33.8

1 h 53 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	28	15.0	28	19.7	26	57.8	0 .0	60 11.4	120 22.7
1	28	15.3	28	20.0	26	58.0	1 .2	61 11.5	121 22.9
2	28	15.5	28	20.2	26	58.3	2 .4	62 11.7	122 23.1
3	28	15.8	28	20.5	26	58.5	3 .6	63 11.9	123 23.3
4	28	16.0	28	20.7	26	58.7	4 .8	64 12.1	124 23.5
5	28	16.3	28	21.0	26	59.0	5 .9	65 12.3	125 23.6
6	28	16.5	28	21.2	26	59.2	6 1.1	66 12.5	126 23.8
7	28	16.8	28	21.5	26	59.5	7 1.3	67 12.7	127 24.0
8	28	17.0	28	21.7	26	59.7	8 1.5	68 12.9	128 24.2
9	28	17.3	28	22.0	26	59.9	9 1.7	69 13.1	129 24.4
10	28	17.5	28	22.2	27	.2	10 1.9	70 13.2	130 24.6
11	28	17.8	28	22.5	27	.4	11 2.1	71 13.4	131 24.8
12	28	18.0	28	22.7	27	.6	12 2.3	72 13.6	132 25.0
13	28	18.3	28	23.0	27	.9	13 2.5	73 13.8	133 25.2
14	28	18.5	28	23.2	27	1.1	14 2.6	74 14.0	134 25.3
15	28	18.8	28	23.5	27	1.4	15 2.8	75 14.2	135 25.5
16	28	19.0	28	23.7	27	1.6	16 3.0	76 14.4	136 25.7
17	28	19.3	28	24.0	27	1.8	17 3.2	77 14.6	137 25.9
18	28	19.5	28	24.2	27	2.1	18 3.4	78 14.8	138 26.1
19	28	19.8	28	24.5	27	2.3	19 3.6	79 14.9	139 26.3
20	28	20.0	28	24.7	27	2.6	20 3.8	80 15.1	140 26.5
21	28	20.3	28	25.0	27	2.8	21 4.0	81 15.3	141 26.7
22	28	20.5	28	25.2	27	3.0	22 4.2	82 15.5	142 26.9
23	28	20.8	28	25.5	27	3.3	23 4.4	83 15.7	143 27.1
24	28	21.0	28	25.7	27	3.5	24 4.5	84 15.9	144 27.2
25	28	21.3	28	26.0	27	3.7	25 4.7	85 16.1	145 27.4
26	28	21.5	28	26.2	27	4.0	26 4.9	86 16.3	146 27.6
27	28	21.8	28	26.5	27	4.2	27 5.1	87 16.5	147 27.8
28	28	22.0	28	26.7	27	4.5	28 5.3	88 16.6	148 28.0
29	28	22.3	28	27.0	27	4.7	29 5.5	89 16.8	149 28.2
30	28	22.5	28	27.2	27	4.9	30 5.7	90 17.0	150 28.4
31	28	22.8	28	27.5	27	5.2	31 5.9	91 17.2	151 28.6
32	28	23.0	28	27.7	27	5.4	32 6.1	92 17.4	152 28.8
33	28	23.3	28	28.0	27	5.7	33 6.2	93 17.6	153 28.9
34	28	23.5	28	28.2	27	5.9	34 6.4	94 17.8	154 29.1
35	28	23.8	28	28.5	27	6.1	35 6.6	95 18.0	155 29.3
36	28	24.0	28	28.7	27	6.4	36 6.8	96 18.2	156 29.5
37	28	24.3	28	29.0	27	6.6	37 7.0	97 18.3	157 29.7
38	28	24.5	28	29.2	27	6.9	38 7.2	98 18.5	158 29.9
39	28	24.8	28	29.5	27	7.1	39 7.4	99 18.7	159 30.1
40	28	25.0	28	29.7	27	7.3	40 7.6	100 18.9	160 30.3
41	28	25.3	28	30.0	27	7.6	41 7.8	101 19.1	161 30.5
42	28	25.5	28	30.2	27	7.8	42 7.9	102 19.3	162 30.6
43	28	25.8	28	30.5	27	8.0	43 8.1	103 19.5	163 30.8
44	28	26.0	28	30.7	27	8.3	44 8.3	104 19.7	164 31.0
45	28	26.3	28	31.0	27	8.5	45 8.5	105 19.9	165 31.2
46	28	26.5	28	31.2	27	8.8	46 8.7	106 20.1	166 31.4
47	28	26.8	28	31.5	27	9.0	47 8.9	107 20.2	167 31.6
48	28	27.0	28	31.7	27	9.2	48 9.1	108 20.4	168 31.8
49	28	27.3	28	32.0	27	9.5	49 9.3	109 20.6	169 32.0
50	28	27.5	28	32.2	27	9.7	50 9.5	110 20.8	170 32.2
51	28	27.8	28	32.5	27	10.0	51 9.6	111 21.0	171 32.3
52	28	28.0	28	32.7	27	10.2	52 9.8	112 21.2	172 32.5
53	28	28.3	28	33.0	27	10.4	53 10.0	113 21.4	173 32.7
54	28	28.5	28	33.2	27	10.7	54 10.2	114 21.6	174 32.9
55	28	28.8	28	33.5	27	10.9	55 10.4	115 21.8	175 33.1
56	28	29.0	28	33.7	27	11.1	56 10.6	116 21.9	176 33.3
57	28	29.3	28	34.0	27	11.4	57 10.8	117 22.1	177 33.5
58	28	29.5	28	34.2	27	11.6	58 11.0	118 22.3	178 33.7
59	28	29.8	28	34.5	27	11.9	59 11.2	119 22.5	179 33.9
60	28	30.0	28	34.8	27	12.1	60 11.4	120 22.7	180 34.1

1 h 54 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	28 30.0	28 34.8	27 12.1	0 .0	60 11.5	120 22.9
1	28 30.3	28 35.0	27 12.3	1 .2	61 11.6	121 23.1
2	28 30.5	28 35.3	27 12.6	2 .4	62 11.8	122 23.3
3	28 30.8	28 35.5	27 12.8	3 .6	63 12.0	123 23.5
4	28 31.0	28 35.8	27 13.1	4 .8	64 12.2	124 23.7
5	28 31.3	28 36.0	27 13.3	5 1.0	65 12.4	125 23.9
6	28 31.5	28 36.3	27 13.5	6 1.1	66 12.6	126 24.0
7	28 31.8	28 36.5	27 13.8	7 1.3	67 12.8	127 24.2
8	28 32.0	28 36.8	27 14.0	8 1.5	68 13.0	128 24.4
9	28 32.3	28 37.0	27 14.2	9 1.7	69 13.2	129 24.6
10	28 32.5	28 37.3	27 14.5	10 1.9	70 13.4	130 24.8
11	28 32.8	28 37.5	27 14.7	11 2.1	71 13.5	131 25.0
12	28 33.0	28 37.8	27 15.0	12 2.3	72 13.7	132 25.2
13	28 33.3	28 38.0	27 15.2	13 2.5	73 13.9	133 25.4
14	28 33.5	28 38.3	27 15.4	14 2.7	74 14.1	134 25.6
15	28 33.8	28 38.5	27 15.7	15 2.9	75 14.3	135 25.8
16	28 34.0	28 38.8	27 15.9	16 3.1	76 14.5	136 26.0
17	28 34.3	28 39.0	27 16.2	17 3.2	77 14.7	137 26.1
18	28 34.5	28 39.3	27 16.4	18 3.4	78 14.9	138 26.3
19	28 34.8	28 39.5	27 16.6	19 3.6	79 15.1	139 26.5
20	28 35.0	28 39.8	27 16.9	20 3.8	80 15.3	140 26.7
21	28 35.3	28 40.0	27 17.1	21 4.0	81 15.5	141 26.9
22	28 35.5	28 40.3	27 17.3	22 4.2	82 15.6	142 27.1
23	28 35.8	28 40.5	27 17.6	23 4.4	83 15.8	143 27.3
24	28 36.0	28 40.8	27 17.8	24 4.6	84 16.0	144 27.5
25	28 36.3	28 41.0	27 18.1	25 4.8	85 16.2	145 27.7
26	28 36.5	28 41.3	27 18.3	26 5.0	86 16.4	146 27.9
27	28 36.8	28 41.5	27 18.5	27 5.2	87 16.6	147 28.1
28	28 37.0	28 41.8	27 18.8	28 5.3	88 16.8	148 28.2
29	28 37.3	28 42.0	27 19.0	29 5.5	89 17.0	149 28.4
30	28 37.5	28 42.3	27 19.3	30 5.7	90 17.2	150 28.6
31	28 37.8	28 42.5	27 19.5	31 5.9	91 17.4	151 28.8
32	28 38.0	28 42.8	27 19.7	32 6.1	92 17.6	152 29.0
33	28 38.3	28 43.0	27 20.0	33 6.3	93 17.7	153 29.2
34	28 38.5	28 43.3	27 20.2	34 6.5	94 17.9	154 29.4
35	28 38.8	28 43.5	27 20.5	35 6.7	95 18.1	155 29.6
36	28 39.0	28 43.8	27 20.7	36 6.9	96 18.3	156 29.8
37	28 39.3	28 44.0	27 20.9	37 7.1	97 18.5	157 30.0
38	28 39.5	28 44.3	27 21.2	38 7.3	98 18.7	158 30.2
39	28 39.8	28 44.5	27 21.4	39 7.4	99 18.9	159 30.3
40	28 40.0	28 44.8	27 21.6	40 7.6	100 19.1	160 30.5
41	28 40.3	28 45.0	27 21.9	41 7.8	101 19.3	161 30.7
42	28 40.5	28 45.3	27 22.1	42 8.0	102 19.5	162 30.9
43	28 40.8	28 45.5	27 22.4	43 8.2	103 19.7	163 31.1
44	28 41.0	28 45.8	27 22.6	44 8.4	104 19.8	164 31.3
45	28 41.3	28 46.0	27 22.8	45 8.6	105 20.0	165 31.5
46	28 41.5	28 46.3	27 23.1	46 8.8	106 20.2	166 31.7
47	28 41.8	28 46.5	27 23.3	47 9.0	107 20.4	167 31.9
48	28 42.0	28 46.8	27 23.6	48 9.2	108 20.6	168 32.1
49	28 42.3	28 47.0	27 23.8	49 9.4	109 20.8	169 32.3
50	28 42.5	28 47.3	27 24.0	50 9.5	110 21.0	170 32.4
51	28 42.8	28 47.5	27 24.3	51 9.7	111 21.2	171 32.6
52	28 43.0	28 47.8	27 24.5	52 9.9	112 21.4	172 32.8
53	28 43.3	28 48.0	27 24.7	53 10.1	113 21.6	173 33.0
54	28 43.5	28 48.3	27 25.0	54 10.3	114 21.8	174 33.2
55	28 43.8	28 48.5	27 25.2	55 10.5	115 21.9	175 33.4
56	28 44.0	28 48.8	27 25.5	56 10.7	116 22.1	176 33.6
57	28 44.3	28 49.0	27 25.7	57 10.9	117 22.3	177 33.8
58	28 44.5	28 49.3	27 25.9	58 11.1	118 22.5	178 34.0
59	28 44.8	28 49.5	27 26.2	59 11.3	119 22.7	179 34.2
60	28 45.0	28 49.8	27 26.4	60 11.5	120 22.9	180 34.4

1 h 55 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	28 45.0	28 49.8	27 26.4	0 .0	60 11.6	120 23.1
1	28 45.3	28 50.0	27 26.7	1 .2	61 11.7	121 23.3
2	28 45.5	28 50.3	27 26.9	2 .4	62 11.9	122 23.5
3	28 45.8	28 50.5	27 27.1	3 .6	63 12.1	123 23.7
4	28 46.0	28 50.8	27 27.4	4 .8	64 12.3	124 23.9
5	28 46.3	28 51.0	27 27.6	5 1.0	65 12.5	125 24.1
6	28 46.5	28 51.3	27 27.8	6 1.2	66 12.7	126 24.3
7	28 46.8	28 51.5	27 28.1	7 1.3	67 12.9	127 24.4
8	28 47.0	28 51.8	27 28.3	8 1.5	68 13.1	128 24.6
9	28 47.3	28 52.0	27 28.6	9 1.7	69 13.3	129 24.8
10	28 47.5	28 52.3	27 28.8	10 1.9	70 13.5	130 25.0
11	28 47.8	28 52.5	27 29.0	11 2.1	71 13.7	131 25.2
12	28 48.0	28 52.8	27 29.3	12 2.3	72 13.9	132 25.4
13	28 48.3	28 53.1	27 29.5	13 2.5	73 14.1	133 25.6
14	28 48.5	28 53.3	27 29.8	14 2.7	74 14.2	134 25.8
15	28 48.8	28 53.6	27 30.0	15 2.9	75 14.4	135 26.0
16	28 49.0	28 53.8	27 30.2	16 3.1	76 14.6	136 26.2
17	28 49.3	28 54.1	27 30.5	17 3.3	77 14.8	137 26.4
18	28 49.5	28 54.3	27 30.7	18 3.5	78 15.0	138 26.6
19	28 49.8	28 54.6	27 31.0	19 3.7	79 15.2	139 26.8
20	28 50.0	28 54.8	27 31.2	20 3.9	80 15.4	140 27.0
21	28 50.3	28 55.1	27 31.4	21 4.0	81 15.6	141 27.1
22	28 50.5	28 55.3	27 31.7	22 4.2	82 15.8	142 27.3
23	28 50.8	28 55.6	27 31.9	23 4.4	83 16.0	143 27.5
24	28 51.0	28 55.8	27 32.1	24 4.6	84 16.2	144 27.7
25	28 51.3	28 56.1	27 32.4	25 4.8	85 16.4	145 27.9
26	28 51.5	28 56.3	27 32.6	26 5.0	86 16.6	146 28.1
27	28 51.8	28 56.6	27 32.9	27 5.2	87 16.7	147 28.3
28	28 52.0	28 56.8	27 33.1	28 5.4	88 16.9	148 28.5
29	28 52.3	28 57.1	27 33.3	29 5.6	89 17.1	149 28.7
30	28 52.5	28 57.3	27 33.6	30 5.8	90 17.3	150 28.9
31	28 52.8	28 57.6	27 33.8	31 6.0	91 17.5	151 29.1
32	28 53.0	28 57.8	27 34.1	32 6.2	92 17.7	152 29.3
33	28 53.3	28 58.1	27 34.3	33 6.4	93 17.9	153 29.5
34	28 53.5	28 58.3	27 34.5	34 6.5	94 18.1	154 29.6
35	28 53.8	28 58.6	27 34.8	35 6.7	95 18.3	155 29.8
36	28 54.0	28 58.8	27 35.0	36 6.9	96 18.5	156 30.0
37	28 54.3	28 59.1	27 35.2	37 7.1	97 18.7	157 30.2
38	28 54.5	28 59.3	27 35.5	38 7.3	98 18.9	158 30.4
39	28 54.8	28 59.6	27 35.7	39 7.5	99 19.1	159 30.6
40	28 55.0	28 59.8	27 36.0	40 7.7	100 19.3	160 30.8
41	28 55.3	29 .1	27 36.2	41 7.9	101 19.4	161 31.0
42	28 55.5	29 .3	27 36.4	42 8.1	102 19.6	162 31.2
43	28 55.8	29 .6	27 36.7	43 8.3	103 19.8	163 31.4
44	28 56.0	29 .8	27 36.9	44 8.5	104 20.0	164 31.6
45	28 56.3	29 1.1	27 37.2	45 8.7	105 20.2	165 31.8
46	28 56.5	29 1.3	27 37.4	46 8.9	106 20.4	166 32.0
47	28 56.8	29 1.6	27 37.6	47 9.0	107 20.6	167 32.1
48	28 57.0	29 1.8	27 37.9	48 9.2	108 20.8	168 32.3
49	28 57.3	29 2.1	27 38.1	49 9.4	109 21.0	169 32.5
50	28 57.5	29 2.3	27 38.3	50 9.6	110 21.2	170 32.7
51	28 57.8	29 2.6	27 38.6	51 9.8	111 21.4	171 32.9
52	28 58.0	29 2.8	27 38.8	52 10.0	112 21.6	172 33.1
53	28 58.3	29 3.1	27 39.1	53 10.2	113 21.8	173 33.3
54	28 58.5	29 3.3	27 39.3	54 10.4	114 21.9	174 33.5
55	28 58.8	29 3.6	27 39.5	55 10.6	115 22.1	175 33.7
56	28 59.0	29 3.8	27 39.8	56 10.8	116 22.3	176 33.9
57	28 59.3	29 4.1	27 40.0	57 11.0	117 22.5	177 34.1
58	28 59.5	29 4.3	27 40.3	58 11.2	118 22.7	178 34.3
59	28 59.8	29 4.6	27 40.5	59 11.4	119 22.9	179 34.5
60	29 .0	29 4.8	27 40.7	60 11.6	120 23.1	180 34.7

1 h 56 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	29	.0	29	4.8	27	40.7	0 .0	60 11.7	120 23.3
1	29	.3	29	5.1	27	41.0	1 .2	61 11.8	121 23.5
2	29	.5	29	5.3	27	41.2	2 .4	62 12.0	122 23.7
3	29	.8	29	5.6	27	41.4	3 .6	63 12.2	123 23.9
4	29	1.0	29	5.8	27	41.7	4 .8	64 12.4	124 24.1
5	29	1.3	29	6.1	27	41.9	5 1.0	65 12.6	125 24.3
6	29	1.5	29	6.3	27	42.2	6 1.2	66 12.8	126 24.5
7	29	1.8	29	6.6	27	42.4	7 1.4	67 13.0	127 24.7
8	29	2.0	29	6.8	27	42.6	8 1.6	68 13.2	128 24.9
9	29	2.3	29	7.1	27	42.9	9 1.7	69 13.4	129 25.0
10	29	2.5	29	7.3	27	43.1	10 1.9	70 13.6	130 25.2
11	29	2.8	29	7.6	27	43.4	11 2.1	71 13.8	131 25.4
12	29	3.0	29	7.8	27	43.6	12 2.3	72 14.0	132 25.6
13	29	3.3	29	8.1	27	43.8	13 2.5	73 14.2	133 25.8
14	29	3.5	29	8.3	27	44.1	14 2.7	74 14.4	134 26.0
15	29	3.8	29	8.6	27	44.3	15 2.9	75 14.6	135 26.2
16	29	4.0	29	8.8	27	44.6	16 3.1	76 14.8	136 26.4
17	29	4.3	29	9.1	27	44.8	17 3.3	77 15.0	137 26.6
18	29	4.5	29	9.3	27	45.0	18 3.5	78 15.1	138 26.8
19	29	4.8	29	9.6	27	45.3	19 3.7	79 15.3	139 27.0
20	29	5.0	29	9.8	27	45.5	20 3.9	80 15.5	140 27.2
21	29	5.3	29	10.1	27	45.7	21 4.1	81 15.7	141 27.4
22	29	5.5	29	10.3	27	46.0	22 4.3	82 15.9	142 27.6
23	29	5.8	29	10.6	27	46.2	23 4.5	83 16.1	143 27.8
24	29	6.0	29	10.9	27	46.5	24 4.7	84 16.3	144 28.0
25	29	6.3	29	11.1	27	46.7	25 4.9	85 16.5	145 28.2
26	29	6.5	29	11.4	27	46.9	26 5.0	86 16.7	146 28.3
27	29	6.8	29	11.6	27	47.2	27 5.2	87 16.9	147 28.5
28	29	7.0	29	11.9	27	47.4	28 5.4	88 17.1	148 28.7
29	29	7.3	29	12.1	27	47.7	29 5.6	89 17.3	149 28.9
30	29	7.5	29	12.4	27	47.9	30 5.8	90 17.5	150 29.1
31	29	7.8	29	12.6	27	48.1	31 6.0	91 17.7	151 29.3
32	29	8.0	29	12.9	27	48.4	32 6.2	92 17.9	152 29.5
33	29	8.3	29	13.1	27	48.6	33 6.4	93 18.1	153 29.7
34	29	8.5	29	13.4	27	48.8	34 6.6	94 18.3	154 29.9
35	29	8.8	29	13.6	27	49.1	35 6.8	95 18.4	155 30.1
36	29	9.0	29	13.9	27	49.3	36 7.0	96 18.6	156 30.3
37	29	9.3	29	14.1	27	49.6	37 7.2	97 18.8	157 30.5
38	29	9.5	29	14.4	27	49.8	38 7.4	98 19.0	158 30.7
39	29	9.8	29	14.6	27	50.0	39 7.6	99 19.2	159 30.9
40	29	10.0	29	14.9	27	50.3	40 7.8	100 19.4	160 31.1
41	29	10.3	29	15.1	27	50.5	41 8.0	101 19.6	161 31.3
42	29	10.5	29	15.4	27	50.8	42 8.2	102 19.8	162 31.5
43	29	10.8	29	15.6	27	51.0	43 8.3	103 20.0	163 31.6
44	29	11.0	29	15.9	27	51.2	44 8.5	104 20.2	164 31.8
45	29	11.3	29	16.1	27	51.5	45 8.7	105 20.4	165 32.0
46	29	11.5	29	16.4	27	51.7	46 8.9	106 20.6	166 32.2
47	29	11.8	29	16.6	27	51.9	47 9.1	107 20.8	167 32.4
48	29	12.0	29	16.9	27	52.2	48 9.3	108 21.0	168 32.6
49	29	12.3	29	17.1	27	52.4	49 9.5	109 21.2	169 32.8
50	29	12.5	29	17.4	27	52.7	50 9.7	110 21.4	170 33.0
51	29	12.8	29	17.6	27	52.9	51 9.9	111 21.6	171 33.2
52	29	13.0	29	17.9	27	53.1	52 10.1	112 21.7	172 33.4
53	29	13.3	29	18.1	27	53.4	53 10.3	113 21.9	173 33.6
54	29	13.5	29	18.4	27	53.6	54 10.5	114 22.1	174 33.8
55	29	13.8	29	18.6	27	53.9	55 10.7	115 22.3	175 34.0
56	29	14.0	29	18.9	27	54.1	56 10.9	116 22.5	176 34.2
57	29	14.3	29	19.1	27	54.3	57 11.1	117 22.7	177 34.4
58	29	14.5	29	19.4	27	54.6	58 11.3	118 22.9	178 34.6
59	29	14.8	29	19.6	27	54.8	59 11.5	119 23.1	179 34.8
60	29	15.0	29	19.9	27	55.1	60 11.7	120 23.3	180 35.0

1 h 57 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	29	15.0	29	19.9	27	55.1	0 .0	60 11.8	120 23.5
1	29	15.3	29	20.1	27	55.3	1 .2	61 11.9	121 23.7
2	29	15.5	29	20.4	27	55.5	2 .4	62 12.1	122 23.9
3	29	15.8	29	20.6	27	55.8	3 .6	63 12.3	123 24.1
4	29	16.0	29	20.9	27	56.0	4 .8	64 12.5	124 24.3
5	29	16.3	29	21.1	27	56.2	5 1.0	65 12.7	125 24.5
6	29	16.5	29	21.4	27	56.5	6 1.2	66 12.9	126 24.7
7	29	16.8	29	21.6	27	56.7	7 1.4	67 13.1	127 24.9
8	29	17.0	29	21.9	27	57.0	8 1.6	68 13.3	128 25.1
9	29	17.3	29	22.1	27	57.2	9 1.8	69 13.5	129 25.3
10	29	17.5	29	22.4	27	57.4	10 2.0	70 13.7	130 25.5
11	29	17.8	29	22.6	27	57.7	11 2.2	71 13.9	131 25.7
12	29	18.0	29	22.9	27	57.9	12 2.4	72 14.1	132 25.9
13	29	18.3	29	23.1	27	58.2	13 2.5	73 14.3	133 26.0
14	29	18.5	29	23.4	27	58.4	14 2.7	74 14.5	134 26.2
15	29	18.8	29	23.6	27	58.6	15 2.9	75 14.7	135 26.4
16	29	19.0	29	23.9	27	58.9	16 3.1	76 14.9	136 26.6
17	29	19.3	29	24.1	27	59.1	17 3.3	77 15.1	137 26.8
18	29	19.5	29	24.4	27	59.3	18 3.5	78 15.3	138 27.0
19	29	19.8	29	24.6	27	59.6	19 3.7	79 15.5	139 27.2
20	29	20.0	29	24.9	27	59.8	20 3.9	80 15.7	140 27.4
21	29	20.3	29	25.1	28	.1	21 4.1	81 15.9	141 27.6
22	29	20.5	29	25.4	28	.3	22 4.3	82 16.1	142 27.8
23	29	20.8	29	25.6	28	.5	23 4.5	83 16.3	143 28.0
24	29	21.0	29	25.9	28	.8	24 4.7	84 16.5	144 28.2
25	29	21.3	29	26.1	28	1.0	25 4.9	85 16.6	145 28.4
26	29	21.5	29	26.4	28	1.3	26 5.1	86 16.8	146 28.6
27	29	21.8	29	26.6	28	1.5	27 5.3	87 17.0	147 28.8
28	29	22.0	29	26.9	28	1.7	28 5.5	88 17.2	148 29.0
29	29	22.3	29	27.1	28	2.0	29 5.7	89 17.4	149 29.2
30	29	22.5	29	27.4	28	2.2	30 5.9	90 17.6	150 29.4
31	29	22.8	29	27.6	28	2.4	31 6.1	91 17.8	151 29.6
32	29	23.0	29	27.9	28	2.7	32 6.3	92 18.0	152 29.8
33	29	23.3	29	28.1	28	2.9	33 6.5	93 18.2	153 30.0
34	29	23.5	29	28.4	28	3.2	34 6.7	94 18.4	154 30.2
35	29	23.8	29	28.6	28	3.4	35 6.9	95 18.6	155 30.4
36	29	24.0	29	28.9	28	3.6	36 7.1	96 18.8	156 30.6
37	29	24.3	29	29.2	28	3.9	37 7.2	97 19.0	157 30.7
38	29	24.5	29	29.4	28	4.1	38 7.4	98 19.2	158 30.9
39	29	24.8	29	29.7	28	4.4	39 7.6	99 19.4	159 31.1
40	29	25.0	29	29.9	28	4.6	40 7.8	100 19.6	160 31.3
41	29	25.3	29	30.2	28	4.8	41 8.0	101 19.8	161 31.5
42	29	25.5	29	30.4	28	5.1	42 8.2	102 20.0	162 31.7
43	29	25.8	29	30.7	28	5.3	43 8.4	103 20.2	163 31.9
44	29	26.0	29	30.9	28	5.5	44 8.6	104 20.4	164 32.1
45	29	26.3	29	31.2	28	5.8	45 8.8	105 20.6	165 32.3
46	29	26.5	29	31.4	28	6.0	46 9.0	106 20.8	166 32.5
47	29	26.8	29	31.7	28	6.3	47 9.2	107 21.0	167 32.7
48	29	27.0	29	31.9	28	6.5	48 9.4	108 21.2	168 32.9
49	29	27.3	29	32.2	28	6.7	49 9.6	109 21.3	169 33.1
50	29	27.5	29	32.4	28	7.0	50 9.8	110 21.5	170 33.3
51	29	27.8	29	32.7	28	7.2	51 10.0	111 21.7	171 33.5
52	29	28.0	29	32.9	28	7.5	52 10.2	112 21.9	172 33.7
53	29	28.3	29	33.2	28	7.7	53 10.4	113 22.1	173 33.9
54	29	28.5	29	33.4	28	7.9	54 10.6	114 22.3	174 34.1
55	29	28.8	29	33.7	28	8.2	55 10.8	115 22.5	175 34.3
56	29	29.0	29	33.9	28	8.4	56 11.0	116 22.7	176 34.5
57	29	29.3	29	34.2	28	8.7	57 11.2	117 22.9	177 34.7
58	29	29.5	29	34.4	28	8.9	58 11.4	118 23.1	178 34.9
59	29	29.8	29	34.7	28	9.1	59 11.6	119 23.3	179 35.1
60	29	30.0	29	34.9	28	9.4	60 11.8	120 23.5	180 35.3

1 h 58 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	29	30.0	29	34.9	28	9.4	0 .0	60 11.9	120 23.7
1	29	30.3	29	35.2	28	9.6	1 .2	61 12.0	121 23.9
2	29	30.5	29	35.4	28	9.8	2 .4	62 12.2	122 24.1
3	29	30.8	29	35.7	28	10.1	3 .6	63 12.4	123 24.3
4	29	31.0	29	35.9	28	10.3	4 .8	64 12.6	124 24.5
5	29	31.3	29	36.2	28	10.6	5 1.0	65 12.8	125 24.7
6	29	31.5	29	36.4	28	10.8	6 1.2	66 13.0	126 24.9
7	29	31.8	29	36.7	28	11.0	7 1.4	67 13.2	127 25.1
8	29	32.0	29	36.9	28	11.3	8 1.6	68 13.4	128 25.3
9	29	32.3	29	37.2	28	11.5	9 1.8	69 13.6	129 25.5
10	29	32.5	29	37.4	28	11.8	10 2.0	70 13.8	130 25.7
11	29	32.8	29	37.7	28	12.0	11 2.2	71 14.0	131 25.9
12	29	33.0	29	37.9	28	12.2	12 2.4	72 14.2	132 26.1
13	29	33.3	29	38.2	28	12.5	13 2.6	73 14.4	133 26.3
14	29	33.5	29	38.4	28	12.7	14 2.8	74 14.6	134 26.5
15	29	33.8	29	38.7	28	12.9	15 3.0	75 14.8	135 26.7
16	29	34.0	29	38.9	28	13.2	16 3.2	76 15.0	136 26.9
17	29	34.3	29	39.2	28	13.4	17 3.4	77 15.2	137 27.1
18	29	34.5	29	39.4	28	13.7	18 3.6	78 15.4	138 27.3
19	29	34.8	29	39.7	28	13.9	19 3.8	79 15.6	139 27.5
20	29	35.0	29	39.9	28	14.1	20 4.0	80 15.8	140 27.7
21	29	35.3	29	40.2	28	14.4	21 4.1	81 16.0	141 27.8
22	29	35.5	29	40.4	28	14.6	22 4.3	82 16.2	142 28.0
23	29	35.8	29	40.7	28	14.9	23 4.5	83 16.4	143 28.2
24	29	36.0	29	40.9	28	15.1	24 4.7	84 16.6	144 28.4
25	29	36.3	29	41.2	28	15.3	25 4.9	85 16.8	145 28.6
26	29	36.5	29	41.4	28	15.6	26 5.1	86 17.0	146 28.8
27	29	36.8	29	41.7	28	15.8	27 5.3	87 17.2	147 29.0
28	29	37.0	29	41.9	28	16.0	28 5.5	88 17.4	148 29.2
29	29	37.3	29	42.2	28	16.3	29 5.7	89 17.6	149 29.4
30	29	37.5	29	42.4	28	16.5	30 5.9	90 17.8	150 29.6
31	29	37.8	29	42.7	28	16.8	31 6.1	91 18.0	151 29.8
32	29	38.0	29	42.9	28	17.0	32 6.3	92 18.2	152 30.0
33	29	38.3	29	43.2	28	17.2	33 6.5	93 18.4	153 30.2
34	29	38.5	29	43.4	28	17.5	34 6.7	94 18.6	154 30.4
35	29	38.8	29	43.7	28	17.7	35 6.9	95 18.8	155 30.6
36	29	39.0	29	43.9	28	18.0	36 7.1	96 19.0	156 30.8
37	29	39.3	29	44.2	28	18.2	37 7.3	97 19.2	157 31.0
38	29	39.5	29	44.4	28	18.4	38 7.5	98 19.4	158 31.2
39	29	39.8	29	44.7	28	18.7	39 7.7	99 19.6	159 31.4
40	29	40.0	29	44.9	28	18.9	40 7.9	100 19.8	160 31.6
41	29	40.3	29	45.2	28	19.1	41 8.1	101 19.9	161 31.8
42	29	40.5	29	45.4	28	19.4	42 8.3	102 20.1	162 32.0
43	29	40.8	29	45.7	28	19.6	43 8.5	103 20.3	163 32.2
44	29	41.0	29	45.9	28	19.9	44 8.7	104 20.5	164 32.4
45	29	41.3	29	46.2	28	20.1	45 8.9	105 20.7	165 32.6
46	29	41.5	29	46.4	28	20.3	46 9.1	106 20.9	166 32.8
47	29	41.8	29	46.7	28	20.6	47 9.3	107 21.1	167 33.0
48	29	42.0	29	47.0	28	20.8	48 9.5	108 21.3	168 33.2
49	29	42.3	29	47.2	28	21.1	49 9.7	109 21.5	169 33.4
50	29	42.5	29	47.5	28	21.3	50 9.9	110 21.7	170 33.6
51	29	42.8	29	47.7	28	21.5	51 10.1	111 21.9	171 33.8
52	29	43.0	29	48.0	28	21.8	52 10.3	112 22.1	172 34.0
53	29	43.3	29	48.2	28	22.0	53 10.5	113 22.3	173 34.2
54	29	43.5	29	48.5	28	22.3	54 10.7	114 22.5	174 34.4
55	29	43.8	29	48.7	28	22.5	55 10.9	115 22.7	175 34.6
56	29	44.0	29	49.0	28	22.7	56 11.1	116 22.9	176 34.8
57	29	44.3	29	49.2	28	23.0	57 11.3	117 23.1	177 35.0
58	29	44.5	29	49.5	28	23.2	58 11.5	118 23.3	178 35.2
59	29	44.8	29	49.7	28	23.4	59 11.7	119 23.5	179 35.4
60	29	45.0	29	50.0	28	23.7	60 11.9	120 23.7	180 35.6

1 h 59 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	29	45.0	29	50.0	28	23.7	0 .0	60 12.0	120 23.9
1	29	45.3	29	50.2	28	23.9	1 .2	61 12.1	121 24.1
2	29	45.5	29	50.5	28	24.2	2 .4	62 12.3	122 24.3
3	29	45.8	29	50.7	28	24.4	3 .6	63 12.5	123 24.5
4	29	46.0	29	51.0	28	24.6	4 .8	64 12.7	124 24.7
5	29	46.3	29	51.2	28	24.9	5 1.0	65 12.9	125 24.9
6	29	46.5	29	51.5	28	25.1	6 1.2	66 13.1	126 25.1
7	29	46.8	29	51.7	28	25.4	7 1.4	67 13.3	127 25.3
8	29	47.0	29	52.0	28	25.6	8 1.6	68 13.5	128 25.5
9	29	47.3	29	52.2	28	25.8	9 1.8	69 13.7	129 25.7
10	29	47.5	29	52.5	28	26.1	10 2.0	70 13.9	130 25.9
11	29	47.8	29	52.7	28	26.3	11 2.2	71 14.1	131 26.1
12	29	48.0	29	53.0	28	26.5	12 2.4	72 14.3	132 26.3
13	29	48.3	29	53.2	28	26.8	13 2.6	73 14.5	133 26.5
14	29	48.5	29	53.5	28	27.0	14 2.8	74 14.7	134 26.7
15	29	48.8	29	53.7	28	27.3	15 3.0	75 14.9	135 26.9
16	29	49.0	29	54.0	28	27.5	16 3.2	76 15.1	136 27.1
17	29	49.3	29	54.2	28	27.7	17 3.4	77 15.3	137 27.3
18	29	49.5	29	54.5	28	28.0	18 3.6	78 15.5	138 27.5
19	29	49.8	29	54.7	28	28.2	19 3.8	79 15.7	139 27.7
20	29	50.0	29	55.0	28	28.5	20 4.0	80 15.9	140 27.9
21	29	50.3	29	55.2	28	28.7	21 4.2	81 16.1	141 28.1
22	29	50.5	29	55.5	28	28.9	22 4.4	82 16.3	142 28.3
23	29	50.8	29	55.7	28	29.2	23 4.6	83 16.5	143 28.5
24	29	51.0	29	56.0	28	29.4	24 4.8	84 16.7	144 28.7
25	29	51.3	29	56.2	28	29.6	25 5.0	85 16.9	145 28.9
26	29	51.5	29	56.5	28	29.9	26 5.2	86 17.1	146 29.1
27	29	51.8	29	56.7	28	30.1	27 5.4	87 17.3	147 29.3
28	29	52.0	29	57.0	28	30.4	28 5.6	88 17.5	148 29.5
29	29	52.3	29	57.2	28	30.6	29 5.8	89 17.7	149 29.7
30	29	52.5	29	57.5	28	30.8	30 6.0	90 17.9	150 29.9
31	29	52.8	29	57.7	28	31.1	31 6.2	91 18.1	151 30.1
32	29	53.0	29	58.0	28	31.3	32 6.4	92 18.3	152 30.3
33	29	53.3	29	58.2	28	31.6	33 6.6	93 18.5	153 30.5
34	29	53.5	29	58.5	28	31.8	34 6.8	94 18.7	154 30.7
35	29	53.8	29	58.7	28	32.0	35 7.0	95 18.9	155 30.9
36	29	54.0	29	59.0	28	32.3	36 7.2	96 19.1	156 31.1
37	29	54.3	29	59.2	28	32.5	37 7.4	97 19.3	157 31.3
38	29	54.5	29	59.5	28	32.8	38 7.6	98 19.5	158 31.5
39	29	54.8	29	59.7	28	33.0	39 7.8	99 19.7	159 31.7
40	29	55.0	29	60.0	28	33.2	40 8.0	100 19.9	160 31.9
41	29	55.3	30	.2	28	33.5	41 8.2	101 20.1	161 32.1
42	29	55.5	30	.5	28	33.7	42 8.4	102 20.3	162 32.3
43	29	55.8	30	.7	28	33.9	43 8.6	103 20.5	163 32.5
44	29	56.0	30	1.0	28	34.2	44 8.8	104 20.7	164 32.7
45	29	56.3	30	1.2	28	34.4	45 9.0	105 20.9	165 32.9
46	29	56.5	30	1.5	28	34.7	46 9.2	106 21.1	166 33.1
47	29	56.8	30	1.7	28	34.9	47 9.4	107 21.3	167 33.3
48	29	57.0	30	2.0	28	35.1	48 9.6	108 21.5	168 33.5
49	29	57.3	30	2.2	28	35.4	49 9.8	109 21.7	169 33.7
50	29	57.5	30	2.5	28	35.6	50 10.0	110 21.9	170 33.9
51	29	57.8	30	2.7	28	35.9	51 10.2	111 22.1	171 34.1
52	29	58.0	30	3.0	28	36.1	52 10.4	112 22.3	172 34.3
53	29	58.3	30	3.2	28	36.3	53 10.6	113 22.5	173 34.5
54	29	58.5	30	3.5	28	36.6	54 10.8	114 22.7	174 34.7
55	29	58.8	30	3.7	28	36.8	55 11.0	115 22.9	175 34.9
56	29	59.0	30	4.0	28	37.0	56 11.2	116 23.1	176 35.1
57	29	59.3	30	4.2	28	37.3	57 11.4	117 23.3	177 35.3
58	29	59.5	30	4.5	28	37.5	58 11.6	118 23.5	178 35.5
59	29	59.8	30	4.7	28	37.8	59 11.8	119 23.7	179 35.7
60	30	.0	30	5.0	28	38.0	60 12.0	120 23.9	180 35.9

TABLICA ZA PRETVARANJE

UGAONIH U VREMENSKE VREDNOSTI

VREMENSKIH U UGAONE

UGAONIH U VREMENSKE VREDNOSTI												VREMENSKIH U UGAONE									
o	h	min	o	h	min	o	h	min	o	h	min	/'	min	s	''	s	h	o	min	o	/'
																			s	/'	''
0	0	0	60	4	0	120	8	0	180	12	0	240	16	0	300	20	0	0	0	0	0
1	0	4	61	4	4	121	8	4	181	12	4	241	16	4	301	20	4	1	0	15	1
2	0	8	62	4	8	122	8	8	182	12	8	242	16	8	302	20	8	2	0	30	2
3	0	12	63	4	12	123	8	12	183	12	12	243	16	12	303	20	12	3	0	45	3
4	0	16	64	4	16	124	8	16	184	12	16	244	16	16	304	20	16	4	0	15	4
5	0	20	65	4	20	125	8	20	185	12	20	245	16	20	305	20	20	5	0	30	5
6	0	24	66	4	24	126	8	24	186	12	24	246	16	24	306	20	24	6	0	45	6
7	0	28	67	4	28	127	8	28	187	12	28	247	16	28	307	20	28	7	0	15	7
8	0	32	68	4	32	128	8	32	188	12	32	248	16	32	308	20	32	8	0	30	8
9	0	36	69	4	36	129	8	36	189	12	36	249	16	36	309	20	36	9	0	45	9
10	0	40	70	4	40	130	8	40	190	12	40	250	16	40	310	20	40	10	0	15	10
11	0	44	71	4	44	131	8	44	191	12	44	251	16	44	311	20	44	11	0	30	11
12	0	48	72	4	48	132	8	48	192	12	48	252	16	48	312	20	48	12	0	45	12
13	0	52	73	4	52	133	8	52	193	12	52	253	16	52	313	20	52	13	0	15	13
14	0	56	74	4	56	134	8	56	194	12	56	254	16	56	314	20	56	14	0	30	14
15	1	0	75	5	0	135	9	0	195	13	0	255	17	0	315	21	0	15	1	0	15
16	1	4	76	5	4	136	9	4	196	13	4	256	17	4	316	21	4	16	1	15	16
17	1	8	77	5	8	137	9	8	197	13	8	257	17	8	317	21	8	17	1	30	17
18	1	12	78	5	12	138	9	12	198	13	12	258	17	12	318	21	12	18	1	45	18
19	1	16	79	5	16	139	9	16	199	13	16	259	17	16	319	21	16	19	1	15	19
20	1	20	80	5	20	140	9	20	200	13	20	260	17	20	320	21	20	20	1	30	20
21	1	24	81	5	24	141	9	24	201	13	24	261	17	24	321	21	24	21	1	45	21
22	1	28	82	5	28	142	9	28	202	13	28	262	17	28	322	21	28	22	1	15	22
23	1	32	83	5	32	143	9	32	203	13	32	263	17	32	323	21	32	23	1	30	23
24	1	36	84	5	36	144	9	36	204	13	36	264	17	36	324	21	36	24	1	45	24
25	1	40	85	5	40	145	9	40	205	13	40	265	17	40	325	21	40	25	1	15	25
26	1	44	86	5	44	146	9	44	206	13	44	266	17	44	326	21	44	26	1	30	26
27	1	48	87	5	48	147	9	48	207	13	48	267	17	48	327	21	48	27	1	45	27
28	1	52	88	5	52	148	9	52	208	13	52	268	17	52	328	21	52	28	1	15	28
29	1	56	89	5	56	149	9	56	209	13	56	269	17	56	329	21	56	29	1	30	29
30	2	0	90	6	0	150	10	0	210	14	0	270	18	0	330	22	0	30	2	0	30
31	2	4	91	6	4	151	10	4	211	14	4	271	18	4	331	22	4	31	2	15	31
32	2	8	92	6	8	152	10	8	212	14	8	272	18	8	332	22	8	32	2	30	32
33	2	12	93	6	12	153	10	12	213	14	12	273	18	12	333	22	12	33	2	45	33
34	2	16	94	6	16	154	10	16	214	14	16	274	18	16	334	22	16	34	2	15	34
35	2	20	95	6	20	155	10	20	215	14	20	275	18	20	335	22	20	35	2	30	35
36	2	24	96	6	24	156	10	24	216	14	24	276	18	24	336	22	24	36	2	45	36
37	2	28	97	6	28	157	10	28	217	14	28	277	18	28	337	22	28	37	2	15	37
38	2	32	98	6	32	158	10	32	218	14	32	278	18	32	338	22	32	38	2	30	38
39	2	36	99	6	36	159	10	36	219	14	36	279	18	36	339	22	36	39	2	45	39
40	2	40	100	6	40	160	10	40	220	14	40	280	18	40	340	22	40	40	2	15	40
41	2	44	101	6	44	161	10	44	221	14	44	281	18	44	341	22	44	41	2	30	41
42	2	48	102	6	48	162	10	48	222	14	48	282	18	48	342	22	48	42	2	45	42
43	2	52	103	6	52	163	10	52	223	14	52	283	18	52	343	22	52	43	2	15	43
44	2	56	104	6	56	164	10	56	224	14	56	284	18	56	344	22	56	44	2	30	44
45	3	0	105	7	0	165	11	0	225	15	0	285	19	0	345	23	0	45	3	0	45
46	3	4	106	7	4	166	11	4	226	15	4	286	19	4	346	23	4	46	3	15	46
47	3	8	107	7	8	167	11	8	227	15	8	287	19	8	347	23	8	47	3	30	47
48	3	12	108	7	12	168	11	12	228	15	12	288	19	12	348	23	12	48	3	45	48
49	3	16	109	7	16	169	11	16	229	15	16	289	19	16	349	23	16	49	3	15	49
50	3	20	110	7	20	170	11	20	230	15	20	290	19	20	350	23	20	50	3	30	50
51	3	24	111	7	24	171	11	24	231	15	24	291	19	24	351	23	24	51	3	45	51
52	3	28	112	7	28	172	11	28	232	15	28	292	19	28	352	23	28	52	3	15	52
53	3	32	113	7	32	173	11	32	233	15	32	293	19	32	353	23	32	53	3	30	53
54	3	36	114	7	36	174	11	36	234	15	36	294	19	36	354	23	36	54	3	45	54
55	3	40	115	7	40	175	11	40	235	15	40	295	19	40	355	23	40	55	3	15	55
56	3	44	116	7	44	176	11	44	236	15	44	296	19	44	356	23	44	56	3	30	56
57	3	48	117	7	48	177	11	48	237	15	48	297	19	48	357	23	48	57	3	45	57
58	3	52	118	7	52	178	11	52	238	15	52	298	19	52	358	23	52	58	3	15	58
59	3	56	119	7	56	179	11	56	239	15	56	299	19	56	359	23	56	59	3	30	59
60	4	0	120	8	0	180	12	0	240	16	0	300	20	0	360	24	0	60	4	0	60

★ ★ ★ ★ ★

Uputstvo
ZA
UPOTREBU NAUTIČKOG GODIŠNJAKA

UPUTSTVO

za upotrebu Nautičkog godišnjaka

Nautički godišnjak se sastoji od dva osnovna dela:

1. **Promenljivog** (efemeride Sunca, Meseca, Venere, Marsa, Jupitera, Saturna ...) i
2. **Stalnog** dela.

Efemeride se menjaju svake godine, dok su u stalnom delu prilozi koji se ne menjaju.

Efemeride sadrže:

- a) Mesečeve mene, perigej, apogej, vidljivost planeta, početke godišnjih doba, pomračenje Sunca i Meseca, te kalendar za 2007. godinu;
- b) časovni ugao i deklinaciju Sunca, Meseca, Venere, Marsa, Jupitera i Saturna, časovni ugao Prolećne tačke za svaki parni čas univerzalnog vremena sa jednočasovnim srednjim i stvarnim razlikama;
- c) vreme izlaza i zalaza Sunca i Meseca sa jednočasovnim izmenama za Mesec, i trajanje građanskog i astronomskog sumraka za svaki datum za geografske širine od 60° N do 60° S;
- d) jednačinu vremena za 00^h i 12^h univerzalnog vremena sa jednočasovnom izmenom, vreme gornjeg prolaza Sunca kroz meridijan u Griniču i prividni poluprečnik Sunca (r);
- e) vreme gornjeg prolaza Meseca kroz meridijan u Griniču sa jednočasovnom izmenom, horizontsku paralaksu Meseca i njegov prividni poluprečnik za 00^h u Griniču. Dalje slede starost Meseca u danima i glavne faze (mene) za određene dane;
- f) vreme gornjeg prolaza planeta kroz meridijan Griniča, horizontsku paralaksu, surektascenziju i prividnu veličinu za 00^h univerzalnog vremena;
- g) surektascenzije, deklinacije i vremena gornjih prolaza zvezda kroz meridijan Griniča za svaki prvi dan u mesecu;
- h) podatke za Severnjaču koje čine Tablice popravki I, II i III za određivanje geografske širine pomoću Severnjače i tablice azimuta Severnjače;
- i) ovo uputstvo.

Sadržaj **stalnog** dela je:

- a) interpolacione tablice za izračunavanje trenutaka izlaza-zalaza Sunca i Meseca za $\varphi = 0^{\circ}$ do 30° i za $\varphi = 30^{\circ}$ do 60° ;
- b) interpolacione tablice za određivanje λ_v kao popravke srednjeg vremena pri izračunavanju trenutaka izlaza, zalaza i prolaza Meseca kroz meridijan;
- c) interpolacione tablice za popravku časovnog ugla Sunca i planeta, Prolećne tačke i Meseca i za popravku drugog reda za časovni ugao navedenih nebeskih tela. Tablice omogućuju i popravku deklinacije tih nebeskih tela, određivanje časovnog ugla i deklinacije za bilo koji trenutak;
- d) pomoćne tablice za pretvaranje vremenskih u lučne vrednosti i obratno;
- e) zvanična i zonska vremena i karta zonskih i zvaničnih vremena;
- f) karte zvezdanog neba.

Primeri za rad sa Godišnjakom grupisani su, radi lakšeg pronalaženja, prema sličnosti. Za vreme svakog izračunavanja mora se voditi računa o predznaku koji je jednako važan kao i sama brojka, jer su sva izračunavanja u vidu algebarskog sabiranja odnosno oduzimanja, gde predznak određuje da li će se vršiti sabiranje ili oduzimanje.

PREGLED PRIMERA ZA KORIŠĆENJE NAUTIČKOG GODIŠNJAKA

1. Određivanje časovnog ugla i deklinacije nebeskih tela

Primer:

- | | |
|--|------|
| 1.1. Određivanje časovnog ugla i deklinacije Sunca | 1, 2 |
| 1.2. Određivanje časovnog ugla i deklinacije Meseca | 3, 4 |
| 1.3. Određivanje časovnog ugla i deklinacije planeta | 5, 6 |
| 1.4. Određivanje časovnog ugla i deklinacije zvezda | 7, 8 |

2. Određivanje izlaza i zalaza nebeskih tela

- | | |
|---|--------|
| 2.1. Određivanje izlaza i zalaza Sunca, početka i završetka građanskog i astronomskog sumraka | 9, 10 |
| 2.2. Određivanje izlaza i zalaza Meseca | 11, 12 |

	Primer:
3. Određivanje gornjeg prolaza nebeskih tela kroz meridijan	13, 14
3.1. Određivanje gornjeg prolaza Sunca kroz meridijan	13, 14
3.2. Određivanje gornjeg prolaza Meseca kroz meridijan	15, 16
3.3. Određivanje gornjeg prolaza planeta kroz meridijan	17
3.4. Određivanje gornjeg prolaza zvezda kroz meridijan	18
4. Severnjača	
4.1. Određivanje geografske širine pomoću visine Severnjače i određivanje azimuta Severnjače	19
5. Pretvaranje raznih vrsta vremena	
5.1. Pretvaranje zonskog, mesnog srednjeg vremena i vremena po časovniku u univerzalno vreme i obratno	20–22
5.2. Pretvaranje zvezdanog vremena u zonsko i mesno srednje vreme	23
6. Identifikacija zvezda pomoću zvezdanih karata	24–27

1. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE NEBESKIH TELA

Efemeride daju časovni ugao i deklinaciju Sunca, Meseca i planeta za svaki parni čas i datum, a pomoćne interpolacione tablice omogućuju određivanje časovnog ugla i deklinacije za bilo koji trenutak.

Popravka časovnog ugla određuje se pomoću interpolacionih tablica u koloni „Popravka časovnog ugla“, a popravka drugog reda za časovni ugao na istoj strani u koloni „Popravka drugog reda za časovni ugao i deklinaciju Sunca, Meseca i planeta“.

Prva popravka časovnog ugla određena je pod pretpostavkom da jednočasovne promene časovnih uglova za Sunce iznose 15° , za Prolećnu tačku $15^\circ 02' .5$ i za Mesec $14^\circ 19'$. Popravka drugog reda časovnog ugla Sunca, Meseca i planeta jeste popravka tih srednjih promena, jer stvarne časovne promene časovnih uglova razlikuju se za veće ili manje vrednosti od usvojenih srednjih promena. Veličina Δ za račun popravke drugog reda nalazi se na dnu efemerida Sunca i planeta, za Mesec desno od vrednosti časovnog ugla, a za popravku drugog reda Prolećne tačke ne uzima se u obzir jer su odstupanja od srednje vrednosti $15^\circ 02' .5$ praktično zanemarljiva.

Određivanje deklinacije nekog nebeskog tela za određeni trenutak vršimo na taj način da u efemeridama tog dana za parni čas pronađemo osnovnu vrednost deklinacije. Popravku za određeni trenutak pronalazimo u interpolacionim tablicama u koloni „Popravka drugog reda za časovni ugao i deklinaciju Sunca, Meseca i planeta“, a pomoću vrednosti Δ .

1.1. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE SUNCA

► **PRIMER 1.** Odrediti mesni časovni ugao i deklinaciju Sunca za 14. april 2007. godine u $UT = 7^h 31^m 46^s$ na $\lambda = 96^\circ 14' .6 E$.

a) časovni ugao	b) deklinacija
Sa strane za 14. april S za 6^h $269^\circ 53' .3$	Sa strane za 14. april δ za 6^h $+9^\circ 16' .9$
Iz interpolacionih tablica za $1^h 31^m 46^s$ popravka časovnog ugla Sunca $22^\circ 56' .5$	Iz interpol. tablica za $1^h 31^m$ popravka za $\delta(\Delta = +9)$. . . $+ 1' .4$
Iz interpolacionih tablica za $1^h 31^m$ popravka drugog reda za $S(\Delta = +2)$ $0' .3$	δ $+9^\circ 18' .3$
S $292^\circ 50' .1$	
$+\lambda$ $+ 96^\circ 14' .6$	
s $389^\circ 04' .7 \rightarrow s_W = 29^\circ 04' .7$	

► **PRIMER 2.** Odrediti mesni časovni ugao i deklinaciju Sunca za 18. septembar 2007. godine u $UT = 13^h 05^m 14^s$ na $\lambda = 28^\circ 53' .6 W$.

a) časovni ugao	b) deklinacija
Sa strane za 18. septembar S za 12^h $1^\circ 25' .7$	Sa strane za 18. septembar δ za 12^h $+1^\circ 54' .4$
Iz interpolacionih tablica za $1^h 5^m 14^s$ popravka časovnog ugla Sunca $16^\circ 18' .5$	Iz interpol. tablica za $1^h 5^m$ popravka za $\delta(\Delta = -10)$. . . $- 1' .1$
Popravka drugog reda za $S(\Delta = +2)$ $0' .2$	δ $+1^\circ 53' .3$
S $17^\circ 44' .4$	
$+\lambda$ $- 28^\circ 53' .6$	
s $348^\circ 50' .8 \rightarrow s_E = 11^\circ 09' .2$	

1.2. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE MESECA

► **PRIMER 3.** Odrediti mesni časovni ugao i deklinaciju Meseca za 15. mart 2007. godine u UT = 8^h15^m25^s na $\lambda = 15^{\circ}32'.0W$.

a) časovni ugao

Sa strane za 15. mart S za 8 ^h	346°23'.8
Iz interpolacionih tablica za 0 ^h 15 ^m 25 ^s popravka časovnog ugla Meseca	3°40'.7
Iz interpol. tablica za 0 ^h 15 ^m popravka za S($\Delta = +76$)	2'.0

S	350°6'.5
+ λ	- 15°32'.0

$$s_W \dots\dots\dots 334^{\circ}34'.5 \rightarrow s_E = 25^{\circ}25'.5$$

b) deklinacija

Sa strane za 15. mart δ za 8 ^h	-23° 1'.6
Iz interpol. tablica za 0 ^h 15 ^m popravka za $\delta(\Delta = +105)$	+ 2'.7
δ	-22°58'.9

► **PRIMER 4.** Odrediti mesni časovni ugao i deklinaciju Meseca za 20. jun 2007. godine u UT = 10^h31^m18^s na $\lambda = 34^{\circ}23'.8E$.

a) časovni ugao

Sa strane za 20. jun S za 10 ^h	261°24'.9
Iz interpolacionih tablica za 0 ^h 31 ^m 18 ^s popravka časovnog ugla Meseca	7°28'.1
Iz interpol. tablica za 0 ^h 31 ^m popravka za S($\Delta = +152$)	8'.0

S	269° 1'.0
+ λ	+ 34°23'.8

$$s_W \dots\dots\dots 303^{\circ}24'.8 \rightarrow s_E = 56^{\circ}35'.2$$

b) deklinacija

Sa strane za 20. jun δ za 10 ^h	+10° 9'.1
Iz interpol. tablica za 0 ^h 31 ^m popravka za $\delta(\Delta = -139)$	- 7'.3
δ	+10° 1'.8

1.3. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE PLANETA

► **PRIMER 5.** Odrediti mesni časovni ugao i deklinaciju Venere za 7. decembar 2007. godine u UT = 21^h15^m7^s na $\lambda = 58^{\circ}34'.2E$.

a) časovni ugao

Sa strane za 7. decembar S za 20 ^h	164°57'.5
Iz interpolacionih tablica za 1 ^h 15 ^m 7 ^s popravka časovnog ugla planete	18°46'.8
Iz interpolacionih tablica za 1 ^h 15 ^m popravka drugog reda za S($\Delta = -3$)	- 0'.4

S	183°43'.9
+ λ	+ 58°34'.2

$$s_W \dots\dots\dots 242^{\circ}18'.1 \rightarrow s_E = 117^{\circ}41'.9$$

b) deklinacija

Sa strane za 7. decembar δ za 20 ^h	-10°15'.2
Iz interpol. tablica za 1 ^h 15 ^m popravka za $\delta(\Delta = -10)$	- 1'.3
δ	-10°16'.5

► **PRIMER 6.** Odrediti mesni časovni ugao i deklinaciju Jupitera za 23. oktobar 2007. godine u UT = 8^h55^m28^s na $\lambda = 145^{\circ}20'.1W$.

a) časovni ugao

Sa strane za 23. oktobar S za 8 ^h	254°25'.8
Iz interpolacionih tablica za 0 ^h 55 ^m 28 ^s popravka časovnog ugla planete	13°52'.0
Iz interpolacionih tablica za 0 ^h 55 ^m popravka drugog reda za S($\Delta = +20$)	1'.9

S	268°18'.7
+ λ	-145°20'.1

$$s \dots\dots\dots 122^{\circ}58'.6 \rightarrow s_E = 237^{\circ} 1'.4$$

b) deklinacija

Sa strane za 23. oktobar δ za 8 ^h	-22°36'.2
Iz interpol. tablica za 0 ^h 55 ^m popravka za $\delta(\Delta = 0)$	0'.0
δ	-22°36'.2

1.4. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE ZVEZDE

Za određivanje časovnog ugla zvezde prvo se određuje časovni ugao Prolećne tačke S_{Υ} , odnosno vrednost zvezdanog vremena izražena u stepenima. Njoj dodajemo surektascenziju ($360^{\circ} - \alpha$) te zvezde prema jednačini $S_* = S_{\Upsilon} - \alpha_*$, odnosno $S_* = S_{\Upsilon} + (360^{\circ} - \alpha_*)$. Rektascenzija odnosno surektascenzija zvezda se tokom meseca neznatno menjaju, pa su stoga date njihove vrednosti samo za prvi dan meseca. U slučaju veće promene surektascenzije tokom meseca, njena interpolacija vrši se napamet. Isto tako, deklinacije zvezda date su za prvi dan meseca. U slučaju potrebe interpolacije, ista se vrši napamet.

► **PRIMER 7.** Odrediti mesni časovni ugao i deklinaciju zvezde Regulus (α Leo) za 16. mart 2007. godine u UT = 18^h11^m26^s na $\lambda = 62^{\circ}13'.2W$.

a) časovni ugao Prolećne (Υ) tačke

Sa strane za 16. mart S_{Υ} za 18 ^h	83°56'.5
Iz interpolacionih tablica za 0 ^h 11 ^m 26 ^s popravka časovnog ugla Υ tačke	2°52'.0
<hr/>	
S_{Υ}	86°48'.5
<hr/>	
Deklinacija (iz tablice deklinacija nautičkih zvezda pod r.b. 24 za 1. mart): δ	+11°56'.2

b) časovni ugao zvezde

S_{Υ}	86°48'.5
Iz tablice surektascenzija nautičkih zvezda pod r.b. 24 za 1. mart	207°48'.3
<hr/>	
S_{*}	294°36'.8
+ λ	- 62°13'.2
<hr/>	
S_{*}	232°23'.6
S_E	127°36'.4

► **PRIMER 8.** Odrediti mesni časovni ugao i deklinaciju zvezde Deneb (α Cyg) za 10. avgust 2007. godine u UT = 21^h42^m8^s na $\lambda = 93^{\circ}14'.2E$.

a) časovni ugao Prolećne (Υ) tačke

Sa strane za 10. avgust S_{Υ} za 20 ^h	258°54'.8
Iz interpolacionih tablica za 1 ^h 42 ^m 8 ^s popravka časovnog ugla Υ tačke	25°36'.3
<hr/>	
S_{Υ}	284°31'.1
<hr/>	
Deklinacija (iz tablice deklinacija nautičkih zvezda pod r.b. 50 za 1. avgust): δ	+ 45°18'.2

b) časovni ugao zvezde

S_{Υ}	284°31'.1
Iz tablice surektascenzija nautičkih zvezda pod r.b. 50 za 1. avgust	49°34'.2
<hr/>	
S_{*}	334° 5'.3
+ λ	+ 93°14'.2
<hr/>	
S_{*}	427°19'.5
S_{*}	67°19'.5

2. ODREĐIVANJE IZLAZA I ZALAZA NEBESKIH TELA

2.1. ODREĐIVANJE IZLAZA I ZALAZA SUNCA, POČETKA I ZAVRŠETKA GRAĐANSKOG I ASTRONOMSKOG SUMRAKA

Vremena izlaza i zalaza Sunca (gornjeg ruba), te trajanja sumraka, data su u efemeridama za severne i južne širine od 0° do 60°. Početak građanskog ili astronomskog svitanja određuje se oduzimanjem vremena trajanja sumraka od vremena izlaza Sunca. Završetak građanskog ili astronomskog sumraka određuje se dodavanjem vremena trajanja sumraka vremenu zalaza Sunca. Data su vremena izlaza i zalaza Sunca, te trajanja sumraka, za svaki dan. Potrebno je izvršiti interpolaciju samo za određenu geografsku širinu pomoću dve interpolacione tablice. Prva tablica je za geografske širine od 0° do 30° N i S, a druga za širine od 30° do 60° N i S. Interpolacija vremena trajanja sumraka vrši se po potrebi samo za celobrojne vrednosti minuta.

► **PRIMER 9.** Odrediti vreme izlaza i zalaza Sunca, početak građanskog svitanja i završetak građanskog sumraka za 5. jul 2007. godine na $\varphi = 48^{\circ}28'.2S$, $\lambda = 72^{\circ}43'.6E$, $\varphi = 48^{\circ}.5S$, $\lambda = 4^{\text{h}}50^{\text{m}}.9$ ($x = +5^{\text{h}}$).

a) izlaz

UT = t_s izlaza za $\varphi = 45^{\circ}S$	7 ^h 38 ^m .0
Popravka za 3° .5 iz interpolacionih tablica ($\Delta = +20^{\text{m}}$)	+ 14 ^m .0
<hr/>	
t_s izlaza za $\varphi = 48^{\circ}.5S$	7 ^h 52 ^m .0
+ ($x - \lambda$)	+ 9 ^m .1
<hr/>	
t_x	8 ^h 01 ^m .1
- trajanje građanskog sumraka	- 37 ^m .0
<hr/>	
početak građanskog svitanja	7 ^h 24 ^m .1

b) zalaz

UT = t_s zalaza za $\varphi = 45^{\circ}S$	16 ^h 31 ^m .0
Popravka za 3° .5 iz interpolacionih tablica ($\Delta = -20^{\text{m}}$)	- 14 ^m .0
<hr/>	
t_s zalaza za $\varphi = 48^{\circ}.5S$	16 ^h 17 ^m .0
+ ($x - \lambda$)	+ 9 ^m .1
<hr/>	
t_x	16 ^h 26 ^m .1
+ trajanje građanskog sumraka	+ 37 ^m .0
<hr/>	
završetak građanskog sumraka	17 ^h 03 ^m .1

► **PRIMER 10.** Odrediti vreme izlaza i zalaza Sunca, početak astronomskog svitanja i završetak astronomskog sumraka za 21. septembar 2007. godine na $\varphi = 22^{\circ}14'.0N$, $\lambda = 56^{\circ}41'.2W$, $\varphi = 22^{\circ}.2N$, $\lambda = 3^{\text{h}}46^{\text{m}}.7$ ($x = -4^{\text{h}}$).

a) izlaz

UT = t_s izlaza za $\varphi = 20^{\circ}N$	5 ^h 49 ^m .0
Popravka za 2° .2 iz interpolacionih tablica ($\Delta = -1^{\text{m}}$)	- 0 ^m .2

b) zalaz

UT = t_s zalaza za $\varphi = 20^{\circ}N$	17 ^h 58 ^m .0
Popravka za 2° .2 iz interpolacionih tablica ($\Delta = 0^{\text{m}}$)	+ 0 ^m .0

t_s izlaza za $\varphi = 22^\circ.2N$	5 ^h 48 ^m .8
+ (x - λ)	- 13 ^m .3
<hr/>	
t_x	5 ^h 35 ^m .5
- trajanje astronomskog sumraka	- 1 ^h 14 ^m .5
<hr/>	
početak astronomskog svitanja	4 ^h 21 ^m .0

t_s zalaza za $\varphi = 22^\circ.2N$	17 ^h 58 ^m .0
+ (x - λ)	- 13 ^m .3
<hr/>	
t_x	17 ^h 44 ^m .7
+ trajanje astronomskog sumraka	+ 1 ^h 14 ^m .5
<hr/>	
završetak astronomskog sumraka	18 ^h 59 ^m .2

2.2. ODREĐIVANJE IZLAZA I ZALAZA MESECA

Vremena izlaza i zalaza Meseca (gornjeg ruba) za svaki dan, za severne i južne geografske širine od 0° do 60° , te njihove promene za jedan čas $\Delta/24$ date su u efemeridama. Pomoću izmene $\Delta/24$ određuje se popravka λv prilikom određivanja izlaza i zalaza Meseca. U slučaju određivanja izlaza i zalaza Meseca na istočnim geografskim dužinama u cilju postizanja tačnosti uzima se vrednost $\Delta/24$ za prethodni dan. Vrednost $\Delta/24$ je uvek pozitivna zbog kašnjenja Meseca. Popravka λv se uvek algebarski oduzima od vremena izlaza ili zalaza Meseca u Griniču. Mora da se vodi računa o znacima vrednosti $\lambda \Delta/24$. Popravka λv data je u interpolacionoj tablici za izračunavanje trenutaka izlaza, zalaza i prolaza Meseca kroz meridijan. Prvo se vrši interpolacija za geografsku širinu pomoću interpolacione tablice za određivanje vremena Sunčevih i Mesečevih izlaza i zalaza, a zatim se određuje popravka za geografsku dužinu.

Moguće je da za određeni dan i širinu u efemeridama nema potrebnih podataka. Ta mesta označena su tačkama. U tim slučajevima koriste se podaci za naredni dan.

► **PRIMER 11.** Odrediti vreme izlaza i zalaza Meseca za 19. jun 2007. godine na $\varphi = 17^\circ 36'.0N$, $\lambda = 72^\circ 15'.0E$, $\varphi = 17^\circ.6N$, $\lambda = 4^h 49^m.0E$ ($x = +5^h$).

a) izlaz

UT = t_s izlaza za $\varphi = 10^\circ N$	9 ^h 40 ^m .0
Popravka za $7^\circ.6$ iz interpolacionih tabl. ($\Delta = -2^m$)	- 1 ^m .5
<hr/>	
UT izlaza za $\varphi = 17^\circ.6N$	9 ^h 38 ^m .5
$\lambda = 72^\circ.3E$	
$\Delta/24 = v = 2^m.0$	- λv
<hr/>	
t_s	9 ^h 28 ^m .9
+ (x - λ)	+ 11 ^m .0
<hr/>	
t_x	9 ^h 39 ^m .9

b) zalaz

UT = t_s zalaza za $\varphi = 10^\circ N$	22 ^h 23 ^m .0
Popravka za $7^\circ.6$ iz interpolacionih tabl. ($\Delta = +4^m$)	+ 3 ^m .0
<hr/>	
UT zalaza za $\varphi = 17^\circ.6N$	22 ^h 26 ^m .0
$\lambda = 72^\circ.3E$	
$\Delta/24 = v = 1^m.6$	- λv
<hr/>	
t_s	22 ^h 18 ^m .3
+ (x - λ)	+ 11 ^m .0
<hr/>	
t_x	22 ^h 29 ^m .3

► **PRIMER 12.** Odrediti vreme izlaza i zalaza Meseca za 23. oktobar 2007. godine na $\varphi = 33^\circ 25'.0S$, $\lambda = 38^\circ 53'.0W$, $\varphi = 33^\circ.4S$, $\lambda = 2^h 35^m.5W$ ($x = -3^h$).

a) izlaz

UT = t_s izlaza za $\varphi = 30^\circ S$	+ 15 ^h 27 ^m .0
Popravka za $3^\circ.4$ iz interpolacionih tabl. ($\Delta = -10^m$)	- 6 ^m .8
<hr/>	
UT izlaza za $\varphi = 33^\circ.4S$	+ 15 ^h 20 ^m .2
$\lambda = 38^\circ.9W$	
$\Delta/24 = v = 2^m.8$	- λv
<hr/>	
t_s	+ 15 ^h 12 ^m .9
+ (x - λ)	- 24 ^m .5
<hr/>	
t_x	+ 14 ^h 48 ^m .4

b) zalaz

UT = t_s zalaza za $\varphi = 30^\circ S$	3 ^h 14 ^m .0
Popravka za $3^\circ.4$ iz interpolacionih tabl. ($\Delta = +12^m$)	+ 8 ^m .2
<hr/>	
UT zalaza za $\varphi = 33^\circ.4S$	3 ^h 22 ^m .2
$\lambda = 38^\circ.9W$	
$\Delta/24 = v = 1^m.4$	- λv
<hr/>	
t_s	3 ^h 18 ^m .6
+ (x - λ)	- 24 ^m .5
<hr/>	
t_x	2 ^h 54 ^m .1

2.3. ODREĐIVANJE IZLAZA I ZALAZA PLANETA I ZVEZDA

Trenutak izlaza i zalaza planeta i zvezda se ne određuje jer se njihov izlaz i zalaz ne vide. Ali u slučaju potrebe može se odrediti vrednost poludnevnog luka na osnovu deklinacije određene zvezde i geografske širine posmatrača ili se ista vrednost odredi pomoću Nautičkih tablica na osnovu zadatih vrednosti. Tako određena vrednost poludnevnog luka oduzima se od vremena gornjeg prolaza određene zvezde kroz meridijan i dobija se vreme izlaza, ako se vrednost poludnevnog luka doda vremenu prolaza dobija se vreme zalaza.

3. ODREĐIVANJE GORNJEG PROLAZA NEBESKIH TELA KROZ MERIDIJAN

3.1. ODREĐIVANJE GORNJEG PROLAZA SUNCA KROZ MERIDIJAN

Za određivanje gornjeg prolaza Sunca kroz meridijan koristi se činjenica da Sunce u trenutku gornjeg prolaza kroz meridijan određenog mesta ima časovni ugao 0° . Zapadna geografska dužina određenog mesta, gde je časovni ugao Sunca 0° , odgovara u tom momentu časovnom uglu Sunca u Griniču, odnosno $\lambda_W = S_\odot$. Za istočne geografske širine koristi se jednačina $(360^\circ - \lambda_E) = S_\odot$. Dakle moramo odrediti univerzalno vreme u kojem je časovni ugao Sunca S_\odot jednak λ_W ili $(360^\circ - \lambda_E)$. Tako određenom vremenu dodaje se zonski indeks sa predznakom i dobija se zonsko vreme gornjeg prolaza Sunca kroz meridijan.

Na drugi način, gornji prolaz Sunca kroz meridijan određuje se pomoću jednačine vremena $T_p - e = UT$. U efemeridama su date vrednosti jednačine vremena $e = T_p - UT$ za 00^h i 12^h sa odgovarajućom jednočasovnom promenom. Pomoću jednačine vremena određuje se univerzalno vreme gornjeg prolaza Sunca kroz meridijan. Za istočne geografske širine koristi se $\Delta/24$ za prethodni dan radi postizanja veće tačnosti.

Treći (približni) način određivanja vremena gornjeg prolaza Sunca kroz meridijan, uz najveću moguću grešku do $\pm 0^m.2$, je ako vremenu gornjeg prolaza Sunca kroz meridijan u Griniču T_m dodamo $x - \lambda$ (primer 14b).

► **PRIMER 13.** Odrediti vreme gornjeg prolaza Sunca kroz meridijan za 8. mart 2007. godine na $\lambda = 103^\circ 28' .8W$, $\lambda = 6^h 53^m 55^s$ ($x = -7^h$).

a) pomoću časovnog ugla

$\lambda_W = S_\odot$	103°28'.8
u UT 18 ^h S_\odot	87°17'.6

Iz interpolacione tablice za Sunce u 1^h04^m45^s.0 ... 16°11'.2

UT	19 ^h 04 ^m 45 ^s .0
+x	- 7 ^h 00 ^m 00 ^s .0

t_x

b) pomoću jednačine vremena

t_p	12 ^h 00 ^m 00 ^s .0	e_{12^h}	-10 ^m 53 ^s .0
$-\lambda$	+ 6 ^h 53 ^m 55 ^s .0	$\Delta/24$	+ 0 ^s .6

T_p

$-e$	+ 10 ^m 48 ^s .9	Popravka	4 ^s .1
UT	19 ^h 04 ^m 43 ^s .9	e_{12^h}	-10 ^m 53 ^s .0

t_x

► **PRIMER 14.** Odrediti vreme gornjeg prolaza Sunca kroz meridijan za 22. januar 2007. godine na $\lambda = 145^\circ 52' .1E$, $\lambda = 9^h 43^m 28^s$ ($x = +10^h$).

a) pomoću časovnog ugla

$(360^\circ - \lambda_E) = S_\odot$	214°07'.9
u UT 2 ^h S_\odot	207° 8'.7

Iz interpolacione tablice za Sunce u 0^h27^m41^s.0 ... 6°59'.2

UT	2 ^h 27 ^m 41 ^s .0
+x	+10 ^h 00 ^m 00 ^s .0

t_x

b) skraćeni postupak

$T_m = t_m$	12 ^h 11 ^m .5	$T_m = t_m$	12 ^h 11 ^m .5
$-\lambda$	- 9 ^h 43 ^m .5	$+(x - \lambda)$	0 ^h 16 ^m .5

UT	2 ^h 28 ^m .0
+x	+10 ^h 00 ^m .0

t_x

3.2. ODREĐIVANJE GORNJEG PROLAZA MESECA KROZ MERIDIJAN

Način određivanja gornjeg prolaza Meseca kroz meridijan je isti kao određivanje izlaza i zalaza Meseca. Iz efemerida se dobija univerzalno vreme gornjeg prolaza Meseca kroz meridijan u Griniču uz odgovarajuću časovnu promenu $\Delta/24$. Ako se određuje popravka λ_v za zapadne geografske širine, vrednost $\Delta/24$ uzima se za dan prolaza Meseca kroz meridijan, a za istočne geografske širine uzima se vrednost $\Delta/24$ od prethodnog dana. Popravka λ_v data je u interpolacionoj tablici za izračunavanje trenutaka izlaza, zalaza i prolaza Meseca kroz meridijan.

Moguće je da za određeni dan u efemeridama nema potrebnih podataka. Ta mesta označena su tačkama. U tim slučajevima koriste se podaci za naredni dan.

► **PRIMER 15.** Odrediti vreme gornjeg prolaza Meseca kroz meridijan za 18. januar 2007. godine na $\lambda = 48^\circ 6' .0W$.

T_m	11 ^h 36 ^m .0	$\Delta/24 = v$	2 ^m .4	x	- 3 ^h 00 ^m .0
$-\lambda_v$	+ 7 ^m .7	λ	48° .1	$-\lambda$	+ 3 ^h 12 ^m .4

t_m	11 ^h 43 ^m .7	λ_v	- 7 ^m .7	$+(x - \lambda)$	+ 0 ^h 12 ^m .4
$+(x - \lambda)$	12 ^m .4				

t_x

► **PRIMER 16.** Odrediti vreme gornjeg prolaza Meseca kroz meridijan u Griniču za 23. jun 2007. godine na $\lambda = 126^{\circ}40'.2E$.

T_m	18 ^h 46 ^m .0	$\Delta/24 = v$	1 ^m .7	x	+ 8 ^h 00 ^m .0
$-\lambda v$	— 14 ^m .4	λ	126 ^o .7	$-\lambda$	— 8 ^h 26 ^m .7
<hr/>					
t_m	19 ^h 0 ^m .4	λv	14 ^m .4	$+(x - \lambda)$	— 0 ^h 26 ^m .7
$+(x - \lambda)$	— 0 ^h 26 ^m .7				
<hr/>					
t_x	18 ^h 33 ^m .7				

3.3. ODREĐIVANJE GORNJEG PROLAZA PLANETA KROZ MERIDIJAN

Metodologija određivanja vremena gornjih prolaza planeta kroz meridijan ista je kao za Mesec, uz razliku da vrednost $\Delta/24$ može biti pozitivna, kada planeta kasni kao Mesec, ili negativna, kada planeta rani kao zvezde. Obično je vrednost $\Delta/24$ negativna.

Ako planeta rani u odnosu na prethodni dan na istočnim geografskim dužinama, vreme je veće od griničkog, a na zapadnim manje, t.j. suprotno nego kod Meseca. Ako planeta kasni postupak je isti kao u slučaju određivanja gornjeg prolaza Meseca kroz meridijan. Shodno tome, određuje se znak vrednosti λv . Obično je planetarni dan kraći od srednjeg sunčevog, pa se može desiti da planeta u jednom danu dva puta prolazi kroz meridijan mesta, odmah posle pola noći i nešto pre pola noći.

Pošto je razlika između dva vremena dva uzastopna prolaza kroz meridijan mala, vrednost λv se ne određuje (primer 17b); univerzalno vreme prolaza kroz meridijan je isto kao mesno srednje vreme kojem se samo dodaje $(x - \lambda)$ i na taj način se određuje zonsko vreme prolaza planeta kroz meridijan mesta.

► **PRIMER 17.** Odrediti vreme gornjeg prolaza Jupitera kroz meridijan za 14. jun 2007. godine na $\lambda = 46^{\circ}17'.3W$, $\lambda = 3^h5^m.2$ ($x = -3^h$).

a) tačan postupak	b) približan postupak—u praksi dovoljno tačan		
T_m	23 ^h 18 ^m .0	T_m	23 ^h 23 ^m .2
$-\lambda v$	0 ^m .5	$+(x - \lambda)$	5 ^m .2
<hr/>		<hr/>	
t_m	23 ^h 17 ^m .5	t_x	23 ^h 23 ^m .2
$+(x - \lambda)$	+ 5 ^m .2		
<hr/>			
t_x	23 ^h 22 ^m .7		

3.4. ODREĐIVANJE GORNJEG PROLAZA ZVEZDA KROZ MERIDIJAN

Vreme gornjeg prolaza zvezda kroz meridijan Griniča dato je u efemeridama za svaki prvi dan u mesecu. U slučaju određivanja vremena prolaza kroz meridijan za bilo koji drugi dan u mesecu, od vrednosti iz efemerida oduzima se popravka koja se nalazi na donjem delu stranice za izabrani dan.

Vreme gornjeg prolaza kroz meridijan T_m izraženo u univerzalnom vremenu može da se uzme kao mesno srednje vreme prolaza kroz meridijan posmatrača t_m , što je približno, jer zvezda dnevno rani oko 4 minuta, a što na većim geografskim dužinama stvara greške od 1 do 2 minuta. Dakle, potrebno je odrediti λv , ali se to ne radi jer za svakodnevni rad tačnost je dovoljna, ako se griničko vreme prolaza kroz meridijan uzima kao mesno srednje vreme i, uz dodavanje $(x - \lambda)$, pretvara u zonsko.

► **PRIMER 18.** Odrediti vreme gornjeg prolaza zvezde Arcturus (α Boo) kroz meridijan 23. maja 2007. godine na $\lambda = 28^{\circ}14'.2E$, $\lambda = 1^h52^m.9$, ($x = +2^h$).

Iz tablice gornjih prolaza zvezda kroz meridijan za
 1. maj 2007. godine (r.b. zvezde 35) $T_m = t_m$

$T_m = t_m$	23 ^h 42 ^m .0
Popravka za 23 dana iz iste tablice	— 1 ^h 30 ^m .5
<hr/>	
t_m	22 ^h 11 ^m .5
$+(x - \lambda)$	7 ^m .1
<hr/>	
t_x	22 ^h 18 ^m .6

4. SEVERNJAČA

4.1. ODREĐIVANJE GEOGRAFSKE ŠIRINE POMOĆU VISINE SEVERNJAČE I ODREĐIVANJE AZIMUTA SEVERNJAČE

Izmerena visina Severnjače ispravlja se radi instrumentalnih grešaka k_i i k_e , depresije i refrakcije. Rezultat ispravki je V_p , kojem se dodaju popravke I, II i III iz tablica Godišnjaka. Ulazne vrednosti tablice azimuta Severnjače su mesni časovni ugao Prolećne tačke i geografska širina posmatrača.

► **PRIMER 19.** Odrediti geografsku širinu posmatrača pomoću visine zvezde Severnjače; odrediti njen azimut za 18. septembar 2007. godine u $UT = 22^h36^m00^s$ na $\varphi = 42^\circ23'N$ i $\lambda = 38^\circ47'W$ zbirne pozicije, ako je prava visina Severnjače $V_p = 41^\circ54'.2$.

a) određivanje mesnog časovnog ugla s_γ

S_γ za UT 22 ^h	327°26'.1
Iz interpolacionih tablica popravka S_γ za 36 ^m	9° 1'.5
<hr/>	
S_γ	336°27'.6
+ λ	- 38°47'.0
<hr/>	
s_γ	297°40'.6

b) određivanje visine

V_p	41°54'.2
I	+ 8'.1
II	+ 0'.2
III	- 0'.0
<hr/>	
φ	42° 2'.5
ω	1°.0

5. PRETVARANJE RAZNIH VRSTA VREMENA

5.1. PRETVARANJE ZONSKOG, MESNOG SREDNJEG VREMENA I VREMENA PO ČASOVNIKU U UNIVERZALNO VREME I OBRATNO

Podaci efemerida odnose se na grinički meridijan, pa je ulazna vrednost univerzalno vreme UT.

U slučaju da časovnik osmatrača pokazuje zonsko vreme, vreme posmatranja je zonsko vreme t_x . Isto tako, može to vreme biti vreme po časovniku t_c ili mesno zonsko vreme t_s , a što nije često.

► **PRIMER 20.** Odrediti UT ako su poznati zonsko vreme t_x , vreme po časovniku t_c i srednje mesno vreme t_s na $\lambda = 13^\circ51'.0E$, $\lambda = 0^h55^m24^s$ ($x = +1^h$).

a) prelaz sa t_x na UT

t_x	7 ^h 39 ^m 19 ^s
-x	-1 ^h 00 ^m 00 ^s
<hr/>	
UT	6 ^h 39 ^m 19 ^s

b) prelaz sa t_c na UT

t_c	7 ^h 31 ^m 55 ^s
+U	- 53 ^m 48 ^s
<hr/>	
t_h	6 ^h 38 ^m 07 ^s
+S	+ 1 ^m 12 ^s
<hr/>	
UT	6 ^h 39 ^m 19 ^s

c) prelaz sa t_s na UT

t_s	7 ^h 34 ^m 43 ^s
- λ	- 55 ^m 24 ^s
<hr/>	
UT	6 ^h 36 ^m 19 ^s

Napomena: U—poređenje hronometra sa časovnikom,
S—stanje hronometra.

► **PRIMER 21.** Odrediti zonsko vreme t_x , vreme po časovniku t_c i srednje mesno vreme t_s za UT na $\lambda = 57^\circ24'.0E$, $\lambda = 3^h49^m36^s$ ($x = -4^h$).

a) prelaz sa UT na t_x

UT	9 ^h 46 ^m 12 ^s
+x	-4 ^h 00 ^m 00 ^s
<hr/>	
t_x	5 ^h 46 ^m 12 ^s

b) prelaz sa UT na t_c

UT	9 ^h 46 ^m 12.0 ^s
-S	+ 2 ^m 06 ^s .5
<hr/>	
t_h	9 ^h 48 ^m 18.5 ^s
-U	+3 ^h 53 ^m 27.5 ^s
<hr/>	
t_c	5 ^h 54 ^m 51.0 ^s

c) prelaz sa UT na t_s

UT	9 ^h 46 ^m 12 ^s
+ λ	-3 ^h 49 ^m 36 ^s
<hr/>	
t_s	5 ^h 56 ^m 36 ^s

Napomena: U—poređenje hronometra sa časovnikom,
S—stanje hronometra.

Prepoznavanje zvezde u posmatračevom zenitu je jednostavno, jer se tačka u zenitu nalazi na njegovom meridijanu, a deklinacija zvezde jednaka je geografskoj širini posmatrača. Stoga je surektascenzija zvezde oko $50^{\circ}.0$, a njena deklinacija oko $45^{\circ}11'.0N$. Iz pregleda zvezda Godišnjaka ili zvezdane karte vidljivo je da je to zvezda Deneb (α Cyg) sa stvarnom surektascenzijom $49^{\circ}34'.0$ i deklinacijom $45^{\circ}18'.0$. Ostale zvezde koje nisu u zenitu raspoznaju se upoređenjem slike zvezdanog neba sa zvezdanom kartom.

► **PRIMER 25.** Odrediti za 22. januar 2007. godine u $t_x = 4^h 08^m.6$ ($x = +2$) na zvezdanoj karti meridijan posmatrača i prepoznajte zvezdu blizu zenita. Posmatrač se nalazi na $\varphi = 54^{\circ}50'N$, $\lambda = 47^{\circ}20'.1E$.

a) određivanje UT	b) određivanje S_{γ}	c) određivanje surektascenzije zvezde pomoću izraza $(360^{\circ} - \alpha_*) = (360^{\circ} - \lambda_E) - S_{\gamma}$
t_x $4^h 08^m.6$	22. januar u $02^h S_{\gamma}$ $151^{\circ} 2'.7$	$(360^{\circ} - \lambda)$ $312^{\circ} 39'.9$
$-x$ $-2^h 00^m.0$	Popravka časovnog ugla Prolećne tačke za $08^m.6$ $2^{\circ} 09'.4$	$-S_{\gamma}$ $153^{\circ} 12'.1$
<hr/> UT $2^h 08^m.6$	<hr/> S_{γ} $153^{\circ} 12'.1$	<hr/> $(360^{\circ} - \alpha_*)$ $159^{\circ} 27'.8$

Iz zvezdane karte ili pregleda zvezda vidljivo je da je zvezda blizu zenita Mizar (ζ Ursae Majoris) čija je deklinacija $54^{\circ}53'.3N$, a surektascenzija $158^{\circ}56'.8$.

2. Zvezdana karta u Merkatorovoj projekciji na gornjem i donjem rubu ima upisane mesece i dane i time je posmatraču omogućeno da odmah vidi koji je deo zvezdanog neba vidljiv određenog datuma u pola noći. Ako želimo tačno odrediti meridijan posmatrača, moramo odrediti mesni časovni ugao Prolećne tačke (zvezdano mesno vreme) i izračunatu vrednost oduzeti od 360° . Na gornjem rubu karte pronalazimo odgovarajuću surektascenziju i time dobijamo mesto meridijana posmatrača. Zvezde desno od meridijana su prema zapadu, a levo prema istoku od posmatrača, koji je okrenut prema jugu.

► **PRIMER 26.** Odrediti meridijan posmatrača i prepoznajte zvezdu blizu zenita 14. aprila 2007. godine u $t_x = 23^h 17^m.9$ ($x = +2$) na $\varphi = 52^{\circ}36'N$, $\lambda = 37^{\circ}55'.6E$.

a) određivanje UT	b) određivanje s_{γ}
t_x $23^h 17^m.9$	14. april za $20^h S_{\gamma}$ $142^{\circ} 36'.4$
x $-2^h 00^m.0$	Popravka časovnog ugla Prolećne tačke za $1^h 17^m 53^s$ $19^{\circ} 31'.5$
<hr/> UT $21^h 17^m.9$	<hr/> $-S_{\gamma}$ $162^{\circ} 7'.9$
	$+\lambda$ $+ 37^{\circ} 55'.6$
	<hr/> s_{γ} $200^{\circ} 3'.5$
	α $200^{\circ} 3'.5$
	$(360^{\circ} - s_{\gamma})$ $159^{\circ} 56'.5$
	$(360^{\circ} - \alpha)$ $159^{\circ} 56'.5$

Meridijan posmatrača nalazi se na skali surektascenzije na $159^{\circ}.5$. Pošto je vrednost posmatračeve geografske širine slična vrednosti deklinacije zvezde, zvezda blizu zenita može biti Mizar (ζ UMa), čija je stvarna deklinacija $54^{\circ}53'.5$ i surektascenzija $158^{\circ}55'.9$.

3. Prepoznavanje zvezde u blizini zenita moguće je i pomoću mesnog vremena posmatrača. Zvezdano nebo zvezdane karte prikazano je u pola noći, odnosno kada je $t_s = 00^h$ posmatrača. Znači da je određivanje zenita posmatrača lako, na karti se kao apscisa koristi određeni datum, a ordinata je geografska širina (φ) mesta posmatrača.

Ako se položaj zenita posmatrača određuje u drugo vreme, prvo se određuje zenit u ponoć i zatim se određuje vremenska razlika između $t_s = 0^h$ i mesnog vremena posmatrača, uzima u šestar na satnoj podeli donjeg ruba zvezdane karte i nanosi se od pozicije zenita u pola noći, ulevo ako je traženo vreme posle pola noći ili udesno ako je vreme pre pola noći. Dobijena tačka je pozicija zenita posmatrača.

Na taj način, određeni zenit posmatrača može poslužiti za približnu orijentaciju merenjem zenitne udaljenosti zvezda po levoj ili desnoj stepenskoj podeli deklinacije. Isto tako, može se odrediti približan azimut slično određivanju na pomorskoj karti. U tom slučaju, navigacijski trougao mora se okrenuti jer su E i W strane zvezdane karte suprotno okrenute u odnosu na navigacijsku kartu. Takođe je bitno da su na ovaj način određeni podaci u blizini horizonta posmatrača netačni.

► **PRIMER 27.** Prepoznajte zvezdu čiji je azimut $A_w = 168^{\circ}$ i zenitna udaljenost $z = 29^{\circ}$ dana 11. marta 2007. godine na poziciji $\varphi = 41^{\circ}20'N$ i $\lambda = 17^{\circ}56'E$ u $t_x = 22^h 15^m$ ($x = +1$).

a) određivanje t_s	b) razlika u odnosu na ponoć
t_x $22^h 15^m$	t_{s1} $0^h 00^m$
$-(x - \lambda)$ $+ 12^m$	$-t_{s2}$ $22^h 27^m$
<hr/> t_s $22^h 27^m$	<hr/> Δt_s (pre ponoći) $1^h 33^m$

Postupajući na gore opisani način, naći će se pozicija zenita u ponoć, sa koordinatama: $\phi = \delta = 41^{\circ}.3N$ i $(360^{\circ} - \alpha) = 215^{\circ}$ (11. mart). Od ove pozicije, približno u smeru 168° i na udaljenosti 29° , pronalazimo zvezdu Regulus (α Leonis).



Zvanična

|

ZONSKA VREMENA

ZVANIČNA I ZONSKA VREMENA

ZONSKO VREME

Podela Zemlje na vremenske zone izvršena je tako da svaka vremenska zona obuhvata područje od 15° geografske dužine. Početna vremenska zona sa zonskim indeksom 0 ($x = 0^h$) proteže se od griničkog meridijana na istok i na zapad do $\lambda = 7^{\circ}.5 E$ i $\lambda = 7^{\circ}.5 W$, a ostale zone nadovezuju se na ove prema istoku, i to sa zonskim indeksima $+1^h$ do $+12^h$, a prema zapadu one sa zonskim indeksima od -1^h do -12^h . Zone sa indeksima $+12^h$ i -12^h predstavljaju u stvari jednu te istu zonu sa indeksom $\pm 12^h$ koja se proteže između $\lambda = 172^{\circ}.5 E$ i $\lambda = 172^{\circ}.5 W$, sa središnjim meridijanom 180° po Griniču.

Za prelaz sa zonskog na griničko vreme koristi se obrazac, gde x označava zonski indeks:

$$UT = t_x - x$$

(O pretvaranju vremena vidi primer u poglavlju 5 Uputstva za upotrebu Nautičkog godišnjaka).

GRANICE DATUMA

Linija na čijem se prelazu vrši promena datuma zove se *datumska granica*. Ona se ne proteže tačno po meridijanu 180° , već zaobilazi nastanjeno kopno i ostrva, pa ide linijom koja se dobije spojnicom sledećih tačaka:

φ	λ	φ	λ
90° 0' N	180°	48° 0' N	180°
75° 0' N	180°	05° 0' S	180°
68° 0' N	168° 58' 22" W (ostrva Diomedea)	15° 0' S	172° 5' W
65° 5' N	168° 58' 22" W (Beringov moreuz)	45° 0' S	172° 5' W
53° 0' N	170° E	51° 0' S	180°
		90° 0' S	180°

Prilikom prelaza granice datuma, ploveći prema zapadu datum se *povećava* za jedan dan. Kada se ona prelazi ploveći prema istoku, *smanjuje* se za jedan dan.

ZVANIČNO VREME I LETNJE VREME

Zvanično vreme, tj. ono vreme koje se unutar granica pojedinih država ili unutar njihovih određenih teritorija koristi u službenom i svakodnevnom životu, najčešće je jednako odgovarajućem zonskom vremenu ili tzv. zimskom vremenu (vidi „Pregled zvaničnih vremena“). Veće zemlje imaju više zvaničnih vremena od kojih svako važi za određene teritorije.

Neke zemlje uvode i *letnje vreme* zbog racionalnog iskorišćenja dnevnog svetla. Ono se obično razlikuje od zonskog (zimskog) vremena za 1^h , a načelno važi na severnoj hemisferi za razdoblje od aprila do oktobra, a na južnoj hemisferi od oktobra do marta. Ipak, neke zemlje ne utvrđuju ni jednake ni fiksne datume prelaska, već ih uvode od slučaja do slučaja na nekoliko dana pre prelaska.

Za prelaz sa *zvaničnog* na *griničko* vreme koristi se obrazac

$$UT = t_{zv} - zv,$$

gde zv označava indeks zvaničnog vremena.

HRONOLOŠKI CIKLUSI I ERE

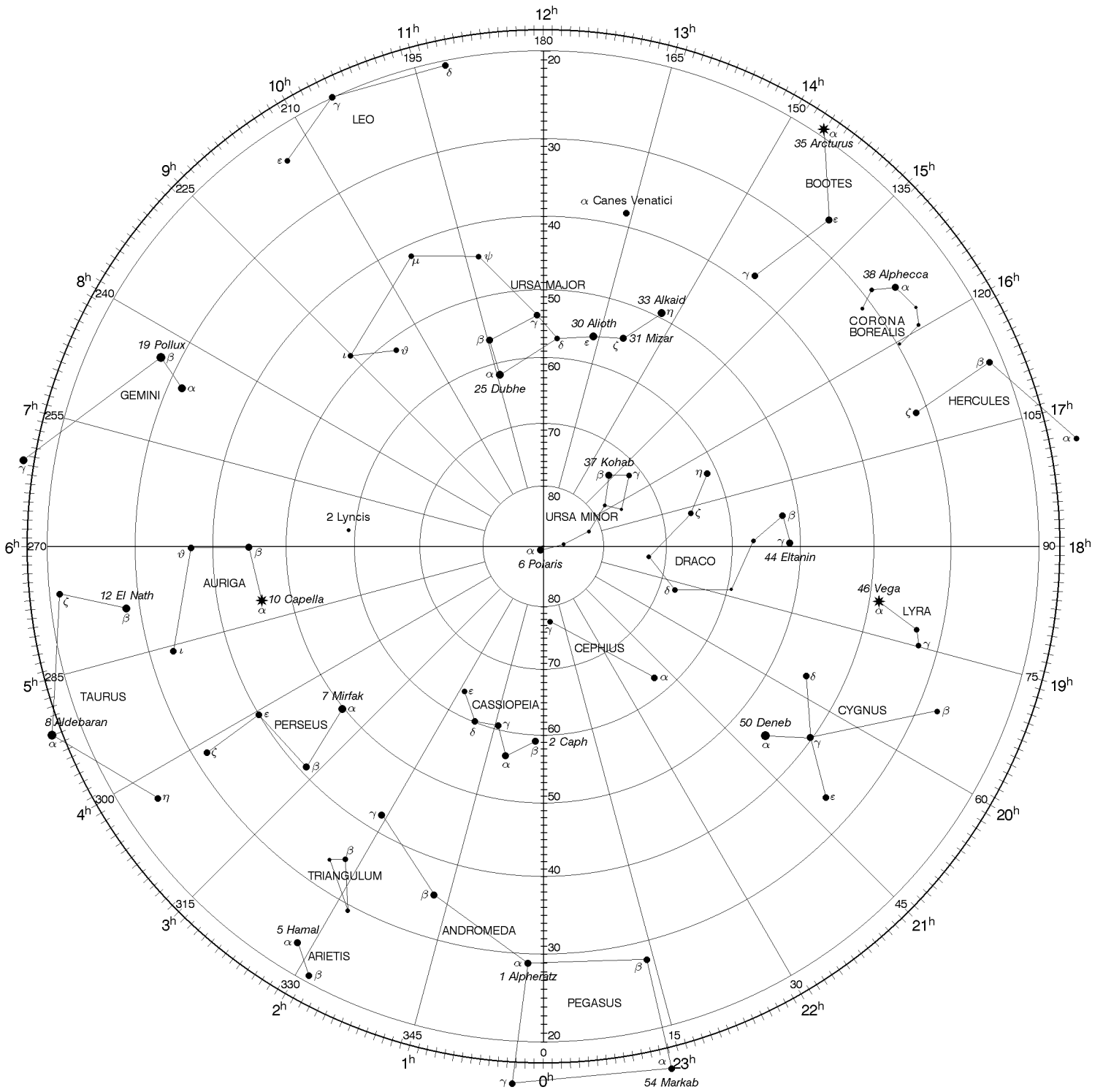
Epakta	11	Julijanski period	6720		
Zlatni broj (Mesečev ciklus)	XIII	Sunčev ciklus	28		
ERA	GODINA	POCINJE	ERA	GODINA	POCINJE
Vizantijska	7516	14. Sep.	Japanska	2667	1. Jan.
Jevrejska	5768	13. Sep.	Grčka (Seleukidova)	2319	14. Sep.
Kineska (Bing-xu)	(4644)	18. Feb.	Indijska (Saka)	1929	22. Mart
Rimska	2760	14. Jan.	Dioklecijanovna	1724	12. Sep.
Nabonasarova	2756	22. Apr.	Islamska (Hegira)	1428	20. Jan.

PREGLED ZVANIČNIH VREMENA

ISTOČNO OD GREENWICH-a	
[+]	
Albanija	1 00
Alžir	1 00
Angola	1 00
Australija:	
Capital Territory	10 00
New South Wales	10 00
Northern Territory	9 30
Queensland	10 00
South Australia	9 30
Tasmania	10 00
Victoria	10 00
Western Australia	8 00
Bahrein	3 00
Balearska ostrva	1 00
Bali	7 00
Bangladeš	6 00
Belgija	1 00
Benin (Dahomej)	1 00
Brunei	8 00
Bugarska	2 00
Burma	6 30
Burundi	2 00
Ceuta	1 00
Čad	1 00
Danska	1 00
Džibuti	3 00
Egipat	2 00
Etiopija	3 00
Fidži	12 00
Filipini	8 00
Finska	2 00
Francuska	1 00
Gabon	1 00
Gibraltar	1 00
Grčka	2 00
Holandija	1 00
Hong Kong	8 00
Indija	5 30
Indonezija:	
Bali, Java, Sumatra	7 00
Borneo, Flores, Timor	8 00
Irian, Molučka ostrva	9 00
Irak	3 00
Iran	3 30
Irska	0 00
Island	0 00
Italija	1 00
Izrael	2 00
Japan	9 00
Jemen	3 00
Jordan	2 00
Jugoslavija	1 00
Južnoafrička Republika	2 00
Kamčatka	12 00
Kamerun	1 00
Kampučija	7 00
Katar	3 00
Kenija	3 00
Kina	8 00
Kipar	2 00
Koreja	9 00
Krit	2 00
Kuvajt	3 00
Laos	7 00
Liban	2 00
Libija	1 00
Madagaskar	3 00
Makao	8 00
Maldivska ostrva	5 00
Malezija	8 00
Malta	1 00
Mandžurija	9 00
Marijanska ostrva	10 00
Mauricijus	4 00
Monako	1 00
Mozambik	2 00
Namibija	2 00
Nemačka	1 00
Nigerija	1 00
Norveška	1 00
Nova Kaledonija	11 00
Novi Zeland	12 00
Oman	4 00
Pakistan	5 00
Papua, Nova Gvineja	10 00
Poljska	1 00
Reunion	4 00
Rumunija	2 00
Rusija (10 zona):	
Novi Port	5 00
Sahalin	11 00
Sankt Petersburg	3 00
Vladivostok	10 00
Volgograd	4 00
Sao Tome i Principe	0 00
Sardinija	1 00
Saudijska Arabija	3 00
Sejšelska ostrva	4 00
Sicilija	1 00
Singapur	8 00
Sirija	2 00
Sokotra	3 00
Somalija	3 00
Sudan	2 00
Španija	1 00
Šri Lanka (Cejlon)	5 30
Švedska	1 00
Tajland	7 00
Tajvan	8 00
Tanzanija	3 00
Tunis	1 00
Turska	3 00
Uganda	3 00
Ujedinjeni Emirati	4 00
Velika Britanija	0 00
Vijetnam	7 00

ZAPADNO OD GREENWICH-a	
[-]	
Argentina	3 00
Azorska ostrva	1 00
Bahamska ostrva	5 00
Barbados	4 00
Belize	6 00
Bermuda	4 00
Bolivija	4 00
Brazil:	
Istočni deo	3 00
Srednji deo	4 00
Zapadni deo	5 00
Čile	4 00
Dominikanska Republika	4 00
Ekvador	5 00
Fokladska ostrva	4 00
Galapagos	6 00
Gambija	0 00
Gana	0 00
Grenada	4 00
Gvajana (Francuska)	3 00
Gvajana (Republika)	3 00
Gvatemala	6 00
Haiti	5 00
Honduras	6 00
Jamajka	5 00
Kajmanska ostrva	5 00
Kanada:	
British Columbia	8 00
Labrador	4 00
New Foundland	3 30
New Scotia	4 00
Yucón	8 00
Kanarska ostrva	0 00
Kapverdska ostrva	1 00
Kolumbija	5 00
Kostarika	6 00
Kuba	5 00
Martinik	4 00
Meksiko	6 00
Midvej	11 00
Nikaragva	6 00
Panamski kanal	5 00
Peru	5 00
Portoriko	4 00
SAD (6 zona):	
Aljaska	9 00
Atlantska obala	5 00
Florida	5 00
Havaji	10 00
Meksički zaliv	6 00
Pacifička obala	8 00
Salvador	6 00
Samoa	11 00
Surinam	3 00
Tobago	4 00
Trinidad	4 00
Urugvaj	3 00
Venecuela	4 00

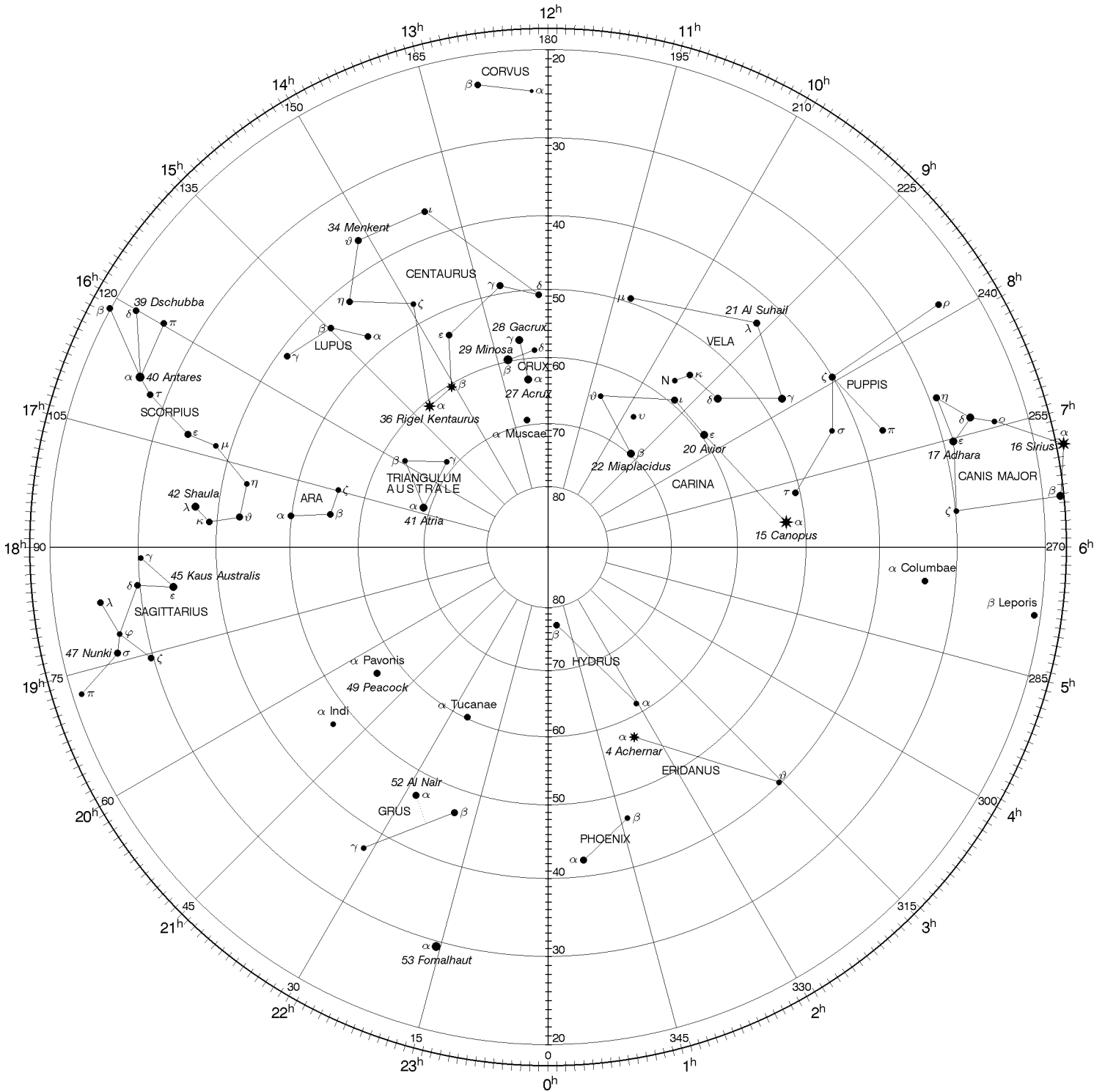
KARTA SAZVEŽDA SEVERNOG NEBA



VELIČINE ZVEZDA

- | | | | | | |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| * $0.0 \geq m$ | * $0.0 < m \leq 0.5$ | * $0.5 < m \leq 1.0$ | ● $1.0 < m \leq 1.5$ | ● $1.5 < m \leq 2.0$ | ● $2.0 < m \leq 2.5$ |
| ● $2.5 < m \leq 3.0$ | ● $3.0 < m \leq 3.5$ | ● $3.5 < m \leq 4.0$ | ● $4.0 < m \leq 4.5$ | ● $4.5 < m \leq 5.0$ | |

KARTA SAZVEŽDA JUŽNOG NEBA



VELIČINE ZVEZDA

- | | | | | | |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| ★ $0.0 \geq m$ | ★ $0.0 < m \leq 0.5$ | ★ $0.5 < m \leq 1.0$ | ● $1.0 < m \leq 1.5$ | ● $1.5 < m \leq 2.0$ | ● $2.0 < m \leq 2.5$ |
| ● $2.5 < m \leq 3.0$ | ● $3.0 < m \leq 3.5$ | ● $3.5 < m \leq 4.0$ | ● $4.0 < m \leq 4.5$ | ● $4.5 < m \leq 5.0$ | |

