



Astrodienst Ephemeris Tables for the year 2199

tropical geocentric zodiac

contains Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, True Node, Moon's Node, Lilith, Chiron

Programming
Dieter Koch and Alois Treindl
based on Swiss Ephemeris
Code D5EPH

ASTRODIENST EPHEMERIS for the year 2199

geocentric

JANUARY 2199

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
T 1	6 43 4	10°34'30	2°11'	21°38'	10°23'	8°48'	6°20'	17°27'	22°R26	20°V 3	23°R 2	27°R39	26°M12	20°II26	6°11'	T 1
W 2	6 47 0	11°35'39	15°45'	23°14'	11°37'	9°33'	6°34'	17°33'	22°II24	20° 3	23°R 1	27°M34	26° 8	20°32'	6°11'	W 2
T 3	6 50 57	12°36'49	29° 0	24°50'	12°52'	10°18'	6°47'	17°40'	22°22'	20° 3	23° 0	27°31'	26° 5	20°39'	6°18'	T 3
F 4	6 54 54	13°37'58	11°Y48	26°26'	14° 6	11° 4	7° 1	17°46'	22°19'	20° 3	22°59'	27°D30	26° 2	20°46'	6°25'	F 4
S 5	6 58 50	14°39'07	24°15'	28° 2	15°20'	11°50'	7°15'	17°52'	22°17'	20° 3	22°58'	27°30'	25°59'	20°52'	6°32'	S 5
S 6	7 2 47	15°40'15	6°B24	29°37'	16°34'	12°35'	7°28'	17°59'	22°15'	20° 3	22°57'	27°32'	25°56'	20°59'	6°39'	S 6
M 7	7 6 43	16°41'24	18°20'	1°12'	17°48'	13°21'	7°42'	18° 5	22°12'	20° 4	22°56'	27°33'	25°52'	21° 6	6°45'	M 7
T 8	7 10 40	17°42'32	0°II10	2°46'	19° 2	14° 7	7°56'	18°12'	22°10'	20° 4	22°55'	27°R33	25°49'	21°12'	6°52'	T 8
W 9	7 14 36	18°43'40	11°57'	4°19'	20°16'	14°52'	8°10'	18°18'	22° 8	20° 4	22°54'	27°32'	25°46'	21°19'	6°59'	W 9
T 10	7 18 33	19°44'48	23°44'	5°52'	21°30'	15°38'	8°23'	18°25'	22° 6	20° 5	22°52'	27°28'	25°43'	21°26'	7° 5	T 10
F 11	7 22 29	20°45'56	5°B36	7°22'	22°44'	16°24'	8°37'	18°32'	22° 4	20° 5	22°51'	27°22'	25°40'	21°32'	7°12'	F 11
S 12	7 26 26	21°47'03	17°33'	8°51'	23°58'	17°10'	8°51'	18°38'	22° 1	20° 5	22°50'	27°14'	25°37'	21°39'	7°18'	S 12
S 13	7 30 23	22°48'11	29°38'	10°18'	25°12'	17°56'	9° 5	18°45'	21°59'	20° 6	22°49'	27° 3	25°33'	21°46'	7°24'	S 13
M14	7 34 19	23°49'18	11°B52	11°42'	26°26'	18°42'	9°19'	18°52'	21°57'	20° 6	22°48'	26°52'	25°30'	21°52'	7°31'	M14
T 15	7 38 16	24°50'24	24°16'	13° 3	27°39'	19°28'	9°33'	18°59'	21°55'	20° 7	22°46'	26°41'	25°27'	21°59'	7°37'	T 15
W16	7 42 12	25°51'31	6°B50	14°21'	28°53'	20°14'	9°47'	19° 5	21°53'	20° 7	22°45'	26°31'	25°24'	22° 6	7°43'	W16
T 17	7 46 9	26°52'37	19°35'	15°34'	0°X 7	21° 0	10° 1	19°12'	21°51'	20° 8	22°44'	26°23'	25°21'	22°12'	7°49'	T 17
F 18	7 50 5	27°53'43	2°B33	16°43'	1°20'	21°46'	10°15'	19°19'	21°49'	20° 8	22°43'	26°17'	25°17'	22°19'	7°55'	F 18
S 19	7 54 2	28°54'49	15°46'	17°45'	2°34'	22°32'	10°29'	19°26'	21°47'	20° 9	22°41'	26°14'	25°14'	22°26'	8° 1	S 19
S 20	7 57 58	29°55'55	29°15'	18°42'	3°47'	23°18'	10°44'	19°33'	21°45'	20°10	22°40'	26°D13	25°11'	22°32'	8° 7	S 20
M21	8 1 55	0°55'01	13°B3	19°31'	5° 1	24° 4	10°58'	19°40'	21°44'	20°10	22°39'	26°14'	25° 8	22°39'	8°13'	M21
T 22	8 5 52	1°58'06	27°10'	20°11'	6°14'	24°51'	11°12'	19°47'	21°42'	20°11	22°37'	26°R14	25° 5	22°46'	8°19'	T 22
W23	8 9 48	2°59'12	11°B36	20°43'	7°28'	25°37'	11°26'	19°54'	21°40'	20°12	22°36'	26°13'	25° 2	22°52'	8°24'	W23
T 24	8 13 45	4° 0'17	26°19'	21° 5	8°41'	26°23'	11°40'	20° 1	21°38'	20°13	22°35'	26°10'	24°58'	22°59'	8°30'	T 24
F 25	8 17 41	5° 1'21	11°B13	21°R16	9°54'	27°10'	11°54'	20° 8	21°37'	20°14	22°33'	26° 4	24°55'	23° 6	8°35'	F 25
S 26	8 21 38	6° 2'25	26°11'	21°16'	11° 8	27°56'	12° 9	20°15'	21°35'	20°15	22°32'	25°55'	24°52'	23°12'	8°41'	S 26
S 27	8 25 34	7° 3'29	11°B3	21° 4	12°21'	28°43'	12°23'	20°22'	21°34'	20°15	22°31'	25°44'	24°49'	23°19'	8°46'	S 27
M28	8 29 31	8° 4'31	25°41'	20°41'	13°34'	29°29'	12°37'	20°29'	21°32'	20°16	22°29'	25°33'	24°46'	23°26'	8°52'	M28
T 29	8 33 27	9° 5'33	9°B57	20° 7	14°47'	0°15'	12°51'	20°36'	21°30'	20°17	22°28'	25°22'	24°43'	23°32'	8°57'	T 29
W30	8 37 24	10° 6'33	23°47'	19°22'	16° 0	1° 2	13° 6	20°43'	21°29'	20°18	22°26'	25°12'	24°39'	23°39'	9° 2	W30
T 31	8 41 21	11°B7'33	7°Y 8	18°B28	17°X13	1°B49	13°B20	20°B50	21°II28	20°Y19	22°R25	25°M 5	24°M36	23°II45	9°17'	T 31

Delta T = 162.02 sec

FEBRUARY 2199

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
F 1	8 45 17	12°B8'31	20°Y 2	17°R25	18°X26	2°B35	13°B34	20°B57	21°R26	20°Y20	22°R24	25°R 1	24°M33	23°II52	9°12'	F 1
S 2	8 49 14	13° 9'28	2°B32	16°B17	19°39'	3°22'	13°49'	21° 5	21°II25	20°22	22°R22	24°M59	24°30'	23°59'	9°17'	S 2
S 3	8 53 10	14°10'24	14°43'	15° 5	20°51'	4° 8	14° 3	21°12'	21°24	20°23	22°21	24°D59	24°27'	24° 5	9°22'	S 3
M 4	8 57 7	15°11'19	26°41'	13°50'	22° 4	4°55'	14°17'	21°19'	21°22	20°24	22°19	24°R59	24°23'	24°12'	9°27'	M 4
T 5	9 1 3	16°12'12	8°II30	12°36'	23°16'	5°42'	14°31'	21°26'	21°21	20°25	22°18	24°58	24°20'	24°19'	9°31'	T 5
W 6	9 5 0	17°13'04	20°17'	11°24'	24°29'	6°28'	14°46'	21°33'	21°20	20°26	22°16	24°56	24°17'	24°25'	9°36'	W 6
T 7	9 8 56	18°13'55	2°B 6	10°17'	25°41'	7°15'	15° 0	21°40'	21°19	20°28	22°15	24°51	24°14'	24°32'	9°40'	T 7
F 8	9 12 53	19°14'45	14° 2	9°15'	26°54'	8° 2	15°14'	21°48'	21°18	20°29	22°13	24°43	24°11'	24°39'	9°45'	F 8
S 9	9 16 50	20°15'33	26° 6	8°19'	28° 6	8°49'	15°28'	21°55'	21°17	20°30	22°12	24°32	24° 8	24°45'	9°49'	S 9
S 10	9 20 46	21°16'20	8°B23	7°31'	29°18'	9°35'	15°43'	22° 2	21°16	20°31	22°11	24°19	24° 4	24°52'	9°53'	S 10
M11	9 24 43	22°17'06	20°51'	6°51'	0°Y30	10°22'	15°57'	22° 9	21°15	20°33	22° 9	24° 5	24° 1	24°59'	9°57'	M11
T 12	9 28 39	23°17'50	3°B32	6°20'	1°42'	11° 9	16°11'	22°16'	21°14	20°34	22° 8	23°51	23°58	25° 5	10° 1	T 12
W13	9 32 36	24°18'33	16°26'	5°56'	2°54'	11°56'	16°25'	22°24	21°13	20°36	22° 6	23°38	23°55	25°12'	10° 5	W13
T 14	9 36 32	25°19'15	29°30'	5°41'	4° 6	12°43'	16°40'	22°31	21°13	20°37	22° 5	23°27	23°52	25°19'	10° 9	T 14
F 15	9 40 29	26°19'56	12°B45	5°33'	5°17'	13°30'	16°54'	22°38	21°12	20°39	22° 3	23°20	23°49	25°25'	10°13'	F 15
S 16	9 44 25	27°20'35	26°11'	5°D33	6°29'	14°16'	17° 8	22°45'	21°11	20°40	22° 2	23°15	23°45	25°32'	10°17'	S 16
S 17	9 48 22	28°21'14	9°M47	5°40'	7°40'	15° 3	17°22'	22°52'	21°11	20°42	22° 0	23°13	23°42	25°39'	10°20'	S 17
M18	9 52 19	29°21'51	23°34'	5°54'	8°52'	15°50'	17°36'	23° 0	21°10	20°43	21°59	23°13	23°39	25°45'	10°24'	M18
T 19	9 56 15	0°X22'27	7°B33	6°13'	10° 3	16°37'	17°50'	23° 7	21°10	20°45	21°58	23°13	23°36	25°52'	10°27'	T 19
W20	10 0 12	1°23'03	21°44'	6°38'	11°14'	17°24'	18° 5	23°14	21° 9	20°46	21°56	23°12	23°33	25°59'	10°31'	W20
T 21	10 4 8	2°23'37	6°B 5	7° 9	12°25'	18°11'	18°19'	23°21	21° 9	20°48	21°55	23° 8	23°29	26° 5	10°34'	T 21
F 22	10 8 5	3°24'09	20°33'	7°44'	13°36'	18°58'	18°33'	23°28	21° 9	20°50	21°53	23° 2	23°26	26°12'	10°37'	F 22
S 23	10 12 1	4°24'41	5°B 5	8°24'	14°47'	19°45'	18°47'	23°35	21° 8	20°51	21°52	22°53	23°23	26°19'	10°40'	S 23
S 24	10 15 58	5°25'11	19°34'	9° 7	15°58'	20°32'	19° 1	23°43	21° 8	20°53	21°50	22°42	23°20	26°25'	10°43'	S 24
M25	10 19 54	6°25'39	3°B52	9°55'	17° 8	21°20'	19°15'	23°50	21° 8	20°55	21°49	22°30	23°17	26°32'	10°46'	M25
T 26	10 23 51	7°26'06	17°55'	10°46'	18°19'	22° 7	19°29'	23°57	21° 8	20°56	21°48	22°18	23°14	26°39'	10°48'	T 26
W27	10 27 47	8°26'31	1°Y37	11°40'	19°29'	22°54'	19°43'	24° 4	21° 8	20°58	21°46	22° 8	23°10	26°45'	10°51'	W27
T 28	10 31 44	9°B26'54	14°Y55	12°B38	20°Y39	23°B41	19°B57	24°B11	21°D 8	21°Y 0	21°R45	22°M 0	23°M 7	26°II52	10°57'	T 28

Delta T = 162.11 sec

ASTRODIENST EPHEMERIS for the year 2199

geocentric

MARCH 2199

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
F 1	10 35 41	10♌27'16	27♏49	13♎38	21♏49	24♎28	20♎11	24♎18	21♏8	21♏2	21♏R44	21♏R55	23♏4	26♏59	10♎56	F 1
S 2	10 39 37	11°27'36	10♏21	14°40	22°59	25°15	20°24	24°25	21°8	21°4	21♏42	21♏53	23°1	27°5	10°58	S 2
S 3	10 43 34	12°27'53	22°35	15°45	24°9	26°2	20°38	24°32	21°8	21°5	21°41	21°D52	22°58	27°12	11°0	S 3
M 4	10 47 30	13°28'09	4♏35	16°52	25°19	26°49	20°52	24°39	21°8	21°7	21°40	21°52	22°55	27°19	11°2	M 4
T 5	10 51 27	14°28'23	16°26	18°2	26°28	27°36	21°6	24°46	21°9	21°9	21°38	21°R52	22°51	27°25	11°4	T 5
W 6	10 55 23	15°28'34	28°15	19°13	27°38	28°24	21°19	24°53	21°9	21°11	21°37	21°52	22°48	27°32	11°6	W 6
T 7	10 59 20	16°28'44	10♏6	20°27	28°47	29°11	21°33	25°0	21°9	21°13	21°36	21°49	22°45	27°39	11°8	T 7
F 8	11 3 16	17°28'52	22°5	21°42	29°56	29°58	21°47	25°6	21°10	21°15	21°34	21°43	22°42	27°45	11°10	F 8
S 9	11 7 13	18°28'57	4♏14	22°58	1♏5	0♏45	22°0	25°13	21°10	21°17	21°33	21°36	22°39	27°52	11°11	S 9
S 10	11 11 10	19°29'00	16°39	24°17	2°14	1°32	22°14	25°20	21°11	21°19	21°32	21°26	22°35	27°59	11°13	S 10
M 11	11 15 6	20°29'02	29°19	25°37	3°22	2°19	22°27	25°27	21°11	21°21	21°31	21°15	22°32	28°5	11°14	M 11
T 12	11 19 3	21°29'01	12♏17	26°58	4°31	3°6	22°41	25°34	21°12	21°23	21°29	21°4	22°29	28°12	11°15	T 12
W 13	11 22 59	22°28'59	25°31	28°21	5°39	3°54	22°54	25°40	21°13	21°25	21°28	20°54	22°26	28°19	11°16	W 13
T 14	11 26 56	23°28'54	8♏59	29°46	6°47	4°41	23°7	25°47	21°14	21°27	21°27	20°45	22°23	28°26	11°17	T 14
F 15	11 30 52	24°28'48	22°39	1♏11	7°55	5°28	23°21	25°54	21°14	21°29	21°26	20°40	22°20	28°32	11°18	F 15
S 16	11 34 49	25°28'40	6♏28	2°38	9°2	6°15	23°34	26°0	21°15	21°31	21°25	20°36	22°16	28°39	11°19	S 16
S 17	11 38 45	26°28'30	20°24	4°7	10°10	7°2	23°47	26°7	21°16	21°33	21°23	20°D36	22°13	28°46	11°20	S 17
M 18	11 42 42	27°28'19	4♏25	5°37	11°17	7°49	24°0	26°13	21°17	21°35	21°22	20°36	22°10	28°52	11°20	M 18
T 19	11 46 39	28°28'06	18°30	7°8	12°24	8°36	24°13	26°20	21°18	21°37	21°21	20°37	22°7	28°59	11°21	T 19
W 20	11 50 35	29°27'51	2♏38	8°40	13°31	9°24	24°26	26°26	21°19	21°40	21°20	20°R37	22°4	29°6	11°21	W 20
T 21	11 54 32	0♏27'35	16°47	10°14	14°38	10°11	24°39	26°33	21°20	21°42	21°19	20°36	22°0	29°12	11°21	T 21
F 22	11 58 28	1°27'17	0♏56	11°49	15°44	10°58	24°52	26°39	21°21	21°44	21°18	20°33	21°57	29°19	11°22	F 22
S 23	12 2 25	2°26'57	15°2	13°25	16°50	11°45	25°5	26°45	21°23	21°46	21°17	20°27	21°54	29°26	11°R22	S 23
S 24	12 6 21	3°26'35	29°2	15°2	17°56	12°32	25°17	26°52	21°24	21°48	21°16	20°20	21°51	29°32	11°22	S 24
M 25	12 10 18	4°26'12	12♏53	16°41	19°2	13°19	25°30	26°58	21°25	21°50	21°15	20°13	21°48	29°39	11°22	M 25
T 26	12 14 14	5°25'47	26°31	18°21	20°7	14°6	25°43	27°4	21°27	21°53	21°14	20°5	21°45	29°46	11°21	T 26
W 27	12 18 11	6°25'19	9♏52	20°2	21°13	14°53	25°55	27°10	21°28	21°55	21°13	19°58	21°41	29°52	11°21	W 27
T 28	12 22 8	7°24'50	22°56	21°45	22°18	15°41	26°8	27°16	21°29	21°57	21°12	19°53	21°38	29°59	11°20	T 28
F 29	12 26 4	8°24'18	5♏41	23°29	23°22	16°28	26°20	27°22	21°31	21°59	21°11	19°50	21°35	0♏6	11°20	F 29
S 30	12 30 1	9°23'45	18°9	25°14	24°27	17°15	26°33	27°28	21°32	22°1	21°10	19°D49	21°32	0°12	11°19	S 30
S 31	12 33 57	10♏23'09	0♏21	27♏0	25♏31	18♏2	26♏45	27♏34	21♏34	22♏4	21♏9	19♏50	21♏29	0♏19	11♏18	S 31

Delta T = 162.18 sec

APRIL 2199

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
M 1	12 37 54	11♏22'31	12♏22	28♏48	26♏35	18♏49	26♏57	27♏40	21♏36	22♏6	21°R8	19♏51	21♏26	0♏26	11°R18	M 1
T 2	12 41 50	12°21'51	24°14	0♏37	27°38	19°36	27°9	27°46	21°37	22°8	21♏8	19°53	21°22	0°32	11♏17	T 2
W 3	12 45 47	13°21'08	6♏4	2°28	28°42	20°23	27°21	27°52	21°39	22°10	21°7	19°54	21°19	0°39	11°16	W 3
T 4	12 49 43	14°20'23	17°56	4°20	29°45	21°10	27°33	27°57	21°41	22°13	21°6	19°R54	21°16	0°46	11°14	T 4
F 5	12 53 40	15°19'36	29°56	6°13	0♏47	21°57	27°45	28°3	21°43	22°15	21°5	19°53	21°13	0°52	11°13	F 5
S 6	12 57 36	16°18'47	12♏7	8°8	1°50	22°44	27°57	28°9	21°45	22°17	21°5	19°50	21°10	0°59	11°12	S 6
S 7	13 1 33	17°17'55	24°34	10°4	2°52	23°31	28°9	28°14	21°47	22°19	21°4	19°46	21°6	1°6	11°10	S 7
M 8	13 5 30	18°17'01	7♏20	12°1	3°53	24°18	28°20	28°20	21°49	22°22	21°3	19°41	21°3	1°12	11°9	M 8
T 9	13 9 26	19°16'04	20°28	14°0	4°55	25°4	28°32	28°25	21°51	22°24	21°3	19°36	21°0	1°19	11°7	T 9
W 10	13 13 23	20°15'06	3♏56	16°0	5°55	25°51	28°43	28°31	21°53	22°26	21°2	19°32	20°57	1°26	11°5	W 10
T 11	13 17 19	21°14'05	17°44	18°1	6°56	26°38	28°54	28°36	21°55	22°28	21°1	19°28	20°54	1°32	11°3	T 11
F 12	13 21 16	22°13'02	1♏48	20°3	7°56	27°25	29°6	28°41	21°57	22°31	21°1	19°26	20°51	1°39	11°2	F 12
S 13	13 25 12	23°11'58	16°4	22°6	8°56	28°12	29°17	28°46	21°59	22°33	21°0	19°D25	20°47	1°46	10°59	S 13
S 14	13 29 9	24°10'51	0♏27	24°11	9°55	28°59	29°28	28°51	22°1	22°35	21°0	19°25	20°44	1°52	10°57	S 14
M 15	13 33 5	25°9'43	14°53	26°16	10°54	29°45	29°39	28°56	22°3	22°38	20°59	19°26	20°41	1°59	10°55	M 15
T 16	13 37 2	26°8'33	29°17	28°22	11°52	0♏32	29°50	29°1	22°6	22°40	20°59	19°28	20°38	2°6	10°53	T 16
W 17	13 40 59	27°7'22	13♏36	0♏28	12°50	1°19	0♏1	29°6	22°8	22°42	20°58	19°29	20°35	2°12	10°50	W 17
T 18	13 44 55	28°6'08	27°47	2°35	13°47	2°5	0°11	29°11	22°10	22°44	20°58	19°R29	20°32	2°19	10°48	T 18
F 19	13 48 52	29°4'53	11♏48	4°41	14°44	2°52	0°22	29°16	22°13	22°47	20°57	19°29	20°28	2°26	10°45	F 19
S 20	13 52 48	0♏3'37	25°38	6°47	15°41	3°39	0°32	29°21	22°15	22°49	20°57	19°27	20°25	2°32	10°43	S 20
S 21	13 56 45	1°2'18	9♏15	8°53	16°37	4°25	0°43	29°25	22°18	22°51	20°57	19°25	20°22	2°39	10°40	S 21
M 22	14 0 41	2°0'58	22°40	10°58	17°32	5°12	0°53	29°30	22°20	22°53	20°56	19°23	20°19	2°46	10°37	M 22
T 23	14 4 38	2°59'36	5♏51	13°1	18°27	5°59	1°3	29°34	22°23	22°56	20°56	19°20	20°16	2°53	10°34	T 23
W 24	14 8 34	3°58'12	18°49	15°3	19°21	6°45	1°13	29°39	22°26	22°58	20°56	19°18	20°12	2°59	10°31	W 24
T 25	14 12 31	4°56'47	1♏32	17°4	20°15	7°32	1°23	29°43	22°28	23°0	20°56	19°17	20°9	3°6	10°28	T 25
F 26	14 16 28	5°55'19	14°2	19°2	21°8	8°18	1°33	29°47	22°31	23°2	20°55	19°D16	20°6	3°13	10°25	F 26
S 27	14 20 24	6°53'50	26°19	20°57	22°0	9°4	1°43	29°52	22°34	23°5	20°55	19°16	20°3	3°19	10°22	S 27
S 28	14 24 21	7°52'19	8♏25	22°50	22°52	9°51	1°52	29°56	22°36	23°7	20°55	19°17	20°0	3°26	10°19	S 28
M 29	14 28 17	8°50'46	20°22	24°40	23°43	10°37	2°2	29°59	22°39	23°9	20°55	19°18	19°57	3°33	10°16	M 29
T 30	14 32 14	9♏49'10	2♏14	26♏26	24♏33	11♏24	2♏11	0♏4	22♏42	23♏11	20♏55	19♏19	19♏53	3♏39	10♏12	T 30

Delta T = 162.26 sec

ASTRODIENST EPHEMERIS for the year 2199

geocentric

MAY 2199

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
W 1	14 36 10	10 ⁸ 47'33	14 ⁴ 4	28 ⁸ 9	25 ^{II} 23	12 ^V 10	2 ^H 20	0 ^H 7	22 ^{II} 45	23 ^V 13	20 ^R 55	19 ^M 20	19 ^M 50	3 ⁵ 46	10 ^R 9	W 1
T 2	14 40 7	11 ⁰ 45'54	25 ⁰ 56	29 ⁰ 49	26 ¹ 11	12 ² 56	2 ² 29	0 ⁰ 11	22 ⁰ 48	23 ¹ 16	20 ⁰ 55	19 ² 20	19 ⁰ 47	3 ⁵ 53	10 ² 5	T 2
F 3	14 44 3	12 ⁰ 44'12	7 ⁰ 55	1 ^{II} 24	26 ⁰ 59	13 ⁰ 42	2 ² 38	0 ⁰ 15	22 ⁰ 50	23 ¹ 18	20 ⁰ 55	19 ⁰ R21	19 ⁰ 44	3 ⁵ 59	10 ⁰ 2	F 3
S 4	14 48 0	13 ⁰ 42'29	20 ⁰ 5	2 ⁰ 56	27 ⁰ 46	14 ⁰ 29	2 ² 47	0 ⁰ 19	22 ⁰ 53	23 ² 20	20 ⁰ 55	19 ⁰ 21	19 ⁰ 41	4 ⁰ 6	9 ⁰ 58	S 4
S 5	14 51 57	14 ⁰ 40'43	2 ⁰ 31	4 ⁰ 23	28 ⁰ 33	15 ⁰ 15	2 ⁰ 56	0 ⁰ 22	22 ⁰ 56	23 ² 22	20 ⁰ 55	19 ⁰ 20	19 ⁰ 37	4 ⁰ 13	9 ⁰ 54	S 5
M 6	14 55 53	15 ⁰ 38'56	15 ⁰ 16	5 ⁰ 47	29 ⁰ 18	16 ⁰ 1	3 ⁰ 5	0 ⁰ 26	22 ⁰ 59	23 ² 24	20 ⁰ 55	19 ⁰ 20	19 ⁰ 34	4 ⁰ 19	9 ⁰ 51	M 6
T 7	14 59 50	16 ⁰ 37'06	28 ⁰ 24	7 ⁰ 6	0 ⁰ 52	16 ⁰ 47	3 ⁰ 13	0 ⁰ 29	23 ⁰ 2	23 ² 26	20 ⁰ 55	19 ⁰ 20	19 ⁰ 31	4 ⁰ 26	9 ⁰ 47	T 7
W 8	15 3 46	17 ⁰ 35'15	11 ⁰ 57	8 ⁰ 21	0 ⁰ 46	17 ⁰ 33	3 ⁰ 21	0 ⁰ 32	23 ⁰ 5	23 ² 28	20 ⁰ 55	19 ⁰ 19	19 ⁰ 28	4 ⁰ 33	9 ⁰ 43	W 8
T 9	15 7 43	18 ⁰ 33'21	25 ⁰ 54	9 ⁰ 31	1 ⁰ 28	18 ⁰ 19	3 ⁰ 30	0 ⁰ 35	23 ⁰ 8	23 ² 31	20 ⁰ 55	19 ⁰ 19	19 ⁰ 25	4 ⁰ 39	9 ⁰ 39	T 9
F 10	15 11 39	19 ⁰ 31'26	10 ⁰ M14	10 ⁰ 37	2 ⁰ 10	19 ⁰ 5	3 ⁰ 38	0 ⁰ 38	23 ⁰ 11	23 ² 33	20 ⁰ 55	19 ⁰ D19	19 ⁰ 22	4 ⁰ 46	9 ⁰ 35	F 10
S 11	15 15 36	20 ⁰ 29'29	24 ⁰ 51	11 ⁰ 38	2 ⁰ 50	19 ⁰ 51	3 ⁰ 45	0 ⁰ 41	23 ⁰ 15	23 ² 35	20 ⁰ 56	19 ⁰ R19	19 ⁰ 18	4 ⁰ 53	9 ⁰ 31	S 11
S 12	15 19 32	21 ⁰ 27'31	9 ⁰ 39	12 ⁰ 35	3 ⁰ 29	20 ⁰ 37	3 ⁰ 53	0 ⁰ 44	23 ⁰ 18	23 ² 37	20 ⁰ 56	19 ⁰ 19	19 ⁰ 15	5 ⁰ 0	9 ⁰ 27	S 12
M13	15 23 29	22 ⁰ 25'31	24 ⁰ 31	13 ⁰ 27	4 ⁰ 7	21 ⁰ 22	4 ⁰ 1	0 ⁰ 47	23 ⁰ 21	23 ² 39	20 ⁰ 56	19 ⁰ 19	19 ⁰ 12	5 ⁰ 6	9 ⁰ 23	M13
T 14	15 27 26	23 ⁰ 23'30	9 ⁰ 30	14 ⁰ 15	4 ⁰ 43	22 ⁰ 8	4 ⁰ 8	0 ⁰ 50	23 ⁰ 24	23 ² 41	20 ⁰ 57	19 ⁰ 19	19 ⁰ 9	5 ⁰ 13	9 ⁰ 19	T 14
W15	15 31 22	24 ⁰ 21'27	23 ⁰ 59	14 ⁰ 57	5 ⁰ 19	22 ⁰ 54	4 ⁰ 16	0 ⁰ 53	23 ⁰ 27	23 ² 43	20 ⁰ 57	19 ⁰ 18	19 ⁰ 6	5 ⁰ 20	9 ⁰ 15	W15
T 16	15 35 19	25 ⁰ 19'23	8 ⁰ 22	15 ⁰ 35	5 ⁰ 53	23 ⁰ 40	4 ⁰ 23	0 ⁰ 55	23 ⁰ 30	23 ² 45	20 ⁰ 57	19 ⁰ 18	19 ⁰ 3	5 ⁰ 26	9 ⁰ 11	T 16
F 17	15 39 15	26 ⁰ 17'18	22 ⁰ 27	16 ⁰ 8	6 ⁰ 26	24 ⁰ 25	4 ⁰ 30	0 ⁰ 58	23 ⁰ 34	23 ² 47	20 ⁰ 58	19 ⁰ D18	18 ⁰ 59	5 ⁰ 33	9 ⁰ 7	F 17
S 18	15 43 12	27 ⁰ 15'12	6 ⁰ 12	16 ⁰ 36	6 ⁰ 57	25 ⁰ 11	4 ⁰ 37	1 ⁰ 0	23 ⁰ 37	23 ² 49	20 ⁰ 58	19 ⁰ 18	18 ⁰ 56	5 ⁰ 40	9 ⁰ 2	S 18
S 19	15 47 8	28 ⁰ 13'04	19 ⁰ 38	16 ⁰ 59	7 ⁰ 27	25 ⁰ 56	4 ⁰ 44	1 ⁰ 2	23 ⁰ 40	23 ² 51	20 ⁰ 58	19 ⁰ 18	18 ⁰ 53	5 ⁰ 46	8 ⁰ 58	S 19
M20	15 51 5	29 ⁰ 10'55	2 ⁰ Y46	17 ⁰ 17	7 ⁰ 55	26 ⁰ 42	4 ⁰ 50	1 ⁰ 5	23 ⁰ 44	23 ² 53	20 ⁰ 59	19 ⁰ 19	18 ⁰ 50	5 ⁰ 53	8 ⁰ 54	M20
T 21	15 55 1	0 ⁰ II 8'45	15 ⁰ 37	17 ⁰ 30	8 ⁰ 22	27 ⁰ 27	4 ⁰ 57	1 ⁰ 7	23 ⁰ 47	23 ² 55	20 ⁰ 59	19 ⁰ 20	18 ⁰ 47	6 ⁰ 0	8 ⁰ 49	T 21
W22	15 58 58	1 ⁰ 6'33	28 ⁰ 14	17 ⁰ 38	8 ⁰ 47	28 ⁰ 13	5 ⁰ 3	1 ⁰ 9	23 ⁰ 50	23 ² 57	21 ⁰ 0	19 ⁰ 21	18 ⁰ 43	6 ⁰ 6	8 ⁰ 45	W22
T 23	16 2 55	2 ⁰ 4'21	10 ⁰ 38	17 ⁰ R41	9 ⁰ 11	28 ⁰ 58	5 ⁰ 9	1 ⁰ 11	23 ⁰ 54	23 ² 58	21 ⁰ 0	19 ⁰ 21	18 ⁰ 40	6 ⁰ 13	8 ⁰ 41	T 23
F 24	16 6 51	3 ⁰ 2'07	22 ⁰ 52	17 ⁰ 40	9 ⁰ 33	29 ⁰ 44	5 ⁰ 15	1 ⁰ 12	23 ⁰ 57	24 ⁰ 0	21 ⁰ 1	19 ⁰ R22	18 ⁰ 37	6 ⁰ 20	8 ⁰ 36	F 24
S 25	16 10 48	3 ⁰ 59'52	4 ⁰ II 57	17 ⁰ 34	9 ⁰ 53	0 ⁰ 829	5 ⁰ 21	1 ⁰ 14	24 ⁰ 0	24 ² 2	21 ⁰ 2	19 ⁰ 21	18 ⁰ 34	6 ⁰ 26	8 ⁰ 32	S 25
S 26	16 14 44	4 ⁰ 57'36	16 ⁰ 55	17 ⁰ 23	10 ⁰ 11	1 ⁰ 14	5 ⁰ 27	1 ⁰ 16	24 ⁰ 4	24 ² 4	21 ⁰ 2	19 ⁰ 20	18 ⁰ 31	6 ⁰ 33	8 ⁰ 28	S 26
M27	16 18 41	5 ⁰ 55'18	28 ⁰ 48	17 ⁰ 9	10 ⁰ 27	1 ⁰ 59	5 ⁰ 32	1 ⁰ 17	24 ⁰ 7	24 ² 6	21 ⁰ 3	19 ⁰ 18	18 ⁰ 28	6 ⁰ 40	8 ⁰ 23	M27
T 28	16 22 37	6 ⁰ 52'59	10 ⁰ 39	16 ⁰ 50	10 ⁰ 41	2 ⁰ 45	5 ⁰ 37	1 ⁰ 19	24 ⁰ 11	24 ² 8	21 ⁰ 4	19 ⁰ 15	18 ⁰ 24	6 ⁰ 47	8 ⁰ 19	T 28
W29	16 26 34	7 ⁰ 50'39	22 ⁰ 29	16 ⁰ 28	10 ⁰ 53	3 ⁰ 30	5 ⁰ 43	1 ⁰ 20	24 ⁰ 14	24 ² 9	21 ⁰ 4	19 ⁰ 12	18 ⁰ 21	6 ⁰ 53	8 ⁰ 15	W29
T 30	16 30 30	8 ⁰ 48'17	4 ⁰ 22	16 ⁰ 3	11 ⁰ 3	4 ⁰ 15	5 ⁰ 48	1 ⁰ 21	24 ⁰ 18	24 ² 11	21 ⁰ 5	19 ⁰ 9	18 ⁰ 18	7 ⁰ 0	8 ⁰ 10	T 30
F 31	16 34 27	9 ⁰ II 45'53	16 ⁰ 20	15 ⁰ II 35	11 ⁰ 31	5 ⁰ 8	5 ⁰ 52	1 ⁰ 22	24 ⁰ II 21	24 ² Y13	21 ⁰ 6	19 ⁰ M 7	18 ⁰ M 15	7 ⁰ 5	8 ⁰ Y 6	F 31

Delta T = 162.34 sec

JUNE 2199

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Day	Sid.t	☉	☽	♀	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
S 1	16 38 24	10 ^{II} 43'29	28 ⁰ 29	15 ⁰ R 5	11 ⁰ 317	5 ⁰ 845	5 ⁰ ✠57	1 ⁰ ✠24	24 ⁰ II24	24 ⁰ Y15	21 ⁰ Ω 7	19 ⁰ R 5	18 ⁰ ♂12	7 ⁰ 313	8 ⁰ R 1	S 1
S 2	16 42 20	11 ⁰ 41'02	10 ⁰ ♂52	14 ⁰ II33	11 ⁰ 20	6 ⁰ 29	6 ⁰ 2	1 ⁰ 24	24 ⁰ 28	24 ⁰ 16	21 ⁰ 7	19 ⁰ D 5	18 ⁰ 9	7 ⁰ 20	7 ⁰ ✠57	S 2
M 3	16 46 17	12 ⁰ 38'35	23 ⁰ 33	14 ⁰ 0	11 ⁰ R21	7 ⁰ 14	6 ⁰ 6	1 ⁰ 25	24 ⁰ 31	24 ⁰ 18	21 ⁰ 8	19 ⁰ ♂. 5	18 ⁰ 5	7 ⁰ 27	7 ⁰ 53	M 3
T 4	16 50 13	13 ⁰ 36'06	6 ⁰ 37	13 ⁰ 26	11 ⁰ 19	7 ⁰ 59	6 ⁰ 10	1 ⁰ 26	24 ⁰ 35	24 ⁰ 20	21 ⁰ 9	19 ⁰ 6	18 ⁰ 2	7 ⁰ 33	7 ⁰ 48	T 4
W 5	16 54 10	14 ⁰ 33'35	20 ⁰ 5	12 ⁰ 53	11 ⁰ 16	8 ⁰ 44	6 ⁰ 14	1 ⁰ 27	24 ⁰ 39	24 ⁰ 21	21 ⁰ 10	19 ⁰ 8	17 ⁰ 59	7 ⁰ 40	7 ⁰ 44	W 5
T 6	16 58 6	15 ⁰ 31'04	4 ⁰ ♂ 1	12 ⁰ 19	11 ⁰ 9	9 ⁰ 28	6 ⁰ 18	1 ⁰ 27	24 ⁰ 42	24 ⁰ 23	21 ⁰ 11	19 ⁰ 9	17 ⁰ 56	7 ⁰ 47	7 ⁰ 40	T 6
F 7	17 2 3	16 ⁰ 28'31	18 ⁰ 22	11 ⁰ 48	11 ⁰ 1	10 ⁰ 13	6 ⁰ 21	1 ⁰ 28	24 ⁰ 46	24 ⁰ 24	21 ⁰ 12	19 ⁰ R10	17 ⁰ 53	7 ⁰ 53	7 ⁰ 35	F 7
S 8	17 5 59	17 ⁰ 25'58	3 ⁰ ✠ 8	11 ⁰ 17	10 ⁰ 50	10 ⁰ 57	6 ⁰ 25	1 ⁰ 28	24 ⁰ 49	24 ⁰ 26	21 ⁰ 13	19 ⁰ 9	17 ⁰ 49	8 ⁰ 0	7 ⁰ 31	S 8
S 9	17 9 56	18 ⁰ 23'23	18 ⁰ 10	10 ⁰ 49	10 ⁰ 36	11 ⁰ 42	6 ⁰ 28	1 ⁰ 28	24 ⁰ 53	24 ⁰ 27	21 ⁰ 14	19 ⁰ 7	17 ⁰ 46	8 ⁰ 7	7 ⁰ 27	S 9
M10	17 13 53	19 ⁰ 20'47	3 ⁰ 21	10 ⁰ 24	10 ⁰ 20	12 ⁰ 26	6 ⁰ 31	1 ⁰ 29	24 ⁰ 56	24 ⁰ 29	21 ⁰ 15	19 ⁰ 4	17 ⁰ 43	8 ⁰ 13	7 ⁰ 23	M10
T 11	17 17 49	20 ⁰ 18'11	18 ⁰ 30	10 ⁰ 2	10 ⁰ 2	13 ⁰ 11	6 ⁰ 34	1 ⁰ R29	25 ⁰ 0	24 ⁰ 30	21 ⁰ 16	19 ⁰ 0	17 ⁰ 40	8 ⁰ 20	7 ⁰ 19	T 11
W12	17 21 46	21 ⁰ 15'34	3 ⁰ 29	9 ⁰ 43	9 ⁰ 42	13 ⁰ 55	6 ⁰ 37	1 ⁰ 29	25 ⁰ 3	24 ⁰ 32	21 ⁰ 17	18 ⁰ 56	17 ⁰ 37	8 ⁰ 27	7 ⁰ 14	W12
T 13	17 25 42	22 ⁰ 12'56	18 ⁰ 9	9 ⁰ 28	9 ⁰ 19	14 ⁰ 39	6 ⁰ 39	1 ⁰ 28	25 ⁰ 7	24 ⁰ 33	21 ⁰ 18	18 ⁰ 52	17 ⁰ 34	8 ⁰ 34	7 ⁰ 10	T 13
F 14	17 29 39	23 ⁰ 10'17	2 ⁰ ✠25	9 ⁰ 17	8 ⁰ 54	15 ⁰ 24	6 ⁰ 41	1 ⁰ 28	25 ⁰ 10	24 ⁰ 35	21 ⁰ 19	18 ⁰ 49	17 ⁰ 30	8 ⁰ 40	7 ⁰ 6	F 14
S 15	17 33 35	24 ⁰ 7'38	16 ⁰ 15	9 ⁰ 10	8 ⁰ 27	16 ⁰ 8	6 ⁰ 44	1 ⁰ 28	25 ⁰ 14	24 ⁰ 36	21 ⁰ 20	18 ⁰ 47	17 ⁰ 27	8 ⁰ 47	7 ⁰ 2	S 15
S 16	17 37 32	25 ⁰ 4'59	29 ⁰ 39	9 ⁰ D 7	7 ⁰ 58	16 ⁰ 52	6 ⁰ 45	1 ⁰ 28	25 ⁰ 18	24 ⁰ 37	21 ⁰ 21	18 ⁰ D47	17 ⁰ 24	8 ⁰ 54	6 ⁰ 58	S 16
M17	17 41 28	26 ⁰ 2'19	12 ⁰ Y40	9 ⁰ 9	7 ⁰ 28	17 ⁰ 36	6 ⁰ 47	1 ⁰ 27	25 ⁰ 21	24 ⁰ 39	21 ⁰ 22	18 ⁰ 48	17 ⁰ 21	9 ⁰ 0	6 ⁰ 54	M17
T 18	17 45 25	26 ⁰ 59'39	25 ⁰ 20	9 ⁰ 16	6 ⁰ 56	18 ⁰ 20	6 ⁰ 49	1 ⁰ 26	25 ⁰ 25	24 ⁰ 40	21 ⁰ 24	18 ⁰ 49	17 ⁰ 18	9 ⁰ 7	6 ⁰ 50	T 18
W19	17 49 22	27 ⁰ 56'58	7 ⁰ 44	9 ⁰ 27	6 ⁰ 22	19 ⁰ 4	6 ⁰ 50	1 ⁰ 26	25 ⁰ 28	24 ⁰ 41	21 ⁰ 25	18 ⁰ 51	17 ⁰ 15	9 ⁰ 14	6 ⁰ 46	W19
T 20	17 53 18	28 ⁰ 54'18	19 ⁰ 56	9 ⁰ 42	5 ⁰ 48	19 ⁰ 48	6 ⁰ 51	1 ⁰ 25	25 ⁰ 32	24 ⁰ 42	21 ⁰ 26	18 ⁰ R51	17 ⁰ 11	9 ⁰ 20	6 ⁰ 43	T 20
F 21	17 57 15	29 ⁰ 51'36	1 ⁰ II58	10 ⁰ 3	5 ⁰ 12	20 ⁰ 31	6 ⁰ 52	1 ⁰ 24	25 ⁰ 35	24 ⁰ 44	21 ⁰ 27	18 ⁰ 50	17 ⁰ 8	9 ⁰ 27	6 ⁰ 39	F 21
S 22	18 1 11	0 ⁰ 34'8'55	13 ⁰ 53	10 ⁰ 27	4 ⁰ 35	21 ⁰ 15	6 ⁰ 53	1 ⁰ 23	25 ⁰ 39	24 ⁰ 45	21 ⁰ 29	18 ⁰ 47	17 ⁰ 5	9 ⁰ 34	6 ⁰ 35	S 22
S 23	18 5 8	1 ⁰ 46'12	25 ⁰ 45	10 ⁰ 57	3 ⁰ 58	21 ⁰ 59	6 ⁰ 54	1 ⁰ 22	25 ⁰ 43	24 ⁰ 46	21 ⁰ 30	18 ⁰ 43	17 ⁰ 2	9 ⁰ 40	6 ⁰ 31	S 23
M24	18 9 4	2 ⁰ 43'30	7 ⁰ 35	11 ⁰ 30	3 ⁰ 21	22 ⁰ 42	6 ⁰ 54	1 ⁰ 21	25 ⁰ 46	24 ⁰ 47	21 ⁰ 31	18 ⁰ 36	16 ⁰ 59	9 ⁰ 47	6 ⁰ 28	M24
T 25	18 13 1	3 ⁰ 40'47	19 ⁰ 26	12 ⁰ 8	2 ⁰ 43	23 ⁰ 26	6 ⁰ 54	1 ⁰ 19	25 ⁰ 50	24 ⁰ 48	21 ⁰ 32	18 ⁰ 28	16 ⁰ 55	9 ⁰ 54	6 ⁰ 24	T 25
W26	18 16 57	4 ⁰ 38'03	1 ⁰ Ω18	12 ⁰ 51	2 ⁰ 6	24 ⁰ 9	6 ⁰ R54	1 ⁰ 18	25 ⁰ 53	24 ⁰ 49	21 ⁰ 34	18 ⁰ 19	16 ⁰ 52	10 ⁰ 1	6 ⁰ 21	W26
T 27	18 20 54	5 ⁰ 35'19	13 ⁰ 14	13 ⁰ 38	1 ⁰ 29	24 ⁰ 53	6 ⁰ 54	1 ⁰ 17	25 ⁰ 57	24 ⁰ 50	21 ⁰ 35	18 ⁰ 11	16 ⁰ 49	10 ⁰ 7	6 ⁰ 17	T 27
F 28	18 24 51	6 ⁰ 32'34	25 ⁰ 16	14 ⁰ 28	0 ⁰ 52	25 ⁰ 36	6 ⁰ 54	1 ⁰ 15	26 ⁰ 0	24 ⁰ 51	21 ⁰ 37	18 ⁰ 3	16 ⁰ 46	10 ⁰ 14	6 ⁰ 14	F 28
S 29	18 28 47	7 ⁰ 29'49	7 ⁰ ♂27	15 ⁰ 23	0 ⁰ 17	26 ⁰ 19	6 ⁰ 53	1 ⁰ 13	26 ⁰ 4	24 ⁰ 52	21 ⁰ 38	17 ⁰ 58	16 ⁰ 43	10 ⁰ 21	6 ⁰ 10	S 29
S 30	18 32 44	8 ⁰ 32'7'03	19 ⁰ ♂50	16 ⁰ II22	29 ⁰ II42	27 ⁰ ✠ 3	6 ⁰ ✠52	1 ⁰ ✠12	26 ⁰ II 7	24 ⁰ Y53	21 ⁰ Ω39	17 ⁰ ♂54	16 ⁰ ♂40	10 ⁰ 327	6 ⁰ ✠ 7	S 30

ASTRODIENST EPHEMERIS for the year 2199

geocentric

JULY 2199

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
M 1	18 36 40	9 ⁵⁵ 24'17	2 ⁵² 29	17 ¹¹ 26	29°R 9	27 ⁸ 46	6°R52	1°R10	26 ¹¹ 11	24 ^Y 54	21 ^Q 41	17°R52	16 ¹¹ 36	10 ⁵³ 34	6°R 4	M 1
T 2	18 40 37	10°21'30	15°27	18°32	28 ¹¹ 37	28°29	6 ¹¹ 50	1 ¹¹ 8	26°14	24°55	21°42	17°D52	16°33	10°41	6 ¹¹ 1	T 2
W 3	18 44 33	11°18'43	28°48	19°43	28° 7	29°12	6°49	1° 6	26°18	24°56	21°44	17 ¹¹ 53	16°30	10°47	5°58	W 3
T 4	18 48 30	12°15'55	12 ¹¹ 35	20°58	27°39	29°55	6°47	1° 4	26°21	24°56	21°45	17°R53	16°27	10°54	5°55	T 4
F 5	18 52 26	13°13'07	26°49	22°17	27°12	0 ¹¹ 38	6°46	1° 1	26°25	24°57	21°47	17°53	16°24	11° 1	5°52	F 5
S 6	18 56 23	14°10'19	11 ¹¹ 29	23°39	26°48	1°21	6°44	0°59	26°28	24°58	21°48	17°51	16°21	11° 8	5°49	S 6
S 7	19 0 20	15° 7'30	26°30	25° 5	26°25	2° 3	6°42	0°57	26°31	24°59	21°50	17°47	16°17	11°14	5°46	S 7
M 8	19 4 16	16° 4'41	11 ¹¹ 45	26°35	26° 5	2°46	6°40	0°54	26°35	24°59	21°51	17°40	16°14	11°21	5°44	M 8
T 9	19 8 13	17° 1'53	27° 3	28° 8	25°47	3°29	6°37	0°52	26°38	25° 0	21°53	17°32	16°11	11°28	5°41	T 9
W10	19 12 9	17°59'04	12 ¹¹ 13	29°45	25°32	4°11	6°34	0°49	26°42	25° 1	21°55	17°24	16° 8	11°34	5°39	W10
T 11	19 16 6	18°56'15	27° 5	1 ⁵² 25	25°19	4°54	6°32	0°47	26°45	25° 1	21°56	17°15	16° 5	11°41	5°36	T 11
F 12	19 20 2	19°53'27	11 ¹¹ 32	3° 9	25° 8	5°36	6°29	0°44	26°48	25° 2	21°58	17° 8	16° 1	11°48	5°34	F 12
S 13	19 23 59	20°50'39	25°30	4°55	25° 0	6°18	6°25	0°41	26°52	25° 2	21°59	17° 4	15°58	11°54	5°32	S 13
S 14	19 27 55	21°47'51	8 ^Y 59	6°45	24°54	7° 1	6°22	0°38	26°55	25° 3	22° 1	17° 1	15°55	12° 1	5°29	S 14
M15	19 31 52	22°45'04	22° 0	8°38	24°50	7°43	6°18	0°35	26°58	25° 3	22° 3	17°D 0	15°52	12° 8	5°27	M15
T 16	19 35 49	23°42'18	4 ¹¹ 38	10°34	24°D49	8°25	6°15	0°32	27° 2	25° 4	22° 4	17° 1	15°49	12°15	5°25	T 16
W17	19 39 45	24°39'32	16°58	12°32	24°50	9° 7	6°11	0°29	27° 5	25° 4	22° 6	17°R 1	15°46	12°21	5°23	W17
T 18	19 43 42	25°36'46	29° 3	14°32	24°54	9°49	6° 7	0°26	27° 8	25° 5	22° 8	17° 0	15°42	12°28	5°22	T 18
F 19	19 47 38	26°34'01	10 ¹¹ 59	16°35	24°59	10°31	6° 2	0°22	27°11	25° 5	22° 9	16°58	15°39	12°35	5°20	F 19
S 20	19 51 35	27°31'17	22°50	18°39	25° 7	11°13	5°58	0°19	27°15	25° 5	22°11	16°53	15°36	12°41	5°18	S 20
S 21	19 55 31	28°28'33	4 ⁵² 39	20°44	25°17	11°55	5°53	0°16	27°18	25° 5	22°13	16°45	15°33	12°48	5°17	S 21
M22	19 59 28	29°25'50	16°29	22°51	25°29	12°36	5°49	0°12	27°21	25° 6	22°15	16°35	15°30	12°55	5°15	M22
T 23	20 3 25	0 ¹¹ 23'07	28°22	24°58	25°44	13°18	5°44	0° 9	27°24	25° 6	22°16	16°22	15°27	13° 1	5°14	T 23
W24	20 7 21	1°20'25	10 ¹¹ 20	27° 6	26° 0	13°59	5°38	0° 5	27°27	25° 6	22°18	16° 9	15°23	13° 8	5°12	W24
T 25	20 11 18	2°17'43	22°23	29°14	26°18	14°41	5°33	0° 1	27°30	25° 6	22°20	15°56	15°20	13°15	5°11	T 25
F 26	20 15 14	3°15'01	4 ¹¹ 33	1 ¹¹ 22	26°37	15°22	5°28	29 ¹¹ 58	27°33	25° 6	22°22	15°45	15°17	13°22	5°10	F 26
S 27	20 19 11	4°12'20	16°52	3°30	26°59	16° 4	5°22	29°54	27°36	25° 6	22°23	15°35	15°14	13°28	5° 9	S 27
S 28	20 23 7	5° 9'39	29°22	5°37	27°22	16°45	5°17	29°50	27°39	25° 6	22°25	15°28	15°11	13°35	5° 8	S 28
M29	20 27 4	6° 6'59	12 ¹¹ 4	7°43	27°47	17°26	5°11	29°46	27°42	25°R 6	22°27	15°24	15° 7	13°42	5° 8	M29
T 30	20 31 0	7° 4'19	25° 2	9°48	28°13	18° 7	5° 5	29°42	27°45	25° 6	22°29	15°22	15° 4	13°48	5° 7	T 30
W31	20 34 57	8 ¹¹ 14	8 ¹¹ 20	11 ¹¹ 52	28 ¹¹ 42	18 ¹¹ 48	4 ¹¹ 59	29 ¹¹ 38	27 ¹¹ 48	25 ^Y 6	22 ¹¹ 31	15 ¹¹ 22	15 ¹¹ 1	13 ⁵² 55	5 ¹¹ 6	W31

Delta T = 162.51 sec

AUGUST 2199

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
T 1	20 38 53	8 ¹¹ 59'01	21 ¹¹ 59	13 ¹¹ 55	29 ¹¹ 11	19 ¹¹ 29	4°R52	29°R34	27 ¹¹ 51	25°R 6	22 ¹¹ 32	15°R22	14 ¹¹ 58	14 ⁵² 2	5°R 6	T 1
F 2	20 42 50	9°56'22	6 ¹¹ 2	15°56	29°42	20°10	4 ¹¹ 46	29 ¹¹ 30	27°54	25°Y 6	22°34	15 ¹¹ 21	14°55	14° 8	5 ¹¹ 5	F 2
S 3	20 46 47	10°53'44	20° 28	17°56	0 ⁵² 14	20°51	4°40	29°26	27°57	25° 6	22°36	15°18	14°52	14°15	5° 5	S 3
S 4	20 50 43	11°51'07	5 ¹¹ 16	19°55	0°48	21°31	4°33	29°22	28° 0	25° 6	22°38	15°12	14°48	14°22	5° 5	S 4
M 5	20 54 40	12°48'30	20°19	21°52	1°23	22°12	4°26	29°18	28° 2	25° 6	22°40	15° 4	14°45	14°29	5° 5	M 5
T 6	20 58 36	13°45'54	5 ¹¹ 29	23°47	1°59	22°52	4°20	29°13	28° 5	25° 5	22°42	14°54	14°42	14°35	5°D 5	T 6
W 7	21 2 33	14°43'19	20°36	25°41	2°37	23°33	4°13	29° 9	28° 8	25° 5	22°43	14°43	14°39	14°42	5° 5	W 7
T 8	21 6 29	15°40'44	5 ¹¹ 28	27°33	3°15	24°13	4° 6	29° 5	28°11	25° 5	22°45	14°33	14°36	14°49	5° 5	T 8
F 9	21 10 26	16°38'11	19°58	29°24	3°55	24°54	3°59	29° 0	28°13	25° 4	22°47	14°24	14°32	14°55	5° 5	F 9
S 10	21 14 22	17°35'39	4 ^Y 1	1 ¹¹ 13	4°36	25°34	3°51	28°56	28°16	25° 4	22°49	14°17	14°29	15° 2	5° 6	S 10
S 11	21 18 19	18°33'08	17°34	3° 1	5°17	26°14	3°44	28°52	28°18	25° 4	22°51	14°13	14°26	15° 9	5° 6	S 11
M12	21 22 16	19°30'38	0 ¹¹ 39	4°47	6° 0	26°54	3°37	28°47	28°21	25° 3	22°53	14°11	14°23	15°16	5° 7	M12
T 13	21 26 12	20°28'10	13°20	6°31	6°44	27°34	3°29	28°43	28°23	25° 3	22°55	14°10	14°20	15°22	5° 7	T 13
W14	21 30 9	21°25'43	25°40	8°14	7°28	28°14	3°22	28°38	28°26	25° 2	22°56	14°10	14°17	15°29	5° 8	W14
T 15	21 34 5	22°23'18	7 ¹¹ 45	9°56	8°14	28°54	3°14	28°34	28°28	25° 2	22°58	14°10	14°13	15°36	5° 9	T 15
F 16	21 38 2	23°20'54	19°40	11°36	9° 0	29°33	3° 7	28°30	28°31	25° 1	23° 0	14° 7	14°10	15°42	5°10	F 16
S 17	21 41 58	24°18'31	1 ⁵² 31	13°14	9°48	0 ⁵² 13	2°59	28°25	28°33	25° 0	23° 2	14° 2	14° 7	15°49	5°11	S 17
S 18	21 45 55	25°16'10	13°20	14°51	10°36	0°52	2°51	28°21	28°35	25° 0	23° 4	13°55	14° 4	15°56	5°12	S 18
M19	21 49 51	26°13'50	25°13	16°26	11°24	1°32	2°43	28°16	28°38	24°59	23° 6	13°45	14° 1	16° 2	5°14	M19
T 20	21 53 48	27°11'31	7 ¹¹ 11	18° 0	12°14	2°11	2°36	28°12	28°40	24°58	23° 8	13°32	13°58	16° 9	5°15	T 20
W21	21 57 45	28° 9'14	19°16	19°32	13° 4	2°50	2°28	28° 7	28°42	24°58	23° 9	13°19	13°54	16°16	5°16	W21
T 22	22 1 41	29° 6'59	1 ¹¹ 30	21° 3	13°55	3°30	2°20	28° 3	28°44	24°57	23°11	13° 6	13°51	16°23	5°18	T 22
F 23	22 5 38	0 ¹¹ 44	13°53	22°32	14°47	4° 9	2°12	27°58	28°47	24°56	23°13	12°55	13°48	16°29	5°20	F 23
S 24	22 9 34	1° 2'31	26°26	24° 0	15°39	4°48	2° 4	27°54	28°49	24°55	23°15	12°45	13°45	16°36	5°21	S 24
S 25	22 13 31	2° 0'19	9 ¹¹ 10	25°27	16°32	5°27	1°56	27°49	28°51	24°55	23°17	12°38	13°42	16°43	5°23	S 25
M26	22 17 27	2°58'08	22° 4	26°51	17°25	6° 5	1°48	27°45	28°53	24°54	23°19	12°34	13°38	16°49	5°25	M26
T 27	22 21 24	3°55'59	5 ¹¹ 12	28°14	18°19	6°44	1°40	27°40	28°55	24°53	23°21	12°32	13°35	16°56	5°27	T 27
W28	22 25 20	4°53'50	18°34	29°36	19°14	7°23	1°33	27°36	28°56	24°52	23°22	12°D32	13°32	17° 3	5°29	W28
T 29	22 29 17	5°51'43	2 ¹¹ 13	0 ⁵² 56	20° 9	8° 1	1°25	27°31	28°58	24°51	23°24	12°R33	13°29	17°10	5°32	T 29
F 30	22 33 14	6°49'38	16° 8	2°14	21° 4	8°40	1°17	27°27	29° 0	24°50	23°26	12°32	13°26	17°16	5°34	F 30
S 31	22 37 10	7 ¹¹ 47'33	0 ⁵² 22	3 ¹¹ 31	22°50	9°58	1 ¹¹ 9	27°22	29 ¹¹ 2	24 ^Y 49	23 ¹¹ 28	12 ¹¹ 30	13 ¹¹ 23	17°52	5 ¹¹ 36	S 31

Delta T = 162.59 sec

ASTRODIENST EPHEMERIS for the year 2199

geocentric

SEPTEMBER 2199

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
S 1	22 41 7	8♎45'30	14♏52	4♎45	22♏57	9♏56	1°R 1	27°R18	29♎4	24°R48	23♎30	12°R26	13♎19	17♏30	5♎39	S 1
M 2	22 45 3	9°43'28	29°34	5°58	23°54	10°34	0♎54	27°R14	29° 5	24°Y47	23°32	12♎20	13°16	17°36	5°42	M 2
T 3	22 49 0	10°41'27	14♏23	7° 9	24°52	11°12	0°46	27° 9	29° 7	24°46	23°33	12°11	13°13	17°43	5°44	T 3
W 4	22 52 56	11°39'28	29°10	8°18	25°50	11°50	0°38	27° 5	29° 9	24°45	23°35	12° 2	13°10	17°50	5°47	W 4
T 5	22 56 53	12°37'30	13♎48	9°25	26°48	12°28	0°31	27° 1	29°10	24°44	23°37	11°53	13° 7	17°56	5°50	T 5
F 6	23 0 49	13°35'34	28° 8	10°29	27°47	13° 6	0°23	26°57	29°12	24°42	23°39	11°45	13° 4	18° 3	5°53	F 6
S 7	23 4 46	14°33'39	12°Y 6	11°31	28°46	13°43	0°16	26°52	29°13	24°41	23°40	11°40	13° 0	18°10	5°56	S 7
S 8	23 8 43	15°31'47	25°38	12°31	29°46	14°21	0° 9	26°48	29°15	24°40	23°42	11°36	12°57	18°17	5°59	S 8
M 9	23 12 39	16°29'56	8♎45	13°28	0♎46	14°58	0° 1	26°44	29°16	24°39	23°44	11°D35	12°54	18°23	6° 3	M 9
T 10	23 16 36	17°28'07	21°27	14°22	1°46	15°36	29°54	26°40	29°17	24°38	23°46	11°35	12°51	18°30	6° 6	T 10
W11	23 20 32	18°26'21	3♎50	15°14	2°47	16°13	29°47	26°36	29°18	24°36	23°47	11°36	12°48	18°37	6° 9	W11
T 12	23 24 29	19°24'36	15°58	16° 2	3°49	16°50	29°40	26°32	29°20	24°35	23°49	11°R37	12°44	18°43	6°13	T 12
F 13	23 28 25	20°22'53	27°55	16°47	4°50	17°27	29°33	26°28	29°21	24°34	23°51	11°37	12°41	18°50	6°16	F 13
S 14	23 32 22	21°21'13	9♏46	17°28	5°52	18° 4	29°26	26°24	29°22	24°32	23°53	11°35	12°38	18°57	6°20	S 14
S 15	23 36 18	22°19'34	21°38	18° 5	6°54	18°40	29°20	26°20	29°23	24°31	23°54	11°31	12°35	19° 4	6°24	S 15
M16	23 40 15	23°17'58	3♎33	18°38	7°57	19°17	29°13	26°17	29°24	24°30	23°56	11°25	12°32	19°10	6°28	M16
T 17	23 44 12	24°16'23	15°36	19° 7	9° 0	19°54	29° 7	26°13	29°25	24°28	23°58	11°17	12°29	19°17	6°32	T 17
W18	23 48 8	25°14'51	27°49	19°31	10° 3	20°30	29° 0	26° 9	29°26	24°27	23°59	11° 9	12°25	19°24	6°36	W18
T 19	23 52 5	26°13'20	10♎14	19°49	11° 6	21° 6	28°54	26° 6	29°27	24°26	24° 1	11° 1	12°22	19°30	6°40	T 19
F 20	23 56 1	27°11'52	22°52	20° 2	12°10	21°42	28°48	26° 2	29°28	24°24	24° 3	10°53	12°19	19°37	6°44	F 20
S 21	23 59 58	28°10'25	5♎43	20°10	13°14	22°19	28°42	25°59	29°28	24°23	24° 4	10°47	12°16	19°44	6°48	S 21
S 22	0 3 54	29° 9'00	18°47	20°R11	14°18	22°54	28°36	25°55	29°29	24°21	24° 6	10°43	12°13	19°51	6°53	S 22
M23	0 7 51	0♎737	2♎3	20° 5	15°23	23°30	28°31	25°52	29°30	24°20	24° 7	10°41	12° 9	19°57	6°57	M23
T 24	0 11 47	1° 6'16	15°30	19°53	16°28	24° 6	28°25	25°49	29°30	24°18	24° 9	10°D40	12° 6	20° 4	7° 1	T 24
W25	0 15 44	2° 4'57	29° 8	19°34	17°33	24°41	28°20	25°45	29°31	24°17	24°10	10°41	12° 3	20°11	7° 6	W25
T 26	0 19 40	3° 3'39	12♎57	19° 7	18°38	25°17	28°15	25°42	29°31	24°15	24°12	10°43	12° 0	20°17	7°11	T 26
F 27	0 23 37	4° 2'23	26°56	18°34	19°43	25°52	28°10	25°39	29°32	24°14	24°13	10°44	11°57	20°24	7°15	F 27
S 28	0 27 34	5° 1'09	11♏4	17°53	20°49	26°27	28° 5	25°36	29°32	24°12	24°15	10°R44	11°54	20°31	7°20	S 28
S 29	0 31 30	5°59'56	25°20	17° 5	21°55	27° 2	28° 0	25°33	29°33	24°11	24°16	10°43	11°50	20°38	7°25	S 29
M30	0 35 27	6♎58'45	9♎41	16♎11	23♎1	27♏37	27♎55	25♎31	29♎33	24°Y 9	24♎18	10♎40	11♎47	20♏44	7♎30	M30

Delta T = 162.67 sec

OCTOBER 2199

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
T 1	0 39 23	7♎57'36	24♎4	15°R12	24♎8	28♏12	27°R51	25°R28	29♎33	24°R 7	24♎19	10°R36	11♎44	20♏51	7♎35	T 1
W 2	0 43 20	8°56'28	8♎24	14♎9	25°15	28°47	27♎47	25♎25	29°33	24°Y 6	24°21	10♎31	11°41	20°58	7°40	W 2
T 3	0 47 16	9°55'22	27°36	13° 2	26°21	29°21	27°43	25°23	29°34	24° 4	24°22	10°26	11°38	21° 4	7°45	T 3
F 4	0 51 13	10°54'18	6°Y34	11°54	27°29	29°55	27°39	25°20	29°34	24° 3	24°24	10°22	11°35	21°11	7°51	F 4
S 5	0 55 9	11°53'16	20°15	10°46	28°36	0♎29	27°35	25°18	29°R34	24° 1	24°25	10°19	11°31	21°18	7°56	S 5
S 6	0 59 6	12°52'16	3♎36	9°40	29°43	1° 4	27°32	25°15	29°34	23°59	24°26	10°18	11°28	21°25	8° 1	S 6
M 7	1 3 3	13°51'19	16°37	8°38	0♎51	1°37	27°29	25°13	29°34	23°58	24°28	10°D18	11°25	21°31	8° 7	M 7
T 8	1 6 59	14°50'23	29°18	7°42	1°59	2°11	27°26	25°11	29°33	23°56	24°29	10°19	11°22	21°38	8°12	T 8
W 9	1 10 56	15°49'30	11♎41	6°52	3° 7	2°45	27°23	25° 9	29°33	23°54	24°30	10°21	11°19	21°45	8°18	W 9
T 10	1 14 52	16°48'39	23°50	6°11	4°15	3°18	27°20	25° 7	29°33	23°53	24°32	10°22	11°15	21°51	8°23	T 10
F 11	1 18 49	17°47'50	5♏49	5°40	5°24	3°51	27°18	25° 5	29°33	23°51	24°33	10°24	11°12	21°58	8°29	F 11
S 12	1 22 45	18°47'04	17°42	5°18	6°32	4°25	27°15	25° 4	29°32	23°49	24°34	10°R24	11° 9	22° 5	8°35	S 12
S 13	1 26 42	19°46'20	29°34	5°D 8	7°41	4°58	27°13	25° 2	29°32	23°48	24°35	10°24	11° 6	22°12	8°40	S 13
M14	1 30 38	20°45'38	11♎31	5° 8	8°50	5°30	27°11	25° 0	29°32	23°46	24°36	10°22	11° 3	22°18	8°46	M14
T 15	1 34 35	21°44'58	23°36	5°19	9°59	6° 3	27° 9	24°59	29°31	23°44	24°38	10°20	11° 0	22°25	8°52	T 15
W16	1 38 32	22°44'21	5♎53	5°41	11° 9	6°35	27° 8	24°57	29°31	23°43	24°39	10°18	10°56	22°32	8°58	W16
T 17	1 42 28	23°43'46	18°26	6°12	12°18	7° 8	27° 7	24°56	29°30	23°41	24°40	10°15	10°53	22°38	9° 4	T 17
F 18	1 46 25	24°43'13	1♎16	6°52	13°28	7°40	27° 5	24°55	29°29	23°39	24°41	10°13	10°50	22°45	9°10	F 18
S 19	1 50 21	25°42'42	14°23	7°41	14°37	8°12	27° 4	24°54	29°29	23°38	24°42	10°11	10°47	22°52	9°16	S 19
S 20	1 54 18	26°42'13	27°48	8°38	15°47	8°43	27° 4	24°53	29°28	23°36	24°43	10°10	10°44	22°59	9°22	S 20
M21	1 58 14	27°41'46	11♎29	9°42	16°57	9°15	27° 3	24°52	29°27	23°34	24°44	10°D10	10°40	23° 5	9°29	M21
T 22	2 2 11	28°41'22	25°23	10°51	18° 7	9°46	27° 3	24°51	29°26	23°33	24°45	10°10	10°37	23°12	9°35	T 22
W23	2 6 7	29°40'59	9♎27	12° 6	19°18	10°18	27°D 3	24°50	29°25	23°31	24°46	10°11	10°34	23°19	9°41	W23
T 24	2 10 4	0♎40'38	23°38	13°26	20°28	10°49	27° 3	24°50	29°24	23°29	24°47	10°12	10°31	23°25	9°48	T 24
F 25	2 14 0	1°40'19	7♏53	14°49	21°39	11°19	27° 3	24°49	29°23	23°28	24°48	10°13	10°28	23°32	9°54	F 25
S 26	2 17 57	2°40'01	22° 8	16°16	22°49	11°50	27° 4	24°49	29°22	23°26	24°49	10°13	10°25	23°39	10° 1	S 26
S 27	2 21 54	3°39'45	6♎20	17°46	24° 0	12°20	27° 4	24°49	29°21	23°24	24°50	10°R13	10°21	23°46	10° 7	S 27
M28	2 25 50	4°39'31	20°29	19°17	25°11	12°50	27° 5	24°49	29°20	23°23	24°50	10°13	10°18	23°52	10°14	M28
T 29	2 29 47	5°39'18	4♎30	20°51	26°22	13°20	27° 6	24°D48	29°19	23°21	24°51	10°12	10°15	23°59	10°20	T 29
W30	2 33 43	6°39'07	18°23	22°26	27°33	13°50	27° 8	24°49	29°18	23°19	24°52	10°12	10°12	24° 6	10°27	W30
T 31	2 37 40	7♎38'58	2°Y 6	24♎3	28♎45	14♎19	27♎9	24♎49	29♎16	23°Y18	24♎23	10♎12	10♎9	24♏12	10♎34	T 31

Delta T = 162.75 sec

ASTRODIENST EPHEMERIS for the year 2199

geocentric

NOVEMBER 2199

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
F 1	2 41 36	8♉38°50	15°37	25♊40	29♈56	14♏49	27♎11	24♎49	29°R15	23°R16	24♏54	10°R11	10♉6	24♎19	10♊40	F 1
S 2	2 45 33	9°38'44	28°53	27°18	1♉8	15°18	27°13	24°49	29°II14	23°V15	24°54	10♉11	10°2	24°26	10°47	S 2
S 3	2 49 29	10°38'40	11♊56	28°57	2°19	15°47	27°15	24°50	29°12	23°13	24°55	10°11	9°59	24°33	10°54	S 3
M 4	2 53 26	11°38'39	24°43	0♉35	3°31	16°15	27°17	24°50	29°11	23°11	24°56	10°11	9°56	24°39	11°1	M 4
T 5	2 57 23	12°38'39	7♉15	2°14	4°43	16°44	27°20	24°51	29°9	23°10	24°56	10°11	9°53	24°46	11°7	T 5
W 6	3 1 19	13°38'41	19°34	3°53	5°55	17°12	27°22	24°52	29°8	23°8	24°57	10°11	9°50	24°53	11°14	W 6
T 7	3 5 16	14°38'45	1♊42	5°32	7°7	17°39	27°25	24°52	29°6	23°7	24°57	10°10	9°46	24°59	11°21	T 7
F 8	3 9 12	15°38'51	13°40	7°11	8°19	18°7	27°28	24°53	29°5	23°5	24°58	10°10	9°43	25°6	11°28	F 8
S 9	3 13 9	16°38'59	25°33	8°50	9°31	18°34	27°32	24°54	29°3	23°4	24°58	10°9	9°40	25°13	11°35	S 9
S 10	3 17 5	17°39'09	7♊26	10°29	10°43	19°1	27°35	24°56	29°1	23°2	24°59	10°9	9°37	25°20	11°42	S 10
M 11	3 21 2	18°39'21	19°21	12°7	11°56	19°28	27°39	24°57	29°0	23°1	24°59	10°D 8	9°34	25°26	11°49	M 11
T 12	3 24 58	19°39'35	1♈24	13°45	13°8	19°55	27°43	24°58	28°58	22°59	25°0	10°9	9°31	25°33	11°56	T 12
W 13	3 28 55	20°39'51	13°40	15°23	14°21	20°21	27°47	25°0	28°56	22°58	25°0	10°9	9°27	25°40	12°4	W 13
T 14	3 32 52	21°40'09	26°13	17°0	15°34	20°47	27°51	25°1	28°54	22°56	25°1	10°10	9°24	25°46	12°11	T 14
F 15	3 36 48	22°40'29	9♊7	18°38	16°46	21°13	27°55	25°3	28°52	22°55	25°1	10°11	9°21	25°53	12°18	F 15
S 16	3 40 45	23°40'51	22°23	20°14	17°59	21°38	28°0	25°5	28°50	22°54	25°1	10°12	9°18	26°0	12°25	S 16
S 17	3 44 41	24°41'15	6♉2	21°51	19°12	22°3	28°4	25°6	28°48	22°52	25°2	10°R13	9°15	26°7	12°32	S 17
M 18	3 48 38	25°41'40	20°3	23°27	20°25	22°28	28°9	25°8	28°46	22°51	25°2	10°13	9°12	26°13	12°39	M 18
T 19	3 52 34	26°42'07	4♊23	25°3	21°38	22°52	28°15	25°11	28°44	22°50	25°2	10°12	9°8	26°20	12°47	T 19
W 20	3 56 31	27°42'36	18°57	26°39	22°51	23°16	28°20	25°13	28°42	22°48	25°2	10°10	9°5	26°27	12°54	W 20
T 21	4 0 27	28°43'07	3♊37	28°15	24°5	23°40	28°25	25°15	28°40	22°47	25°2	10°8	9°2	26°34	13°1	T 21
F 22	4 4 24	29°43'38	18°18	29°50	25°18	24°3	28°31	25°17	28°38	22°46	25°3	10°5	8°59	26°40	13°9	F 22
S 23	4 8 21	0♊44'11	2♊52	1♊25	26°31	24°26	28°37	25°20	28°36	22°45	25°3	10°3	8°56	26°47	13°16	S 23
S 24	4 12 17	1°44'45	17°14	3°0	27°44	24°49	28°43	25°22	28°34	22°43	25°3	10°1	8°52	26°54	13°23	S 24
M 25	4 16 14	2°45'21	1♈22	4°34	28°58	25°11	28°49	25°25	28°31	22°42	25°3	10°D 0	8°49	27°0	13°31	M 25
T 26	4 20 10	3°45'57	15°14	6°9	0♉11	25°33	28°55	25°28	28°29	22°41	25°R 3	10°1	8°46	27°7	13°38	T 26
W 27	4 24 7	4°46'34	28°50	7°43	1°25	25°55	29°2	25°31	28°27	22°40	25°3	10°2	8°43	27°14	13°45	W 27
T 28	4 28 3	5°47'13	12°V10	9°17	2°39	26°16	29°9	25°33	28°25	22°39	25°3	10°4	8°40	27°21	13°53	T 28
F 29	4 32 0	6°47'53	25°16	10°51	3°52	26°37	29°15	25°36	28°22	22°38	25°3	10°5	8°37	27°27	14°0	F 29
S 30	4 35 56	7♊48'33	8♊9	12♊25	5♉6	26♊57	29♊22	25♊40	28°II20	22°V36	25♊3	10°R 6	8♉33	27♊34	14♊7	S 30

Delta T = 162.83 sec

DECEMBER 2199

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
S 1	4 39 53	8♊49'16	20♊49	13♊58	6♉20	27♊17	29♊30	25♊43	28°R18	22°R35	25°R 2	10°R 5	8♉30	27♊41	14♊15	S 1
M 2	4 43 50	9°49'59	3♉19	15°32	7°34	27°37	29°37	25°46	28°II15	22°V34	25♊2	10♉3	8°27	27°47	14°22	M 2
T 3	4 47 46	10°50'44	15°39	17°5	8°48	27°56	29°44	25°50	28°13	22°33	25°2	10°0	8°24	27°54	14°30	T 3
W 4	4 51 43	11°51'29	27°50	18°39	10°1	28°14	29°52	25°53	28°10	22°32	25°2	9°55	8°21	28°1	14°37	W 4
T 5	4 55 39	12°52'17	9♊52	20°12	11°15	28°33	29°59	25°57	28°8	22°31	25°2	9°49	8°18	28°8	14°44	T 5
F 6	4 59 36	13°53'05	21°49	21°45	12°29	28°50	0♈8	26°0	28°5	22°31	25°1	9°42	8°14	28°14	14°52	F 6
S 7	5 3 32	14°53'55	3♊41	23°18	13°44	29°8	0°16	26°4	28°3	22°30	25°1	9°36	8°11	28°21	14°59	S 7
S 8	5 7 29	15°54'46	15°32	24°52	14°58	29°25	0°24	26°8	28°1	22°29	25°1	9°31	8°8	28°28	15°7	S 8
M 9	5 11 25	16°55'38	27°26	26°25	16°12	29°41	0°32	26°12	27°58	22°28	25°0	9°27	8°5	28°35	15°14	M 9
T 10	5 15 22	17°56'31	9♈26	27°58	17°26	29°57	0°41	26°16	27°55	22°27	25°0	9°25	8°2	28°41	15°21	T 10
W 11	5 19 19	18°57'26	21°38	29°31	18°40	0♈12	0°50	26°20	27°53	22°26	25°0	9°D24	7°58	28°48	15°29	W 11
T 12	5 23 15	19°58'22	4♊5	1♊3	19°55	0°27	0°58	26°24	27°50	22°26	24°59	9°25	7°55	28°55	15°36	T 12
F 13	5 27 12	20°59'19	16°54	2°36	21°9	0°41	1°7	26°28	27°48	22°25	24°59	9°27	7°52	29°1	15°43	F 13
S 14	5 31 8	22°0'18	0♉7	4°9	22°23	0°55	1°16	26°33	27°45	22°24	24°58	9°28	7°49	29°8	15°51	S 14
S 15	5 35 5	23°1'17	13°48	5°42	23°38	1°8	1°26	26°37	27°43	22°24	24°58	9°R28	7°46	29°15	15°58	S 15
M 16	5 39 1	24°2'18	27°57	7°14	24°52	1°21	1°35	26°41	27°40	22°23	24°57	9°27	7°43	29°22	16°6	M 16
T 17	5 42 58	25°3'20	12♊31	8°46	26°7	1°33	1°44	26°46	27°38	22°23	24°57	9°23	7°39	29°28	16°13	T 17
W 18	5 46 54	26°4'22	27°25	10°18	27°21	1°45	1°54	26°51	27°35	22°22	24°56	9°17	7°36	29°35	16°20	W 18
T 19	5 50 51	27°5'26	12♊31	11°50	28°36	1°55	2°4	26°55	27°33	22°21	24°55	9°10	7°33	29°42	16°28	T 19
F 20	5 54 48	28°6'30	27°39	13°21	29°50	2°6	2°14	27°0	27°30	22°21	24°55	9°2	7°30	29°48	16°35	F 20
S 21	5 58 44	29°7'34	12♊38	14°51	1♊5	2°15	2°24	27°5	27°27	22°21	24°54	8°55	7°27	29°55	16°42	S 21
S 22	6 2 41	0♊8'39	27°20	16°21	2°19	2°24	2°34	27°10	27°25	22°20	24°53	8°49	7°24	0♊2	16°49	S 22
M 23	6 6 37	1°9'44	11♈40	17°50	3°34	2°33	2°44	27°15	27°22	22°20	24°53	8°45	7°20	0°9	16°57	M 23
T 24	6 10 34	2°10'49	25°36	19°18	4°49	2°40	2°54	27°20	27°20	22°19	24°52	8°43	7°17	0°15	17°4	T 24
W 25	6 14 30	3°11'54	9°V 8	20°45	6°3	2°47	3°5	27°25	27°17	22°19	24°51	8°D43	7°14	0°22	17°11	W 25
T 26	6 18 27	4°13'00	22°18	22°10	7°18	2°54	3°15	27°30	27°15	22°19	24°50	8°44	7°11	0°29	17°18	T 26
F 27	6 22 24	5°14'06	5♊9	23°34	8°33	2°59	3°26	27°36	27°12	22°19	24°50	8°R45	7°8	0°36	17°25	F 27
S 28	6 26 20	6°15'12	17°45	24°55	9°47	3°4	3°37	27°41	27°10	22°18	24°49	8°44	7°4	0°42	17°32	S 28
S 29	6 30 17	7°16'18	0♉9	26°15	11°2	3°9	3°48	27°47	27°7	22°18	24°48	8°42	7°1	0°49	17°40	S 29
M 30	6 34 13	8°17'25	12°23	27°31	12°17	3°12	3°59	27°52	27°5	22°18	24°47	8°37	6°58	0°56	17°47	M 30
T 31	6 38 10	9♊18'31	24°II30	28♊44	13♊32	3♈15	4♈10	27♊58	27°II 2	22°V18	24♊46	8♉29	6♉55	1♊2	17♊54	T 31

Delta T = 162.91 sec