

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Earth only		
	Longitude	Latitude			x	y	z	X	Y	Z
	<i>l</i>	<i>b</i>	<i>r</i>							
244	°	°								
0280.5	158.965	-0.001	0.99067	1.02852	-0.92466	+0.32623	+0.14147	+0.854	-0.301	-0.131
0290.5	168.981	.000	.99321	.02066	.97490	.17416	.07553	.894	.160	.069
0300.5	178.944	.000	.99594	.01229	.99577	+ .01684	+ .00731	.906	- .015	- .007
0310.5	188.851	+ .001	0.99878	1.00366	.98689	- .14100	- .06113	.890	+ .127	+ .055
0320.5	198.702	+0.001	1.00166	0.99505	-0.94877	-0.29466	-0.12777	+0.848	+0.263	+0.114
0330.5	208.496	.002	.00447	.98670	.88278	.43968	.19065	.783	.390	.169
0340.5	218.237	.002	.00715	.97886	.79107	.57189	.24799	.696	.503	.218
0350.5	227.928	.002	.00961	.97171	.67650	.68758	.29815	.591	.600	.260
0360.5	237.575	+0.002	1.01179	0.96545	-0.54252	-0.78355	-0.33977	+0.471	+0.680	+0.295
0370.5	247.183	.003	.01362	.96022	.39307	.85719	.37170	.339	.739	.321
0380.5	256.761	.003	.01506	.95614	.23247	.90652	.39310	.200	.779	.338
0390.5	266.315	.003	.01607	.95330	- .06531	.93027	.40340	+ .056	.797	.345
0400.5	275.854	+0.003	1.01661	0.95177	+0.10370	-0.92783	-0.40234	-0.089	+0.793	+0.344
0410.5	285.388	.002	.01669	.95157	.26979	.89932	.38998	.231	.769	.333
0420.5	294.925	.002	.01628	.95271	.42830	.84555	.36666	.367	.724	.314
0430.5	304.474	.002	.01541	.95517	.57476	.76798	.33303	.493	.659	.286
0440.5	314.044	+0.002	1.01409	0.95889	+0.70500	-0.66877	-0.29000	-0.607	+0.576	+0.250
0450.5	323.642	.001	.01237	.96379	.81529	.55062	.23877	.706	.477	.207
0460.5	333.277	.001	.01029	.96976	.90238	.41680	.18074	.786	.363	.157
0470.5	342.954	+ .001	.00790	.97666	.96363	.27106	.11754	.845	.238	.103
0480.5	352.680	0.000	1.00529	0.98431	+0.99709	-0.11751	-0.05096	-0.882	+0.104	+0.045
0490.5	2.458	.000	1.00250	0.99252	1.00158	+ .03945	+ .01710	.893	- .035	- .015
0500.5	12.292	- .001	0.99964	1.00107	0.97673	.19525	.08466	.878	.176	.076
0510.5	22.182	.001	.99678	.00971	.92301	.34527	.14972	.837	.313	.136
0520.5	32.128	-0.002	0.99401	1.01818	+0.84179	+0.48500	+0.21031	-0.770	-0.444	-0.192
0530.5	42.129	.002	.99142	.02620	.73527	.61015	.26457	.678	.562	.244
0540.5	52.179	.002	.98907	.03353	.60649	.71681	.31083	.563	.666	.289
0550.5	62.274	.002	.98705	.03989	.45922	.80160	.34760	.429	.749	.325
0560.5	72.406	-0.003	0.98541	1.04507	+0.29785	+0.86179	+0.37370	-0.280	-0.809	-0.351
0570.5	82.568	.003	.98422	.04887	+ .12731	.89540	.38827	- .120	.844	.366
0580.5	92.749	.003	.98351	.05115	- .04718	.90129	.39083	+ .045	.851	.369
0590.5	102.940	.003	.98330	.05182	.22020	.87922	.38126	.208	.831	.360
0600.5	113.130	-0.002	0.98360	1.05086	-0.38638	+0.82987	+0.35986	+0.365	-0.783	-0.340
0610.5	123.309	.002	.98440	.04830	.54058	.75477	.32730	.509	.711	.308
0620.5	133.466	.002	.98567	.04425	.67807	.65633	.28461	.636	.616	.267
0630.5	143.592	.001	.98737	.03885	.79465	.53766	.23315	.742	.502	.218
0640.5	153.680	-0.001	0.98946	1.03231	-0.88688	+0.40249	+0.17454	+0.822	-0.373	-0.162
0650.5	163.722	.000	.99185	.02485	.95209	.25506	.11061	.877	.235	.102
0660.5	173.713	.000	.99448	.01673	.98850	+ .09991	+ .04333	.903	- .091	- .040
0670.5	183.650	.000	0.99727	1.00822	.99525	- .05824	- .02525	.901	+ .053	+ .023
0680.5	193.530	+0.001	1.00014	0.99959	-0.97238	-0.21467	-0.09308	+0.873	+0.193	+0.084
0690.5	203.354	.001	.00299	.99108	.92082	.36478	.15818	.820	.325	.141
0700.5	213.123	.002	.00575	.98296	.84231	.50422	.21864	.744	.445	.193
0710.5	222.840	.002	.00833	.97542	.73936	.62903	.27276	.648	.551	.239
0720.5	232.510	+0.002	1.01067	0.96867	-0.61512	-0.73573	-0.31903	+0.535	+0.640	+0.278
0730.5	242.138	.003	.01269	.96288	.47328	.82139	.35618	.409	.711	.308
0740.5	251.731	.003	.01435	.95817	.31798	.88371	.38320	.274	.761	.330
0750.5	261.296	.003	.01559	.95466	- .15368	.92103	.39939	+ .132	.790	.343
0760.5	270.843	+0.003	1.01638	0.95242	+0.01495	-0.93238	-0.40431	-0.013	+0.798	+0.346

VENUS

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	Longitude l	Latitude b			x	y	z	X	Y	Z
244	°	°								
0760.5	183.755	+3.236	0.72033	2.67551	-0.71764	-0.05939	+0.01856	+1.393	+0.115	-0.036
0770.5	199.901	2.824	.72153	.66217	.67762	.23920	-.06499	1.308	0.462	+0.125
0780.5	215.976	2.192	.72287	.64739	.58457	.40030	.14347	1.122	0.769	0.275
0790.5	231.975	1.392	.72424	.63236	.44601	.53026	.21078	0.852	1.012	0.402
0800.5	247.903	+0.489	0.72554	2.61824	-0.27293	-0.61919	-0.26179	+0.518	+1.176	+0.497
0810.5	263.773	-0.449	.72667	.60608	-.07882	.66045	.29264	+0.149	1.248	0.553
0820.5	279.603	1.351	.72754	.59676	+ .12134	.65111	.30108	-0.229	1.226	0.567
0830.5	295.414	2.149	.72808	.59094	.31224	.59205	.28652	0.587	1.113	0.538
0840.5	311.223	-2.783	0.72826	2.58904	+0.47935	-0.48787	-0.25013	-0.900	+0.916	+0.470
0850.5	327.047	3.207	.72806	.59116	.60997	.34656	.19469	1.146	0.651	0.366
0860.5	342.897	3.388	.72750	.59719	.69411	-.17884	.12443	1.307	+0.337	0.234
0870.5	358.780	3.312	.72661	.60669	.72524	+ .00254	-.04466	1.371	-0.005	+0.084
0880.5	14.702	-2.983	0.72548	2.61896	+0.70078	+0.18370	+0.03852	-1.331	-0.349	-0.073
0890.5	30.664	2.422	.72417	.63314	.62236	.35072	.11874	1.189	0.670	0.227
0900.5	46.671	1.673	.72280	.64812	.49576	.49057	.18976	0.952	0.942	0.364
0910.5	62.725	-0.790	.72148	.66277	.33059	.59222	.24600	0.638	1.144	0.475
0920.5	78.829	+0.158	0.72029	2.67592	+0.13955	+0.64751	+0.28298	-0.271	-1.257	-0.549
0930.5	94.981	1.096	.71935	.68649	-.06245	.65187	.29770	+0.122	1.270	0.580
0940.5	111.179	1.949	.71872	.69358	.25951	.60476	.28892	0.507	1.181	0.564
0950.5	127.412	2.648	.71845	.69662	.43602	.50977	.25726	0.853	0.997	0.503
0960.5	143.664	+3.136	0.71856	2.69532	-0.57798	+0.37438	+0.20521	+1.130	-0.732	-0.401
0970.5	159.914	3.374	.71905	.68983	.67414	.20933	.13691	1.315	0.408	0.267
0980.5	176.137	3.343	.71987	.68059	.71702	+ .02772	+ .05778	1.394	-0.054	-0.112
0990.5	192.311	3.048	.72097	.66841	.70339	-.15608	-.02591	1.361	+0.302	+0.050
1000.5	208.419	+2.514	0.72224	2.65429	-0.63460	-0.32765	-0.10757	+1.222	+0.631	+0.207
1010.5	224.453	1.786	.72360	.63936	.51627	.47366	.18084	0.988	0.907	0.346
1020.5	240.414	+0.923	.72494	.62481	.35788	.58294	.24009	0.681	1.110	0.457
1030.5	256.310	-0.008	.72615	.61173	-.17186	.64723	.28081	+0.326	1.226	0.532
1040.5	272.158	-0.936	0.72714	2.60107	+0.02737	-0.66181	-0.29997	-0.052	+1.248	+0.566
1050.5	287.977	1.790	.72783	.59361	.22452	.62579	.29618	0.422	1.177	0.557
1060.5	303.786	2.508	.72818	.58987	.40455	.54203	.26981	0.760	1.018	0.507
1070.5	319.603	3.036	.72816	.59012	.55377	.41699	.22289	1.040	0.783	0.419
1080.5	335.441	-3.335	0.72777	2.59433	+0.66081	-0.26019	-0.15899	-1.243	+0.490	+0.299
1090.5	351.310	3.380	.72703	.60220	.71743	-.08355	.08296	1.354	+0.158	0.157
1100.5	7.214	3.168	.72601	.61321	.71916	+ .09948	-.00059	1.363	-0.189	+0.001
1110.5	23.158	2.712	.72478	.62652	.66563	.27485	+ .08182	1.268	0.524	-0.156
1120.5	39.145	-2.045	0.72344	2.64120	+0.56071	+0.42899	+0.15791	-1.074	-0.822	-0.302
1130.5	55.176	1.217	.72208	.65610	.41225	.54981	.22173	0.794	1.059	0.427
1140.5	71.256	-0.291	.72082	.67004	.23162	.62769	.26823	0.449	1.216	0.519
1150.5	87.386	+0.661	.71976	.68191	+ .03282	.65630	.29368	-0.064	1.277	0.571
1160.5	103.564	+1.563	0.71897	2.69071	-0.16855	+0.63317	+0.29598	+0.329	-1.236	-0.578
1170.5	119.782	2.343	.71853	.69568	.35659	.55998	.27487	0.697	1.095	0.537
1180.5	136.027	2.936	.71846	.69641	.51638	.44241	.23198	1.010	0.865	0.454
1190.5	152.280	3.295	.71878	.69284	.63524	.28979	.17071	1.241	0.566	0.333
1200.5	168.518	+3.391	0.71946	2.68526	-0.70382	+0.11423	+0.09593	+1.371	-0.222	-0.187
1210.5	184.717	3.218	.72043	.67434	.71686	-.07036	+ .01357	1.390	+0.136	-0.026
1220.5	200.858	2.792	.72164	.66100	.67354	.24943	-.06986	1.300	0.481	+0.135
1230.5	216.927	2.149	.72297	.64631	.57754	.40900	.14783	1.108	0.785	0.284
1240.5	232.921	+1.341	0.72433	2.63144	-0.43659	-0.53676	-0.21431	+0.833	+1.024	+0.409

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	Longitude	Latitude			x	y	z	X	Y	Z
	<i>l</i>	<i>b</i>	<i>r</i>							
244	°	°								
0760.5	270.843	+0.003	1.01638	0.95242	+0.01495	-0.93238	-0.40431	-0.013	+0.798	+0.346
0770.5	280.379	.003	.01671	.95151	.18316	.91752	.39787	.157	.784	.340
0780.5	289.913	.002	.01656	.95193	.34623	.87688	.38025	.296	.750	.325
0790.5	299.454	.002	.01593	.95369	.49956	.81160	.35194	.428	.695	.302
0800.5	309.012	+0.002	1.01485	0.95674	+0.63882	-0.72346	-0.31372	-0.549	+0.622	+0.270
0810.5	318.594	.002	.01334	.96103	.76004	.61489	.26664	.656	.531	.230
0820.5	328.208	.001	.01144	.96644	.85969	.48888	.21200	.746	.424	.184
0830.5	337.862	+ .001	.00921	.97286	.93481	.34892	.15131	.817	.305	.132
0840.5	347.561	0.000	1.00671	0.98014	+0.98308	-0.19894	-0.08627	-0.866	+0.175	+0.076
0850.5	357.311	.000	.00400	.98809	1.00290	- .04321	- .01874	.890	+ .038	+ .017
0860.5	7.115	- .001	1.00117	0.99649	0.99346	+ .11377	+ .04933	.889	- .102	- .044
0870.5	16.975	.001	0.99830	1.00512	.95481	.26740	.11595	.862	.241	.105
0880.5	26.891	-0.001	0.99547	1.01373	+0.88782	+0.41309	+0.17912	-0.809	-0.376	-0.163
0890.5	36.863	.002	.99276	.02203	.79428	.54641	.23694	.729	.502	.218
0900.5	46.888	.002	.99027	.02978	.67678	.66324	.28760	.626	.614	.266
0910.5	56.960	.003	.98806	.03669	.53871	.75992	.32952	.502	.708	.307
0920.5	67.074	-0.003	0.98621	1.04254	+0.38417	+0.83333	+0.36136	-0.360	-0.780	-0.338
0930.5	77.222	.003	.98477	.04712	.21780	.88111	.38207	.205	.829	.359
0940.5	87.395	.003	.98380	.05023	+ .04471	.90166	.39098	- .042	.851	.369
0950.5	97.583	.003	.98332	.05177	- .12976	.89426	.38778	+ .123	.845	.366
0960.5	107.775	-0.003	0.98334	1.05168	-0.30020	+0.85911	+0.37253	+0.284	-0.812	-0.352
0970.5	117.962	.002	.98388	.04996	.46133	.79729	.34573	.435	.752	.326
0980.5	128.133	.002	.98491	.04668	.60816	.71076	.30821	.572	.668	.290
0990.5	138.277	.002	.98639	.04197	.73622	.60228	.26117	.689	.564	.244
1000.5	148.387	-0.001	0.98828	1.03599	-0.84163	+0.47528	+0.20610	+0.783	-0.442	-0.192
1010.5	158.454	- .001	.99053	.02897	.92132	.33373	.14472	.852	.308	.134
1020.5	168.473	.000	.99305	.02115	.97302	.18205	.07895	.893	.167	.072
1030.5	178.439	.000	.99577	.01279	.99540	+ .02488	+ .01079	.906	- .023	- .010
1040.5	188.350	+0.001	0.99861	1.00417	-0.98803	-0.13305	-0.05769	+0.891	+0.120	+0.052
1050.5	198.204	.001	1.00149	0.99555	.95136	.28704	.12446	.851	.257	.111
1060.5	208.001	.002	.00431	.98718	.88674	.43260	.18758	.786	.384	.166
1070.5	217.745	.002	.00700	.97930	.79627	.56556	.24524	.701	.498	.216
1080.5	227.439	+0.002	1.00948	0.97210	-0.68278	-0.68217	-0.29581	+0.596	+0.596	+0.258
1090.5	237.089	.002	.01168	.96577	.54969	.77921	.33789	.477	.676	.293
1100.5	246.699	.003	.01354	.96046	.40092	.85404	.37033	.346	.737	.320
1110.5	256.278	.003	.01501	.95630	.24078	.90465	.39228	.207	.777	.337
1120.5	265.833	+0.003	1.01605	0.95336	-0.07384	-0.92971	-0.40315	+0.063	+0.796	+0.345
1130.5	275.372	.003	.01663	.95174	+ .09518	.92861	.40267	- .081	.794	.344
1140.5	284.905	.003	.01673	.95144	.26153	.90142	.39088	.224	.770	.334
1150.5	294.441	.003	.01636	.95249	.42053	.84890	.36811	.360	.726	.315
1160.5	303.988	+0.002	1.01552	0.95486	+0.56770	-0.77251	-0.33499	-0.487	+0.663	+0.287
1170.5	313.556	.002	.01423	.95850	.69886	.67435	.29242	.602	.581	.252
1180.5	323.151	.002	.01253	.96332	.81025	.55710	.24158	.701	.482	.209
1190.5	332.782	.001	.01047	.96923	.89859	.42401	.18387	.782	.369	.160
1200.5	342.456	+0.001	1.00810	0.97609	+0.96121	-0.27880	-0.12090	-0.843	+0.244	+0.106
1210.5	352.178	.000	.00549	.98372	0.99613	- .12555	- .05445	.880	+ .111	+ .048
1220.5	1.952	.000	1.00271	0.99192	1.00212	+ .03134	+ .01359	.893	- .028	- .012
1230.5	11.782	- .001	0.99984	1.00048	0.97878	.18730	.08121	.880	.168	.073
1240.5	21.668	-0.001	0.99697	1.00915	+0.92652	+0.33772	+0.14644	-0.840	-0.306	-0.133

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244	°	°								
1240.5	232.921	+1.341	0.72433	2.63144	-0.43659	-0.53676	-0.21431	+0.833	+1.024	+0.409
1250.5	248.846	+0.433	.72561	.61755	.26185	.62300	.26421	0.497	1.183	0.502
1260.5	264.714	-0.505	.72671	.60567	-.06695	.66130	.29378	+0.127	1.250	0.555
1270.5	280.544	1.402	.72755	.59664	+ .13309	.64893	.30084	-0.251	1.222	0.567
1280.5	296.355	-2.192	0.72807	2.59112	+0.32298	-0.58701	-0.28493	-0.607	+1.103	+0.535
1290.5	312.167	2.815	.72822	.58947	.48826	.48036	.24731	0.917	0.902	0.464
1300.5	327.993	3.225	.72800	.59186	.61635	.33714	.19085	1.159	0.634	0.359
1310.5	343.847	3.391	.72742	.59807	.69748	-.16822	.11986	1.314	+0.317	0.226
1320.5	359.734	-3.300	0.72652	2.60770	+0.72531	+0.01354	-0.03971	-1.372	-0.026	+0.075
1330.5	15.659	2.955	.72538	.62005	.69753	.19426	+ .04349	1.325	0.369	-0.083
1340.5	31.625	2.382	.72407	.63425	.61601	.36000	.12332	1.177	0.688	0.236
1350.5	47.635	1.623	.72271	.64919	.48680	.49784	.19360	0.935	0.957	0.372
1360.5	63.692	-0.734	0.72139	2.66375	+0.31969	+0.59691	+0.24880	-0.618	-1.153	-0.481
1370.5	79.799	+0.215	.72022	.67675	+ .12755	.64923	.28451	-0.248	1.260	0.552
1380.5	95.955	1.150	.71929	.68711	-.07461	.65047	.29784	+0.145	1.268	0.580
1390.5	112.156	1.996	.71868	.69397	.27087	.60033	.28764	0.529	1.173	0.562
1400.5	128.391	+2.684	0.71843	2.69674	-0.44567	+0.50266	+0.25467	+0.872	-0.983	-0.498
1410.5	144.643	3.158	.71857	.69517	.58515	.36515	.20151	1.144	0.714	0.394
1420.5	160.892	3.380	.71909	.68940	.67829	.19872	.13239	1.323	0.388	0.258
1430.5	177.113	3.332	.71993	.67994	.71780	+ .01656	+ .05280	1.395	-0.032	-0.103
1440.5	193.283	+3.022	0.72104	2.66759	-0.70078	-0.16690	-0.03095	+1.356	+0.323	+0.060
1450.5	209.387	2.475	.72233	.65336	.62880	.33729	.11228	1.210	0.649	0.216
1460.5	225.416	1.737	.72369	.63841	.50776	.48139	.18486	0.972	0.921	0.354
1470.5	241.372	+0.868	.72502	.62389	.34733	.58815	.24311	0.661	1.119	0.463
1480.5	257.265	-0.065	0.72622	2.61089	-0.16009	-0.64955	-0.28260	+0.303	+1.230	+0.535
1490.5	273.110	0.990	.72720	.60037	+ .03945	.66108	.30040	-0.074	1.247	0.567
1500.5	288.928	1.838	.72788	.59306	.23598	.62207	.29523	0.444	1.170	0.555
1510.5	304.736	2.546	.72822	.58949	.41453	.53562	.26755	0.779	1.006	0.502
1520.5	320.553	-3.061	0.72818	2.58992	+0.56151	-0.40838	-0.21950	-1.055	+0.767	+0.412
1530.5	336.391	3.345	.72777	.59430	.66572	.25005	.15473	1.253	0.470	0.291
1540.5	352.260	3.375	.72702	.60237	.71914	-.07264	-.07816	1.357	+0.137	+0.148
1550.5	8.165	3.148	.72598	.61353	.71754	+ .11031	+ .00439	1.360	-0.209	-0.008
1560.5	24.110	-2.678	0.72473	2.62703	+0.66079	+0.28478	+0.08660	-1.259	-0.543	-0.165
1570.5	40.097	2.000	.72338	.64181	.55301	.43724	.16211	1.060	0.838	0.311
1580.5	56.131	1.164	.72202	.65680	.40229	.55573	.22502	0.775	1.071	0.434
1590.5	72.214	-0.234	.72075	.67080	.22016	.63081	.27036	0.426	1.222	0.524
1600.5	88.347	+0.717	0.71969	2.68265	+0.02076	+0.65636	+0.29447	-0.040	-1.277	-0.573
1610.5	104.527	1.614	.71891	.69138	-.18026	.63016	.29536	+0.352	1.230	0.577
1620.5	120.749	2.384	.71848	.69623	.36702	.55411	.27288	0.718	1.084	0.534
1630.5	136.997	2.964	.71843	.69681	.52470	.43416	.22878	1.026	0.849	0.447
1640.5	153.252	+3.308	0.71876	2.69304	-0.64078	+0.27978	+0.16655	+1.252	-0.546	-0.325
1650.5	169.491	3.388	.71946	.68525	.70615	+ .10326	.09113	1.375	-0.201	0.177
1660.5	185.689	3.199	.72045	.67413	.71579	-.08142	+ .00852	1.388	+0.158	-0.017
1670.5	201.827	2.759	.72167	.66059	.66916	.25971	-.07477	1.291	0.501	+0.144
1680.5	217.893	+2.104	0.72302	2.64577	-0.57019	-0.41770	-0.15222	+1.094	+0.802	+0.292
1690.5	233.884	1.288	.72439	.63082	.42686	.54321	.21783	0.814	1.036	0.416
1700.5	249.806	+0.377	.72567	.61690	.25050	.62671	.26660	0.475	1.189	0.506
1710.5	265.671	-0.561	.72677	.60503	-.05485	.66200	.29486	+0.104	1.251	0.557
1720.5	281.499	-1.454	0.72760	2.59608	+0.14500	-0.64658	-0.30053	-0.273	+1.217	+0.566

EARTH

29

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Earth only		
	Longitude	Latitude			x	y	z	X	Y	Z
	<i>l</i>	<i>b</i>	<i>r</i>							
244	°	°								
1240.5	21.668	-0.001	0.99697	1.00915	+0.92652	+0.33772	+0.14644	-0.840	-0.306	-0.133
1250.5	31.611	.002	.99418	.01767	.84667	.47808	.20731	.774	.437	.190
1260.5	41.608	.002	.99155	.02577	.74139	.60407	.26194	.683	.557	.241
1270.5	51.656	.002	.98918	.03318	.61367	.71177	.30864	.570	.661	.286
1280.5	61.749	-0.003	0.98712	1.03964	+0.46724	+0.79776	+0.34593	-0.436	-0.745	-0.323
1290.5	71.880	.003	.98546	.04493	.30648	.85928	.37260	.288	.807	.350
1300.5	82.041	.003	.98423	.04884	+ .13628	.89429	.38779	- .128	.843	.365
1310.5	92.223	.003	.98348	.05123	- .03814	.90163	.39097	+ .036	.851	.369
1320.5	102.415	-0.003	0.98324	1.05201	-0.21138	+0.88099	+0.38202	+0.200	-0.833	-0.361
1330.5	112.606	.003	.98351	.05114	.37806	.83300	.36121	.357	.787	.341
1340.5	122.787	.002	.98428	.04867	.53301	.75917	.32920	.502	.715	.310
1350.5	132.947	.002	.98553	.04468	.67147	.66185	.28700	.630	.621	.269
1360.5	143.076	-0.002	0.98722	1.03933	-0.78922	+0.54412	+0.23595	+0.737	-0.508	-0.220
1370.5	153.167	.001	.98929	.03282	.88277	.40969	.17766	.819	.380	.165
1380.5	163.213	- .001	.99168	.02538	.94942	.26277	.11395	.875	.242	.105
1390.5	173.207	.000	.99431	.01726	.98734	+ .10790	+ .04679	.902	- .099	- .043
1400.5	183.147	0.000	0.99711	1.00872	-0.99560	-0.05023	-0.02178	+0.902	+0.046	+0.020
1410.5	193.031	+ .001	0.99998	1.00006	.97423	.20686	.08970	.875	.186	.081
1420.5	202.858	.001	1.00284	0.99152	.92409	.35739	.15497	.823	.318	.138
1430.5	212.629	.002	.00562	.98334	.84691	.49747	.21572	.748	.439	.191
1440.5	222.349	+0.002	1.00822	0.97575	-0.74513	-0.62312	-0.27020	+0.653	+0.546	+0.237
1450.5	232.021	.002	.01057	.96894	.62188	.73082	.31690	.541	.636	.276
1460.5	241.650	.003	.01262	.96308	.48085	.81761	.35454	.416	.707	.307
1470.5	251.244	.003	.01430	.95831	.32613	.88116	.38209	.281	.759	.329
1480.5	260.811	+0.003	1.01556	0.95473	-0.16218	-0.91978	-0.39884	+0.139	+0.789	+0.342
1490.5	270.357	.003	.01638	.95242	+ .00634	.93247	.40434	- .005	.798	.346
1500.5	279.893	.003	.01673	.95143	.17468	.91894	.39848	.149	.785	.341
1510.5	289.426	.003	.01661	.95179	.33812	.87960	.38142	.289	.752	.326
1520.5	298.967	+0.002	1.01601	0.95348	+0.49205	-0.81553	-0.35364	-0.421	+0.699	+0.303
1530.5	308.523	.002	.01495	.95646	.63213	.72851	.31591	.543	.626	.271
1540.5	318.103	.002	.01346	.96068	.75436	.62092	.26925	.651	.536	.232
1550.5	327.715	.001	.01158	.96604	.85519	.49572	.21496	.742	.430	.187
1560.5	337.366	+0.001	1.00937	0.97242	+0.93162	-0.35639	-0.15454	-0.814	+0.311	+0.135
1570.5	347.062	.000	.00687	.97966	0.98131	.20683	.08969	.864	.182	.079
1580.5	356.808	.000	.00417	.98759	1.00262	- .05129	- .02225	.890	+ .046	+ .020
1590.5	6.609	.000	1.00134	0.99599	0.99469	+ .10573	+ .04585	.890	- .095	- .041
1600.5	16.465	-0.001	0.99846	1.00462	+0.95752	+0.25964	+0.11259	-0.864	-0.234	-0.102
1610.5	26.379	.001	.99562	.01325	.89195	.40585	.17598	.812	.369	.160
1620.5	36.348	.002	.99290	.02160	.79972	.53990	.23411	.734	.496	.215
1630.5	46.370	.002	.99039	.02940	.68337	.65768	.28519	.632	.608	.264
1640.5	56.440	-0.003	0.98816	1.03638	+0.54627	+0.75547	+0.32759	-0.509	-0.703	-0.305
1650.5	66.552	.003	.98628	.04231	.39246	.83015	.35997	.367	.777	.337
1660.5	76.699	.003	.98482	.04696	.22658	.87929	.38128	.213	.827	.359
1670.5	86.871	.003	.98382	.05016	+ .05371	.90127	.39081	- .051	.850	.369
1680.5	97.058	-0.003	0.98331	1.05179	-0.12083	+0.89531	+0.38823	+0.114	-0.846	-0.367
1690.5	107.251	.003	.98331	.05179	.29161	.86156	.37360	.276	.814	.353
1700.5	117.439	.003	.98382	.05015	.45335	.80107	.34737	.428	.756	.328
1710.5	127.611	.002	.98483	.04694	.60104	.71576	.31037	.565	.673	.292
1720.5	137.757	-0.002	0.98629	1.04229	-0.73016	+0.60832	+0.26379	+0.684	-0.570	-0.247

VENUS

Julian Date	Heliocentric		Radius Vector r	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Venus only		
	Longitude l	Latitude b			x	y	z	X	Y	Z
244	°	°								
17205	281.499	-1.454	0.72760	2.59608	+0.14500	-0.64658	-0.30053	-0.273	+1.217	+0.566
17305	297.309	2.234	.72811	.59066	.33380	.58179	.28326	0.627	1.093	0.532
17405	313.120	2.846	.72825	.58917	.49717	.47269	.24441	0.934	0.888	0.459
17505	328.947	3.242	.72801	.59169	.62268	.32759	.18695	1.170	0.616	0.351
17605	344.800	-3.393	0.72742	2.59805	+0.70074	-0.15754	-0.11525	-1.320	+0.297	+0.217
17705	0.687	3.286	.72651	.60782	.72526	+ .02455	- .03474	1.372	-0.046	+0.066
17805	16.612	2.927	.72535	.62033	.69417	.20474	+ .04842	1.319	0.389	-0.092
17905	32.579	2.341	.72404	.63463	.60960	.36915	.12785	1.165	0.705	0.244
18005	48.590	-1.573	0.72266	2.64968	+0.47782	+0.50495	+0.19737	-0.918	-0.970	-0.379
18105	64.649	-0.678	.72134	.66428	.30883	.60141	.25151	0.597	1.162	0.486
18205	80.758	+0.272	.72017	.67729	+ .11567	.65077	.28596	-0.225	1.264	0.555
18305	96.916	1.204	.71925	.68762	- .08659	.64891	.29789	+0.169	1.265	0.581
18405	113.120	+2.042	0.71864	2.69440	-0.28200	+0.59579	+0.28629	+0.551	-1.164	-0.559
18505	129.357	2.718	.71841	.69704	.45507	.49549	.25203	0.890	0.969	0.493
18605	145.611	3.178	.71856	.69531	.59206	.35591	.19778	1.157	0.696	0.387
18705	161.861	3.384	.71909	.68937	.68216	.18814	.12787	1.331	0.367	0.249
18805	178.081	+3.321	0.71995	2.67973	-0.71834	+0.00549	+0.04784	+1.396	-0.011	-0.093
18905	194.250	2.995	.72108	.66721	.69794	- .17760	- .03596	1.350	+0.344	+0.070
19005	210.351	2.435	.72237	.65285	.62281	.34678	.11694	1.198	0.667	0.225
19105	226.377	1.688	.72374	.63782	.49910	.48893	.18881	0.955	0.935	0.361
19205	242.330	+0.813	0.72508	2.62329	-0.33668	-0.59317	-0.24604	+0.641	+1.129	+0.468
19305	258.220	-0.122	.72628	.61034	- .14828	.65166	.28430	+0.281	1.234	0.538
19405	274.063	1.044	.72724	.59994	+ .05152	.66014	.30074	-0.097	1.245	0.567
19505	289.879	1.885	.72791	.59281	.24738	.61815	.29419	0.465	1.162	0.553
19605	305.688	-2.583	0.72822	2.58946	+0.42439	-0.52903	-0.26520	-0.797	+0.994	+0.498
19705	321.506	3.085	.72816	.59010	.56909	.39962	.21602	1.069	0.751	0.406
19805	337.346	3.354	.72773	.59470	.67043	.23978	.15039	1.262	0.451	0.283
19905	353.217	3.368	.72696	.60295	.72063	- .06164	- .07329	1.360	+0.116	+0.138
20005	9.124	-3.126	0.72591	2.61425	+0.71566	+0.12120	+0.00942	-1.357	-0.230	-0.018
20105	25.071	2.642	.72466	.62782	.65569	.29471	.09140	1.250	0.562	0.174
20205	41.061	1.953	.72330	.64264	.54506	.44544	.16631	1.045	0.854	0.319
20305	57.097	1.110	.72195	.65758	.39210	.56156	.22830	0.756	1.082	0.440
20405	73.183	-0.177	0.72069	2.67146	+0.20851	+0.63380	+0.27244	-0.404	-1.228	-0.528
20505	89.318	+0.773	.71965	.68314	+ .00857	.65626	.29520	-0.017	1.277	0.574
20605	105.501	1.664	.71889	.69163	- .19205	.62697	.29467	+0.375	1.224	0.575
20705	121.724	2.425	.71848	.69621	.37746	.54808	.27083	0.738	1.072	0.530
20805	137.973	+2.992	0.71846	2.69646	-0.53296	+0.42576	+0.22552	+1.042	-0.833	-0.441
20905	154.227	3.321	.71882	.69238	.64623	.26970	.16235	1.262	0.527	0.317
21005	170.462	3.384	.71954	.68433	.70836	+ .09229	.08632	1.379	-0.180	0.168
21105	186.656	3.179	.72056	.67297	.71460	- .09241	+ .00349	1.385	+0.179	-0.007
21205	202.789	+2.725	0.72179	2.65931	-0.66469	-0.26986	-0.07963	+1.282	+0.520	+0.154
21305	218.849	2.059	.72314	.64445	.56282	.42622	.15653	1.079	0.817	0.300
21405	234.834	1.236	.72450	.62955	.41718	.54946	.22126	0.796	1.048	0.422
21505	250.750	+0.321	.72577	.61579	.23928	.63022	.26890	0.454	1.196	0.510
21605	266.611	-0.616	0.72685	2.60417	-0.04296	-0.66252	-0.29585	+0.081	+1.251	+0.559
21705	282.437	1.504	.72765	.59553	+ .15665	.64409	.30015	-0.295	1.212	0.565
21805	298.246	2.276	.72813	.59048	.34432	.57649	.28154	0.647	1.083	0.529
21905	314.058	2.876	.72823	.58937	.50576	.46498	.24148	0.950	0.873	0.454
22005	329.887	-3.258	0.72796	2.59225	+0.62869	-0.31807	-0.18304	-1.182	+0.598	+0.344

Julian Date	Heliocentric		Radius Vector r	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Earth only		
	Longitude l	Latitude b			x	y	z	X	Y	Z
244	°	°								
1720.5	137.757	-0.002	0.98629	1.04229	-0.73016	+0.60832	+0.26379	+0.684	-0.570	-0.247
1730.5	147.869	.001	.98817	.03635	.83682	.48218	.20909	.779	.449	.195
1740.5	157.939	- .001	.99040	.02936	.91789	.34128	.14799	.849	.316	.137
1750.5	167.961	.000	.99292	.02156	.97108	.19001	.08240	.891	.174	.076
1760.5	177.930	0.000	0.99564	1.01321	-0.99499	+0.03300	+0.01431	+0.906	-0.030	-0.013
1770.5	187.843	+ .001	0.99848	1.00458	.98914	- .12500	- .05420	.893	+ .113	+ .049
1780.5	197.699	.001	1.00136	0.99595	.95396	.27930	.12111	.854	.250	.108
1790.5	207.499	.002	.00418	.98755	.89073	.42539	.18446	.790	.377	.164
1800.5	217.245	+0.002	1.00688	0.97963	-0.80153	-0.55909	-0.24243	+0.705	+0.492	+0.213
1810.5	226.941	.002	.00937	.97240	.68915	.67663	.29340	.602	.591	.256
1820.5	236.592	.003	.01159	.96603	.55698	.77474	.33595	.483	.672	.292
1830.5	246.204	.003	.01346	.96068	.40892	.85076	.36891	.353	.734	.318
1840.5	255.784	+0.003	1.01495	0.95647	-0.24926	-0.90265	-0.39141	+0.214	+0.776	+0.336
1850.5	265.340	.003	.01600	.95350	- .08255	.92906	.40286	+ .071	.796	.345
1860.5	274.880	.003	.01660	.95182	+ .08648	.92930	.40297	- .074	.795	.345
1870.5	284.414	.003	.01672	.95148	.25308	.90344	.39175	.216	.772	.335
1880.5	293.949	+0.003	1.01636	0.95247	+0.41257	-0.85219	-0.36953	-0.353	+0.729	+0.316
1890.5	303.497	.002	.01554	.95479	.56046	.77698	.33692	.481	.666	.289
1900.5	313.063	.002	.01428	.95837	.69255	.67986	.29481	.596	.585	.254
1910.5	322.658	.002	.01260	.96314	.80504	.56352	.24436	.697	.488	.211
1920.5	332.288	+0.001	1.01056	0.96899	+0.89464	-0.43115	-0.18696	-0.779	+0.375	+0.163
1930.5	341.960	+ .001	.00820	.97579	.95864	.28645	.12422	.840	.251	.109
1940.5	351.680	.000	.00561	.98336	0.99502	- .13351	- .05790	.879	+ .118	+ .051
1950.5	1.451	.000	1.00284	0.99152	1.00252	+ .02330	+ .01010	.893	- .021	- .009
1960.5	11.278	-0.001	0.99999	1.00004	+0.98068	+0.17943	+0.07780	-0.881	-0.161	-0.070
1970.5	21.161	.001	.99712	.00869	.92988	.33025	.14320	.843	.299	.130
1980.5	31.101	.002	.99433	.01719	.85141	.47123	.20433	.778	.431	.187
1990.5	41.095	.002	.99171	.02530	.74737	.59806	.25933	.688	.551	.239
2000.5	51.140	-0.003	0.98932	1.03273	+0.62072	+0.70678	+0.30647	-0.576	-0.656	-0.284
2010.5	61.230	.003	.98726	.03923	.47516	.79396	.34428	.444	.741	.321
2020.5	71.359	.003	.98557	.04457	.31502	.85678	.37152	.296	.804	.349
2030.5	81.518	.003	.98432	.04855	+ .14518	.89320	.38731	- .137	.841	.365
2040.5	91.698	-0.003	0.98355	1.05103	-0.02915	+0.90197	+0.39112	+0.028	-0.852	-0.369
2050.5	101.889	.003	.98328	.05190	.20257	.88276	.38279	.191	.834	.362
2060.5	112.080	.003	.98351	.05114	.36971	.83615	.36258	.349	.790	.342
2070.5	122.261	.002	.98425	.04877	.52538	.76361	.33112	.495	.719	.312
2080.5	132.422	-0.002	0.98547	1.04488	-0.66479	+0.66742	+0.28941	+0.624	-0.626	-0.272
2090.5	142.553	.002	.98713	.03963	.78370	.55065	.23878	.732	.514	.223
2100.5	152.646	.001	.98917	.03320	.87857	.41699	.18082	.815	.387	.168
2110.5	162.695	- .001	.99154	.02582	.94665	.27060	.11735	.872	.249	.108
2120.5	172.692	0.000	0.99415	1.01776	-0.98608	+0.11601	+0.05031	+0.902	-0.106	-0.046
2130.5	182.636	.000	.99693	.00926	.99588	- .04206	- .01823	.903	+ .038	+ .017
2140.5	192.523	+ .001	0.99980	1.00062	.97601	.19890	.08624	.877	.179	.078
2150.5	202.353	.002	1.00266	0.99207	.92731	.34986	.15170	.826	.312	.135
2160.5	212.129	+0.002	1.00543	0.98387	-0.85146	-0.49058	-0.21272	+0.753	+0.434	+0.188
2170.5	221.852	.002	.00804	.97625	.75087	.61706	.26757	.659	.541	.235
2180.5	231.527	.003	.01041	.96940	.62863	.72576	.31470	.547	.632	.274
2190.5	241.159	.003	.01248	.96348	.48840	.81369	.35283	.423	.704	.305
2200.5	250.755	+0.003	1.01418	0.95864	-0.33428	-0.87847	-0.38092	+0.288	+0.757	+0.328

VENUS

Julian Date	Heliocentric		Radius Vector r	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Venus only		
	Longitude l	Latitude b			x	y	z	X	Y	Z
244	°	°								
2200-5	329-887	-3-258	0-72796	2-59225	+0-62869	-0-31807	-0-18304	-1-182	+0-598	+0-344
2210-5	345-744	3-394	-72733	-59895	-70370	-1-4691	-11064	1-326	+0-277	0-209
2220-5	1-635	3-271	-72640	-60899	-72492	+0-3547	-0-2980	1-372	-0-067	+0-056
2230-5	17-564	2-898	-72523	-62166	-69053	-21512	+0-5333	1-313	0-409	-0-101
2240-5	33-535	-2-300	0-72391	2-63603	+0-60292	+0-37817	+0-13234	-1-153	-0-723	-0-253
2250-5	49-551	1-522	-72254	-65103	-46860	-51190	-20109	0-901	0-984	0-387
2260-5	65-615	-0-622	-72123	-66550	-29776	-60573	-25417	0-576	1-171	0-491
2270-5	81-728	+0-330	-72008	-67827	+0-10360	-65210	-28732	-0-201	1-267	0-558
2280-5	97-890	+1-258	0-71919	2-68828	-0-09870	+0-64713	+0-29786	+0-192	-1-262	-0-581
2290-5	114-096	2-088	-71862	-69469	-29319	-59102	-28486	0-573	1-155	0-557
2300-5	130-335	2-753	-71842	-69694	-46446	-48811	-24930	0-908	0-955	0-488
2310-5	146-589	3-198	-71860	-69483	-59892	-34651	-19397	1-171	0-677	0-379
2320-5	162-836	+3-388	0-71916	2-68855	-0-68593	+0-17746	+0-12329	+1-338	-0-346	-0-240
2330-5	179-052	3-308	-72005	-67862	-71875	-0-0562	+0-4286	1-396	+0-011	-0-083
2340-5	195-215	2-968	-72119	-66591	-69498	-18827	-0-4095	1-344	0-364	+0-079
2350-5	211-310	2-395	-72250	-65146	-61674	-35618	-12156	1-186	0-685	0-234
2360-5	227-330	+1-638	0-72387	2-63642	-0-49042	-0-49633	-0-19270	+0-938	+0-949	+0-368
2370-5	243-277	+0-758	-72520	-62199	-32608	-59802	-24890	0-620	1-137	0-473
2380-5	259-162	-0-178	-72638	-60923	-1-3659	-65362	-28592	+0-258	1-237	0-541
2390-5	275-001	1-097	-72732	-59909	+0-6340	-65907	-30101	-0-120	1-242	0-567
2400-5	290-816	-1-931	0-72796	2-59229	+0-25854	-0-61415	-0-29309	-0-486	+1-155	+0-551
2410-5	306-624	2-619	-72824	-58931	-43398	-52241	-26283	0-815	0-981	0-494
2420-5	322-443	3-108	-72814	-59033	-57638	-39089	-21255	1-083	0-734	0-399
2430-5	338-285	3-362	-72768	-59530	-67487	-22960	-14609	1-270	0-432	0-275
2440-5	354-159	-3-361	0-72688	2-60386	+0-72186	-0-05079	-0-06848	-1-363	+0-096	+0-129
2450-5	10-070	3-103	-72581	-61541	-71358	+0-13189	+0-01437	1-354	-0-250	-0-027
2460-5	26-022	2-606	-72454	-62912	-65042	-30443	-0-9611	1-240	0-580	0-183
2470-5	42-016	1-906	-72318	-64398	-53700	-45342	-17042	1-030	0-869	0-327
2480-5	58-057	-1-056	0-72183	2-65885	+0-38184	+0-56715	+0-23147	-0-736	-1-094	-0-446
2490-5	74-146	-0-119	-72059	-67256	+0-19685	-63655	-27443	-0-382	1-234	0-532
2500-5	90-286	+0-829	-71957	-68399	-0-0359	-65594	-29582	+0-007	1-277	0-576
2510-5	106-472	1-714	-71884	-69220	-20374	-62358	-29388	0-398	1-218	0-574
2520-5	122-698	+2-465	0-71846	2-69646	-0-38776	+0-54188	+0-26869	+0-758	-1-060	-0-525
2530-5	138-947	3-019	-71846	-69641	-54105	-41724	-22220	1-058	0-816	0-435
2540-5	155-201	3-332	-71885	-69206	-65146	-25953	-15810	1-272	0-507	0-309
2550-5	171-435	3-380	-71959	-68379	-71033	+0-08128	+0-08149	1-383	-0-158	-0-159
2560-5	187-626	+3-159	0-72062	2-67229	-0-71316	-0-10340	-0-00156	+1-382	+0-200	+0-003
2570-5	203-755	2-690	-72186	-65851	-65998	-27996	-08448	1-273	0-540	0-163
2580-5	219-810	2-013	-72322	-64361	-55521	-43465	-16081	1-065	0-833	0-308
2590-5	235-791	1-183	-72458	-62875	-40728	-55558	-22465	0-777	1-059	0-428
2600-5	251-704	+0-264	0-72584	2-61507	-0-22786	-0-63357	-0-27113	+0-432	+1-202	+0-514
2610-5	267-562	-0-672	-72690	-60358	-0-3091	-66285	-29676	+0-058	1-252	0-560
2620-5	283-387	1-554	-72769	-59511	+0-16841	-64138	-29967	-0-317	1-207	0-564
2630-5	299-196	2-318	-72815	-59026	-35490	-57097	-27972	0-667	1-073	0-525
2640-5	315-008	-2-905	0-72823	2-58934	+0-51435	-0-45707	-0-23846	-0-966	+0-858	+0-448
2650-5	330-838	3-273	-72795	-59241	-63464	-30836	-17904	1-193	0-580	0-337
2660-5	346-696	3-394	-72730	-59928	-70654	-1-3615	-10597	1-332	+0-257	0-200
2670-5	2-588	3-255	-72636	-60943	-72445	+0-04646	-0-2481	1-371	-0-088	+0-047
2680-5	18-519	-2-868	0-72518	2-62218	+0-68677	+0-22549	+0-05825	-1-306	-0-429	-0-111

Julian Date	Heliocentric		Radius Vector r	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Earth only		
	Longitude l	Latitude b			x	y	z	X	Y	Z
244	°	°								
2200.5	250.755	+0.003	1.01418	0.95864	-0.33428	-0.87847	-0.38092	+0.288	+0.757	+0.328
2210.5	260.324	.003	.01547	.95499	.17068	.91840	.39824	.146	.788	.342
2220.5	269.872	.003	.01632	.95261	-.00228	-.93242	.40432	+ .002	.798	.346
2230.5	279.408	.003	.01669	.95154	+ .16619	.92023	.39903	- .142	.787	.341
2240.5	288.942	+0.003	1.01660	0.95182	+0.33000	-0.88218	-0.38254	-0.282	+0.754	+0.327
2250.5	298.482	.003	.01602	.95343	.48453	.81934	.35529	.415	.702	.304
2260.5	308.037	.002	.01499	.95634	.62541	.73343	.31804	.537	.630	.273
2270.5	317.616	.002	.01353	.96048	.74864	.62682	.27181	.646	.541	.235
2280.5	327.227	+0.001	1.01168	0.96577	+0.85064	-0.50243	-0.21787	-0.738	+0.436	+0.189
2290.5	336.876	+ .001	.00949	.97208	.92838	.36372	.15773	.811	.318	.138
2300.5	346.569	.000	.00701	.97925	0.97947	.21459	.09306	.862	.189	.082
2310.5	356.313	.000	.00433	.98712	1.00225	- .05925	- .02570	.889	+ .053	+ .023
2320.5	6.110	-0.001	1.00152	0.99546	+0.99583	+0.09781	+0.04240	-0.891	-0.087	-0.038
2330.5	15.963	.001	0.99865	1.00406	.96014	.25198	.10926	.866	.227	.099
2340.5	25.873	.002	.99581	.01267	.89600	.39869	.17287	.815	.363	.157
2350.5	35.838	.002	.99310	.02100	.80508	.53346	.23132	.738	.489	.212
2360.5	45.856	-0.003	0.99058	1.02881	+0.68990	+0.65216	+0.28279	-0.638	-0.603	-0.261
2370.5	55.922	.003	.98834	.03583	.55378	.75105	.32567	.515	.699	.303
2380.5	66.031	.003	.98644	.04180	.40074	.82698	.35859	.375	.774	.336
2390.5	76.174	.003	.98496	.04653	.23537	.87747	.38049	.221	.825	.358
2400.5	86.344	-0.003	0.98393	1.04982	+0.06274	+0.90087	+0.39064	-0.059	-0.850	-0.368
2410.5	96.530	.003	.98338	.05156	- .11183	.89636	.38868	+ .106	.847	.367
2420.5	106.721	.003	.98335	.05167	.28292	.86403	.37466	.267	.816	.354
2430.5	116.908	.003	.98382	.05016	.44524	.80489	.34902	.420	.759	.329
2440.5	127.081	-0.002	0.98478	1.04708	-0.59377	+0.72080	+0.31256	+0.559	-0.678	-0.294
2450.5	137.229	.002	.98621	.04254	.72394	.61443	.26643	.678	.575	.250
2460.5	147.343	.001	.98805	.03672	.83185	.48915	.21212	.775	.456	.198
2470.5	157.415	- .001	.99025	.02983	.91431	.34891	.15130	.846	.323	.140
2480.5	167.440	0.000	0.99274	1.02211	-0.96898	+0.19806	+0.08589	+0.890	-0.182	-0.079
2490.5	177.413	.000	.99544	.01382	.99442	+ .04122	+ .01788	.905	- .038	- .016
2500.5	187.330	+ .001	0.99827	1.00522	.99011	- .11685	- .05066	.894	+ .106	+ .046
2510.5	197.191	.001	1.00114	0.99660	.95641	.27147	.11771	.856	.243	.105
2520.5	206.995	+0.002	1.00397	0.98819	-0.89458	-0.41811	-0.18129	+0.794	+0.371	+0.161
2530.5	216.746	.002	.00668	.98024	.80665	.55255	.23959	.710	.487	.211
2540.5	226.446	.003	.00918	.97295	.69537	.67101	.29096	.608	.587	.254
2550.5	236.100	.003	.01142	.96651	.56411	.77020	.33397	.490	.669	.290
2560.5	245.715	+0.003	1.01332	0.96108	-0.41676	-0.84741	-0.36745	+0.360	+0.732	+0.317
2570.5	255.297	.003	.01484	.95678	.25757	.90058	.39051	.221	.774	.336
2580.5	264.855	.003	.01593	.95371	- .09111	.92831	.40254	+ .078	.795	.345
2590.5	274.396	.003	.01656	.95193	+ .07792	.92991	.40323	- .067	.795	.345
2600.5	283.930	+0.003	1.01672	0.95149	+0.24477	-0.90536	-0.39258	-0.209	+0.774	+0.336
2610.5	293.466	.003	.01640	.95238	.40473	.85538	.37091	.346	.732	.317
2620.5	303.012	.003	.01561	.95461	.55332	.78135	.33881	.475	.670	.291
2630.5	312.577	.002	.01437	.95811	.68630	.68529	.29716	.591	.590	.256
2640.5	322.170	+0.002	1.01271	0.96281	+0.79987	-0.56985	-0.24711	-0.692	+0.493	+0.214
2650.5	331.797	.001	.01069	.96860	.89070	.43822	.19003	.775	.381	.165
2660.5	341.466	+ .001	.00835	.97536	.95606	.29406	.12752	.838	.258	.112
2670.5	351.183	.000	.00577	.98290	0.99388	- .14143	- .06134	.878	+ .125	+ .054
2680.5	0.952	0.000	1.00300	0.99105	+1.00286	+0.01529	+0.00662	-0.893	-0.014	-0.006

VENUS

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Venus only		
	Longitude	Latitude			x	y	z	X	Y	Z
	<i>l</i>	<i>b</i>	<i>r</i>							
244	°	°								
2680.5	18.519	-2.868	0.72518	2.62218	+0.68677	+0.22549	+0.05825	-1.306	-0.429	-0.111
2690.5	34.492	2.258	.72386	.63657	.59615	.38712	.13681	1.140	0.740	0.262
2700.5	50.509	1.470	.72249	.65154	.45932	.51874	.20477	0.883	0.998	0.394
2710.5	66.574	-0.566	.72119	.66591	.28671	.60991	.25675	0.554	1.179	0.496
2720.5	82.688	+0.387	0.72006	2.67856	+0.09164	+0.65329	+0.28862	-0.178	-1.269	-0.561
2730.5	98.852	1.311	.71917	.68843	-.11064	.64522	.29776	+0.216	1.258	0.581
2740.5	115.059	2.133	.71862	.69468	.30416	.58617	.28337	0.594	1.146	0.554
2750.5	131.298	2.786	.71843	.69679	.47359	.48070	.24654	0.926	0.940	0.482
2760.5	147.552	+3.217	0.71863	2.69456	-0.60548	+0.33713	+0.19016	+1.183	-0.659	-0.372
2770.5	163.798	3.391	.71920	.68819	.68942	+ .16685	.11873	1.344	-0.325	0.231
2780.5	180.013	3.295	.72009	.67822	.71890	-.01661	+ .03791	1.396	+0.032	-0.074
2790.5	196.174	2.939	.72123	.66550	.69177	.19878	-.04590	1.337	0.384	+0.089
2800.5	212.266	+2.354	0.72254	2.65108	-0.61045	-0.36539	-0.12611	+1.174	+0.703	+0.242
2810.5	228.283	1.588	.72390	.63610	.48153	.50353	.19651	0.921	0.963	0.376
2820.5	244.228	+0.702	.72522	.62176	.31529	.60266	.25168	0.600	1.146	0.479
2830.5	260.112	-0.234	.72639	.60910	-.12473	.65533	.28745	+0.236	1.240	0.544
2840.5	275.952	-1.151	0.72732	2.59908	+0.07540	-0.65773	-0.30117	-0.142	+1.240	+0.568
2850.5	291.767	1.978	.72795	.59239	.26979	.60986	.29187	0.507	1.147	0.549
2860.5	307.577	2.654	.72822	.58951	.44361	.51550	.26033	0.833	0.968	0.489
2870.5	323.398	3.130	.72811	.59063	.58365	.38189	.20896	1.097	0.718	0.393
2880.5	339.242	-3.369	0.72764	2.59569	+0.67923	-0.21918	-0.14167	-1.279	+0.413	+0.267
2890.5	355.117	3.353	.72683	.60432	.72296	-.03975	-.06357	1.366	+0.075	+0.120
2900.5	11.030	3.080	.72576	.61591	.71132	+ .14272	+ .01940	1.350	-0.271	-0.037
2910.5	26.982	2.569	.72450	.62963	.64498	.31419	.10086	1.230	0.599	0.192
2920.5	42.978	-1.859	0.72314	2.64445	+0.52878	+0.46137	+0.17452	-1.014	-0.885	-0.335
2930.5	59.020	1.001	.72180	.65923	.37148	.57267	.23461	0.716	1.104	0.452
2940.5	75.110	-0.062	.72057	.67282	+ .18516	.63919	.27636	-0.359	1.239	0.536
2950.5	91.251	+0.885	.71956	.68409	-.01571	.65549	.29639	+0.031	1.276	0.577
2960.5	107.438	+1.764	0.71885	2.69212	-0.21532	+0.62008	+0.29304	+0.420	-1.211	-0.572
2970.5	123.664	2.504	.71848	.69621	.39789	.53561	.26650	0.778	1.047	0.521
2980.5	139.913	3.045	.71850	.69601	.54892	.40869	.21884	1.073	0.799	0.428
2990.5	156.165	3.343	.71890	.69155	.65647	.24939	.15384	1.282	0.487	0.300
3000.5	172.397	+3.374	0.71964	2.68319	-0.71208	+0.07035	+0.07667	+1.386	-0.137	-0.149
3010.5	188.585	3.138	.72068	.67166	.71153	-.11424	-.00655	1.379	+0.221	+0.013
3020.5	204.711	2.655	.72192	.65792	.65511	.28988	.08926	1.263	0.559	0.172
3030.5	220.763	1.967	.72326	.64309	.54749	.44288	.16501	1.050	0.849	0.316
3040.5	236.741	+1.129	0.72461	2.62833	-0.39732	-0.56147	-0.22794	+0.757	+1.070	+0.435
3050.5	252.652	+0.208	.72586	.61478	.21643	.63668	.27326	0.410	1.207	0.518
3060.5	268.510	-0.727	.72692	.60344	-.01890	.66295	.29757	+0.036	1.252	0.562
3070.5	284.335	1.604	.72769	.59513	+ .18009	.63847	.29910	-0.339	1.202	0.563
3080.5	300.145	-2.359	0.72813	2.59043	+0.36535	-0.56526	-0.27781	-0.686	+1.062	+0.522
3090.5	315.959	2.934	.72820	.58967	.52277	.44899	.23535	0.982	0.843	0.442
3100.5	331.791	3.288	.72790	.59291	.64039	.29853	.17498	1.204	0.561	0.329
3110.5	347.651	3.393	.72724	.59992	.70917	-.12532	.10126	1.337	+0.236	0.191
3120.5	3.546	-3.239	0.72629	2.61021	+0.72374	+0.05747	-0.01980	-1.370	-0.109	+0.037
3130.5	19.480	2.837	.72510	.62305	.68276	.23584	+ .06317	1.299	0.449	-0.120
3140.5	35.455	2.215	.72377	.63750	.58913	.39601	.14126	1.127	0.758	0.270
3150.5	51.475	1.418	.72241	.65246	.44982	.52546	.20839	0.865	1.011	0.401
3160.5	67.543	-0.509	0.72112	2.66676	+0.27545	+0.61393	+0.25927	-0.533	-1.187	-0.501

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Earth only		
	Longitude	Latitude			x	y	z	X	Y	Z
	l	b	r							
244	°	°								
2680.5	0.952	0.000	1.00300	0.99105	+1.00286	+0.01529	+0.00662	-0.893	-0.014	-0.006
2690.5	10.776	- .001	1.00014	0.99957	0.98251	-17156	-07438	-882	-154	-067
2700.5	20.656	·002	0.99727	1.00822	·93316	·32276	·13995	·845	·292	·127
2710.5	30.593	·002	·99448	·01675	·85605	·46435	·20134	·782	·424	·184
2720.5	40.584	-0.003	0.99184	1.02488	+0.75325	+0.59200	+0.25670	-0.694	-0.545	-0.236
2730.5	50.627	·003	·98944	·03235	·62767	·70174	·30428	·582	·651	·282
2740.5	60.715	·003	·98736	·03890	·48298	·79009	·34259	·451	·737	·320
2750.5	70.841	·003	·98566	·04430	·32348	·85422	·37040	·303	·801	·347
2760.5	80.999	-0.004	0.98439	1.04835	+0.15401	+0.89202	+0.38679	-0.145	-0.840	-0.364
2770.5	91.178	·004	·98359	·05089	- .02022	-02022	·39121	+ .019	·852	·369
2780.5	101.368	·003	·98329	·05184	·19382	·88443	·38351	·183	·836	·362
2790.5	111.559	·003	·98351	·05116	·36140	·83920	·36389	·341	·792	·344
2800.5	121.741	-0.003	0.98422	1.04887	-0.51778	+0.76793	+0.33299	+0.488	-0.724	-0.314
2810.5	131.902	·002	·98542	·04505	·65813	·67289	·29178	·618	·632	·274
2820.5	142.035	·002	·98705	·03987	·77818	·55710	·24157	·727	·520	·226
2830.5	152.129	·001	·98908	·03349	·87435	·42420	·18395	·812	·394	·171
2840.5	162.180	-0.001	0.99143	1.02616	-0.94386	+0.27837	+0.12071	+0.870	-0.257	-0.111
2850.5	172.180	·000	·99403	·01813	·98478	+ .12409	+ .05382	·901	- .113	- .049
2860.5	182.126	+ .001	·99680	·00966	·99611	- .03392	- .01470	·904	+ .031	+ .013
2870.5	192.015	·001	0.99966	1.00102	·97776	·19093	·08278	·879	·172	·074
2880.5	201.848	+0.002	1.00252	0.99247	-0.93051	-0.34230	-0.14842	+0.830	+0.305	+0.132
2890.5	211.626	·002	·00530	·98426	·85600	·48365	·20971	·757	·428	·185
2900.5	221.352	·003	·00792	·97661	·75661	·61095	·26491	·664	·536	·232
2910.5	231.029	·003	·01030	·96971	·63541	·72064	·31248	·554	·628	·272
2920.5	240.663	+0.003	1.01238	0.96375	-0.49601	-0.80971	-0.35110	+0.429	+0.701	+0.304
2930.5	250.261	·003	·01411	·95885	·34249	·87574	·37973	·295	·754	·327
2940.5	259.831	·004	·01542	·95514	·17928	·91697	·39761	·154	·787	·341
2950.5	269.379	·004	·01629	·95268	- .01101	·93235	·40428	+ .009	·798	·346
2960.5	278.916	+0.003	1.01669	0.95154	+0.15758	-0.92151	-0.39958	-0.135	+0.788	+0.342
2970.5	288.450	·003	·01662	·95175	·32174	·88477	·38365	·275	·756	·328
2980.5	297.989	·003	·01607	·95329	·47685	·82317	·35694	·408	·705	·306
2990.5	307.543	·003	·01507	·95613	·61854	·73841	·32019	·531	·634	·275
3000.5	317.120	+0.002	1.01362	0.96022	+0.74277	-0.63280	-0.27440	-0.641	+0.546	+0.237
3010.5	326.729	·002	·01179	·96546	·84594	·50925	·22083	·734	·442	·192
3020.5	336.375	+ .001	·00961	·97173	·92499	·37120	·16096	·807	·324	·141
3030.5	346.067	·000	·00714	·97888	0.97751	·22249	·09648	·860	·196	·085
3040.5	355.808	0.000	1.00446	0.98674	+1.00177	-0.06737	-0.02922	-0.888	+0.060	+0.026
3050.5	5.602	- .001	1.00164	0.99509	0.99686	+ .08972	+ .03889	·891	- .080	- .035
3060.5	15.453	·001	0.99877	1.00371	·96266	·24416	·10586	·868	·220	·095
3070.5	25.361	·002	·99592	·01234	·89994	·39136	·16969	·818	·356	·154
3080.5	35.324	-0.002	0.99319	1.02072	+0.81034	+0.52686	+0.22845	-0.743	-0.483	-0.209
3090.5	45.340	·003	·99066	·02857	·69633	·64649	·28032	·643	·597	·259
3100.5	55.405	·003	·98840	·03563	·56118	·74648	·32368	·522	·695	·301
3110.5	65.513	·003	·98649	·04166	·40889	·82366	·35715	·383	·771	·334
3120.5	75.656	-0.003	0.98499	1.04643	+0.24403	+0.87551	+0.37963	-0.229	-0.823	-0.357
3130.5	85.825	·004	·98394	·04978	+ .07163	·90033	·39040	- .068	·849	·368
3140.5	96.011	·003	·98338	·05156	- .10297	·89725	·38906	+ .097	·848	·368
3150.5	106.203	·003	·98333	·05171	·27439	·86634	·37566	·259	·819	·355
3160.5	116.391	-0.003	0.98379	1.05024	-0.43728	+0.80853	+0.35059	+0.413	-0.763	-0.331

VENUS

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Venus only		
	Longitude	Latitude			x	y	z	X	Y	Z
	<i>l</i>	<i>b</i>	<i>r</i>							
244	°	°								
3160.5	67.543	-0.509	0.72112	2.66676	+0.27545	+0.61393	+0.25927	-0.533	-1.187	-0.501
3170.5	83.660	+0.444	.71999	.67926	+ .07950	.65427	.28983	-0.154	1.271	0.563
3180.5	99.827	1.364	.71913	.68891	- .12270	.64308	.29756	+0.239	1.254	0.580
3190.5	116.036	2.178	.71860	.69490	.31519	.58107	.28177	0.616	1.136	0.551
3200.5	132.277	+2.819	0.71844	2.69670	-0.48272	+0.47304	+0.24366	+0.944	-0.925	-0.477
3210.5	148.531	3.235	.71866	.69418	.61198	.32751	.18624	1.196	0.640	0.364
3220.5	164.775	3.393	.71925	.68754	.69279	+ .15605	.11407	1.350	-0.304	0.222
3230.5	180.986	3.281	.72017	.67734	.71888	- .02775	+ .03289	1.396	+0.054	-0.064
3240.5	197.143	+2.910	0.72133	2.66445	-0.68839	-0.20938	-0.05089	+1.330	+0.405	+0.098
3250.5	213.230	2.313	.72264	.64991	.60398	.37462	.13068	1.161	0.720	0.251
3260.5	229.242	1.537	.72401	.63490	.47252	.51069	.20030	0.903	0.976	0.383
3270.5	245.181	+0.647	.72533	.62059	.30444	.60720	.25441	0.579	1.154	0.484
3280.5	261.061	-0.291	0.72649	2.60805	-0.11289	-0.65694	-0.28892	+0.214	+1.243	+0.547
3290.5	276.897	1.203	.72740	.59821	+ .08733	.65629	.30128	-0.165	1.237	0.568
3300.5	292.710	2.023	.72801	.59176	.28088	.60551	.29062	0.528	1.138	0.546
3310.5	308.519	2.689	.72825	.58916	.45303	.50857	.25780	0.851	0.955	0.484
3320.5	324.339	-3.151	0.72812	2.59059	+0.59069	-0.37292	-0.20536	-1.110	+0.701	+0.386
3330.5	340.184	3.376	.72762	.59594	.68334	.20886	.13728	1.287	0.393	0.258
3340.5	356.061	3.343	.72678	.60486	.72383	- .02886	- .05872	1.367	+0.055	+0.111
3350.5	11.976	3.056	.72568	.61672	.70888	+ .15334	+ .02434	1.345	-0.291	-0.046
3360.5	27.932	-2.532	0.72440	2.63065	+0.63939	+0.32373	+0.10552	-1.220	-0.618	-0.201
3370.5	43.931	1.811	.72303	.64563	.52045	.46908	.17853	0.999	0.900	0.343
3380.5	59.977	0.947	.72168	.66048	.36105	.57792	.23765	0.697	1.115	0.459
3390.5	76.072	-0.005	.72046	.67404	+ .17342	.64157	.27818	-0.336	1.244	0.540
3400.5	92.217	+0.940	0.71946	2.68520	-0.02783	+0.65478	+0.29684	+0.054	-1.275	-0.578
3410.5	108.409	1.813	.71877	.69301	.22688	.61632	.29207	0.443	1.204	0.570
3420.5	124.639	2.543	.71843	.69680	.40796	.52907	.26419	0.798	1.035	0.517
3430.5	140.891	3.070	.71848	.69625	.55670	.39989	.21537	1.089	0.782	0.421
3440.5	157.144	+3.352	0.71891	2.69140	-0.66133	+0.23902	+0.14948	+1.291	-0.467	-0.292
3450.5	173.374	3.367	.71969	.68269	.71365	+ .05924	+ .07176	1.389	-0.115	-0.140
3460.5	189.559	3.115	.72075	.67085	.70969	- .12523	- .01162	1.375	+0.243	+0.023
3470.5	205.680	2.619	.72201	.65688	.65002	.29987	.09409	1.253	0.578	0.181
3480.5	221.727	+1.920	0.72337	2.64190	-0.53957	-0.45111	-0.16922	+1.034	+0.864	+0.324
3490.5	237.699	1.075	.72473	.62709	.38720	.56732	.23121	0.738	1.081	0.441
3500.5	253.605	+0.151	.72597	.61359	.20491	.63971	.27535	0.388	1.213	0.522
3510.5	269.459	-0.782	.72702	.60237	- .00687	.66295	.29833	+0.013	1.251	0.563
3520.5	285.280	-1.654	0.72777	2.59426	+0.19171	-0.63546	-0.29848	-0.361	+1.196	+0.562
3530.5	301.088	2.399	.72819	.58982	.37567	.55949	.27586	0.706	1.051	0.518
3540.5	316.901	2.962	.72823	.58934	.53103	.44091	.23223	0.997	0.828	0.436
3550.5	332.733	3.301	.72790	.59288	.64595	.28876	.17092	1.215	0.543	0.321
3560.5	348.594	-3.391	0.72722	2.60019	+0.71161	-0.11459	-0.09658	-1.342	+0.216	+0.182
3570.5	4.490	3.222	.72624	.61076	.72286	+ .06832	- .01486	1.369	-0.129	+0.028
3580.5	20.426	2.806	.72503	.62383	.67863	.24598	+ .06800	1.291	0.468	-0.129
3590.5	36.404	2.172	.72369	.63846	.58204	.40466	.14561	1.114	0.774	0.279
3600.5	52.427	-1.367	0.72231	2.65353	+0.44032	+0.53193	+0.21191	-0.847	-1.024	-0.408
3610.5	68.499	-0.452	.72102	.66785	.26426	.61770	.26168	0.511	1.195	0.506
3620.5	84.621	+0.500	.71990	.68025	.06749	.65503	.29093	-0.131	1.273	0.566
3630.5	100.792	1.416	.71905	.68979	.13459	.64075	.29726	+0.263	1.250	0.580
3640.5	117.005	+2.222	0.71854	2.69555	-0.32602	+0.57581	+0.28008	+0.637	-1.126	-0.548

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Earth only		
	Longitude	Latitude			x	y	z	X	Y	Z
	l	b	r							
244	°	°								
3160-5	116.391	-0.003	0.98379	1.05024	-0.43728	+0.80853	+0.35059	+0.413	-0.763	-0.331
3170-5	126.564	.003	.98475	.04719	.58663	.72566	.31466	.552	.683	.296
3180-5	136.712	.002	.98616	.04269	.71785	.62036	.26900	.672	.581	.252
3190-5	146.827	.002	.98799	.03690	.82698	.49597	.21507	.770	.462	.200
3200-5	156.901	-0.001	0.99019	1.03003	-0.91080	+0.35640	+0.15455	+0.843	-0.330	-0.143
3210-5	166.927	.000	.99267	.02233	.96694	.20599	.08933	.888	.189	.082
3220-5	176.901	.000	.99536	.01405	.99390	+ .04936	+ .02141	.905	- .045	- .020
3230-5	186.820	+ .001	0.99818	1.00548	.99112	- .10876	- .04715	.895	+ .098	+ .043
3240-5	196.683	+0.001	1.00105	0.99686	-0.95891	-0.26366	-0.11432	+0.859	+0.236	+0.102
3250-5	206.489	.002	.00388	.98846	.89849	.41080	.17812	.798	.365	.158
3260-5	216.241	.002	.00658	.98052	.81184	.54596	.23673	.715	.481	.209
3270-5	225.943	.003	.00909	.97323	.70169	.66532	.28849	.613	.582	.252
3280-5	235.599	+0.003	1.01132	0.96679	-0.57138	-0.76558	-0.33196	+0.496	+0.665	+0.288
3290-5	245.216	.004	.01323	.96134	.42475	.84398	.36595	.367	.729	.316
3300-5	254.800	.004	.01475	.95701	.26606	.89843	.38957	.229	.772	.335
3310-5	264.359	.004	.01585	.95391	- .09985	.92750	.40217	+ .086	.795	.345
3320-5	273.902	+0.004	1.01650	0.95209	+0.06917	-0.93044	-0.40345	-0.059	+0.796	+0.345
3330-5	283.437	.004	.01667	.95160	.23625	.90723	.39338	.202	.776	.336
3340-5	292.973	.003	.01637	.95245	.39669	.85853	.37227	.339	.735	.319
3350-5	302.520	.003	.01561	.95461	.54598	.78568	.34068	.468	.674	.292
3360-5	312.085	+0.003	1.01439	0.95805	+0.67987	-0.69070	-0.29950	-0.585	+0.594	+0.258
3370-5	321.676	.002	.01276	.96268	.79453	.57618	.24984	.687	.498	.216
3380-5	331.303	.002	.01076	.96841	.88661	.44528	.19308	.771	.387	.168
3390-5	340.971	+ .001	.00844	.97511	.95333	.30166	.13081	.835	.264	.115
3400-5	350.685	0.000	1.00587	0.98259	+0.99261	-0.14937	-0.06477	-0.876	+0.132	+0.057
3410-5	0.452	.000	.00312	.99069	1.00309	+ .00726	+ .00314	.893	- .006	- .003
3420-5	10.273	- .001	1.00028	0.99917	0.98424	.16367	.07096	.883	.147	.064
3430-5	20.151	.002	0.99741	1.00781	.93636	.31524	.13668	.848	.285	.124
3440-5	30.084	-0.002	0.99462	1.01633	+0.86063	+0.45743	+0.19834	-0.786	-0.418	-0.181
3450-5	40.073	.003	.99197	.02447	.75908	.58589	.25404	.699	.539	.234
3460-5	50.113	.003	.98957	.03197	.63459	.69663	.30206	.588	.646	.280
3470-5	60.198	.003	.98747	.03856	.49077	.78615	.34088	.458	.733	.318
3480-5	70.323	-0.004	0.98574	1.04402	+0.33192	+0.85157	+0.36925	-0.311	-0.799	-0.346
3490-5	80.479	.004	.98445	.04814	+ .16284	.89076	.38624	- .153	.839	.364
3500-5	90.657	.004	.98363	.05076	- .01128	.90239	.39128	+ .011	.852	.369
3510-5	100.846	.004	.98331	.05178	.18504	.88604	.38420	.175	.837	.363
3520-5	111.037	-0.003	0.98351	1.05116	-0.35306	+0.84219	+0.36518	+0.333	-0.795	-0.345
3530-5	121.219	.003	.98420	.04894	.51012	.77221	.33484	.481	.728	.316
3540-5	131.381	.003	.98538	.04519	.65140	.67833	.29413	.612	.637	.276
3550-5	141.515	.002	.98699	.04005	.77259	.56352	.24435	.722	.527	.228
3560-5	151.611	-0.001	0.98900	1.03373	-0.87007	+0.43141	+0.18707	+0.808	-0.401	-0.174
3570-5	161.663	- .001	.99134	.02644	.94100	.28614	.12408	.868	.264	.114
3580-5	171.665	.000	.99393	.01844	.98343	+ .13219	+ .05733	.900	- .121	- .052
3590-5	181.613	+ .001	.99669	.00999	.99630	- .02574	- .01115	.904	+ .023	+ .010
3600-5	191.505	+0.001	0.99954	1.00137	-0.97946	-0.18290	-0.07930	+0.881	+0.165	+0.071
3610-5	201.340	.002	1.00240	0.99283	.93367	.33467	.14511	.833	.298	.129
3620-5	211.120	.002	.00518	.98462	.86052	.47663	.20667	.761	.422	.183
3630-5	220.848	.003	.00780	.97696	.76235	.60475	.26222	.669	.531	.230
3640-5	230.527	+0.003	1.01019	0.97006	-0.64219	-0.71543	-0.31021	+0.560	+0.623	+0.270

VENUS

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Venus only		
	Longitude	Latitude			x	y	z	X	Y	Z
	l	b	r							
244	°	°								
3640.5	117.005	+2.222	0.71854	2.69555	-0.32602	+0.57581	+0.28008	+0.637	-1.126	-0.548
3650.5	133.249	2.850	.71840	.69708	.49162	.46526	.24072	0.962	0.910	0.471
3660.5	149.504	3.252	.71866	.69423	.61825	.31783	.18228	1.208	0.621	0.356
3670.5	165.749	3.394	.71928	.68727	.69592	+ .14522	.10939	1.356	-0.283	0.213
3680.5	181.957	+3.266	0.72021	2.67680	-0.71863	-0.03886	+0.02787	+1.395	+0.075	-0.054
3690.5	198.110	2.880	.72139	.66369	.68479	.21989	-.05585	1.323	0.425	+0.108
3700.5	214.193	2.271	.72272	.64905	.59733	.38372	.13521	1.148	0.737	0.260
3710.5	230.200	1.487	.72409	.63402	.46334	.51768	.20404	0.885	0.989	0.390
3720.5	246.136	+0.591	0.72540	2.61977	-0.29346	-0.61156	-0.25707	+0.558	+1.162	+0.488
3730.5	262.012	-0.347	.72655	.60739	-.10096	.65833	.29031	+0.191	1.245	0.549
3740.5	277.846	1.256	.72745	.59774	+ .09929	.65464	.30129	-0.187	1.233	0.568
3750.5	293.659	2.068	.72803	.59153	.29196	.60093	.28925	0.549	1.129	0.544
3760.5	309.468	-2.723	0.72825	2.58917	+0.46239	-0.50143	-0.25517	-0.868	+0.942	+0.479
3770.5	325.290	3.172	.72809	.59083	.59761	.36375	.20167	1.123	0.684	0.379
3780.5	341.137	3.381	.72757	.59640	.68730	.19836	.13280	1.294	0.374	0.250
3790.5	357.016	3.333	.72673	.60549	.72451	-.01783	-.05379	1.369	+0.034	+0.102
3800.5	12.933	-3.031	0.72562	2.61745	+0.70622	+0.16405	+0.02933	-1.341	-0.311	-0.056
3810.5	28.891	2.494	.72433	.63142	.63358	.33330	.11019	1.209	0.636	0.210
3820.5	44.893	1.763	.72297	.64636	.51193	.47675	.18252	0.983	0.915	0.350
3830.5	60.941	-0.891	.72163	.66109	.35046	.58310	.24065	0.676	1.125	0.464
3840.5	77.038	+0.053	0.72042	2.67445	+0.16159	+0.64384	+0.27995	-0.313	-1.249	-0.543
3850.5	93.185	0.996	.71945	.68538	-.03997	.65396	.29724	+0.078	1.274	0.579
3860.5	109.378	1.862	.71878	.69291	.23836	.61246	.29106	0.466	1.196	0.568
3870.5	125.608	2.581	.71846	.69644	.41789	.52248	.26185	0.817	1.022	0.512
3880.5	141.858	+3.094	0.71853	2.69564	-0.56429	+0.39111	+0.21189	+1.103	-0.765	-0.414
3890.5	158.109	3.361	.71898	.69059	.66599	.22874	.14514	1.300	0.446	0.283
3900.5	174.336	3.359	.71977	.68175	.71503	+ .04828	+ .06691	1.391	-0.094	-0.130
3910.5	190.516	3.092	.72084	.66985	.70770	-.13600	-.01660	1.370	+0.263	+0.032
3920.5	206.633	+2.583	0.72210	2.65590	-0.64483	-0.30961	-0.09881	+1.242	+0.596	+0.190
3930.5	222.675	1.873	.72345	.64103	.53161	.45906	.17331	1.018	0.879	0.332
3940.5	238.643	1.022	.72479	.62640	.37710	.57288	.23436	0.718	1.091	0.446
3950.5	254.546	+0.095	.72602	.61314	-.19346	.64247	.27732	+0.367	1.218	0.526
3960.5	270.399	-0.836	0.72703	2.60221	+0.00506	-0.66270	-0.29897	-0.010	+1.251	+0.564
3970.5	286.220	1.702	.72776	.59439	.20320	.63221	.29775	0.382	1.190	0.560
3980.5	302.031	2.438	.72815	.59023	.38584	.55350	.27381	0.725	1.040	0.514
3990.5	317.847	2.989	.72817	.59003	.53909	.43262	.22901	1.013	0.813	0.430
4000.5	333.683	-3.314	0.72782	2.59379	+0.65129	-0.27880	-0.16677	-1.225	+0.524	+0.314
4010.5	349.548	3.388	.72712	.60125	.71381	-.10371	.09182	1.347	+0.196	0.173
4020.5	5.448	3.204	.72613	.61188	.72172	+ .07930	-.00984	1.367	-0.150	+0.019
4030.5	21.388	2.773	.72493	.62495	.67421	.25621	+ .07289	1.284	0.488	-0.139
4040.5	37.369	-2.127	0.72359	2.63947	+0.57468	+0.41333	+0.14998	-1.100	-0.791	-0.287
4050.5	53.395	1.314	.72224	.65435	.43055	.53837	.21543	0.829	1.036	0.415
4060.5	69.469	-0.395	.72097	.66844	.25284	.62139	.26407	0.489	1.203	0.511
4070.5	85.593	+0.558	.71987	.68059	+ .05531	.65567	.29199	-0.108	1.275	0.568
4080.5	101.765	+1.469	0.71905	2.68978	-0.14656	+0.63828	+0.29691	+0.286	-1.245	-0.579
4090.5	117.978	2.265	.71857	.69523	.33684	.57044	.27835	0.658	1.115	0.544
4100.5	134.221	2.882	.71846	.69647	.50044	.45741	.23774	0.979	0.895	0.465
4110.5	150.475	3.268	.71873	.69339	.62438	.30812	.17829	1.220	0.602	0.348
4120.5	166.715	+3.394	0.71937	2.68625	-0.69889	+0.13445	+0.10473	+1.362	-0.262	-0.204

Julian Date	Heliocentric		Radius Vector <i>r</i>	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Earth-only		
	Longitude <i>l</i>	Latitude <i>b</i>			<i>x</i>	<i>y</i>	<i>z</i>	<i>X</i>	<i>Y</i>	<i>Z</i>
244	°	°								
3640.5	230.527	+0.003	1.01019	0.97006	-0.64219	-0.71543	-0.31021	+0.560	+0.623	+0.270
3650.5	240.164	.003	.01227	.96407	.50363	.80562	.34932	.436	.698	.303
3660.5	249.764	.004	.01400	.95914	.35073	.87289	.37849	.302	.752	.326
3670.5	259.335	.004	.01533	.95539	.18790	.91544	.39694	.161	.786	.341
3680.5	268.886	+0.004	1.01621	0.95290	-0.01976	-0.93216	-0.40419	+0.017	+0.798	+0.346
3690.5	278.424	.004	.01664	.95171	+ .14893	.92266	.40008	- .127	.789	.342
3700.5	287.958	.003	.01658	.95186	.31344	.88724	.38472	.268	.759	.329
3710.5	297.499	.003	.01606	.95333	.46914	.82688	.35855	.402	.708	.307
3720.5	307.053	+0.003	1.01507	0.95611	+0.61163	-0.74325	-0.32228	-0.525	+0.638	+0.277
3730.5	316.630	.002	.01366	.96013	.73686	.63863	.27692	.636	.551	.239
3740.5	326.237	.002	.01184	.96529	.84119	.51592	.22371	.729	.447	.194
3750.5	335.883	.001	.00969	.97149	.92155	.37851	.16413	.804	.330	.143
3760.5	345.573	+0.001	1.00725	0.97858	+0.97548	-0.23024	-0.09984	-0.858	+0.202	+0.088
3770.5	355.311	.000	.00459	.98637	1.00122	- .07533	- .03267	.887	+ .067	+ .029
3780.5	5.103	- .001	1.00178	0.99467	0.99781	+ .08176	+ .03544	.892	- .073	- .032
3790.5	14.951	.001	0.99892	1.00324	.96510	.23645	.10252	.870	.213	.092
3800.5	24.855	-0.002	0.99608	1.01184	+0.90382	+0.38413	+0.16656	-0.822	-0.349	-0.151
3810.5	34.815	.002	.99335	.02022	.81554	.52033	.22561	.747	.477	.207
3820.5	44.828	.003	.99081	.02809	.70270	.64086	.27788	.649	.592	.257
3830.5	54.890	.003	.98854	.03520	.56855	.74193	.32171	.529	.690	.299
3840.5	64.995	-0.004	0.98660	1.04129	+0.41703	+0.82033	+0.35570	-0.390	-0.767	-0.333
3850.5	75.136	.004	.98507	.04615	.25270	.87353	.37877	.237	.821	.356
3860.5	85.304	.004	.98400	.04959	+ .08057	.89975	.39014	- .076	.848	.368
3870.5	95.489	.004	.98340	.05149	- .09406	.89810	.38942	+ .089	.848	.368
3880.5	105.680	-0.004	0.98332	1.05176	-0.26576	+0.86858	+0.37663	+0.251	-0.821	-0.356
3890.5	115.869	.003	.98375	.05040	.42922	.81211	.35214	.405	.766	.332
3900.5	126.043	.003	.98467	.04745	.57938	.73046	.31674	.545	.687	.298
3910.5	136.194	.002	.98606	.04303	.71162	.62623	.27154	.667	.587	.254
3920.5	146.312	-0.002	0.98787	1.03731	-0.82197	+0.50272	+0.21799	+0.766	-0.468	-0.203
3930.5	156.388	.001	.99004	.03049	.90715	.36381	.15776	.840	.337	.146
3940.5	166.418	- .001	.99251	.02282	.96475	.21384	.09273	.886	.196	.085
3950.5	176.395	.000	.99519	.01456	.99323	+ .05740	+ .02490	.905	- .052	- .023
3960.5	186.317	+0.001	0.99802	1.00597	-0.99196	-0.10076	-0.04368	+0.896	+0.091	+0.039
3970.5	196.183	.001	1.00089	0.99733	.96123	.25593	.11097	.861	.229	.099
3980.5	205.992	.002	.00373	.98890	.90221	.40358	.17499	.802	.359	.155
3990.5	215.747	.003	.00645	.98089	.81684	.53945	.23390	.720	.475	.206
4000.5	225.451	+0.003	1.00898	0.97355	-0.70782	-0.65970	-0.28605	+0.619	+0.577	+0.250
4010.5	235.109	.003	.01124	.96703	.57845	.76100	.32997	.503	.661	.287
4020.5	244.727	.004	.01317	.96151	.43256	.84057	.36448	.374	.726	.315
4030.5	254.312	.004	.01472	.95712	.27438	.89629	.38864	.236	.771	.334
4040.5	263.871	+0.004	1.01584	0.95394	-0.10845	-0.92667	-0.40181	+0.093	+0.794	+0.344
4050.5	273.414	.004	.01651	.95206	+ .06053	.93096	.40367	- .052	.796	.345
4060.5	282.949	.004	.01671	.95150	.22782	.90907	.39418	.195	.777	.337
4070.5	292.484	.003	.01643	.95228	.38871	.86165	.37362	.333	.737	.320
4080.5	302.029	+0.003	1.01568	0.95439	+0.53866	-0.79001	-0.34256	-0.462	+0.677	+0.294
4090.5	311.592	.003	.01449	.95777	.67344	.69610	.30184	.579	.599	.260
4100.5	321.182	.002	.01287	.96236	.78917	.58251	.25259	.682	.504	.218
4110.5	330.806	.002	.01088	.96805	.88248	.45238	.19616	.767	.393	.171
4120.5	340.471	+0.001	1.00858	0.97470	+0.95056	-0.30932	-0.13413	-0.832	+0.271	+0.117

VENUS

Julian Date	Heliocentric Longitude Latitude		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Venus only		
	<i>l</i>	<i>b</i>	<i>r</i>		<i>x</i>	<i>y</i>	<i>z</i>	<i>X</i>	<i>Y</i>	<i>Z</i>
244	°	°								
4120.5	166.715	+3.394	0.71937	2.68625	-0.69889	+0.13445	+0.10473	+1.362	-0.262	-0.204
4130.5	182.920	3.250	.72032	.67567	.71822	- .04985	+ .02289	1.394	+0.097	-0.044
4140.5	199.067	2.850	.72150	.66255	.68107	.23024	- .06075	1.315	0.445	+0.117
4150.5	215.145	2.228	.72282	.64797	.59060	.39263	.13965	1.134	0.754	0.268
4160.5	231.147	+1.436	0.72418	2.63308	-0.45415	-0.52445	-0.20767	+0.867	+1.002	+0.397
4170.5	247.079	+0.536	.72547	.61906	.28253	.61569	.25963	0.537	1.170	0.493
4180.5	262.952	-0.403	.72659	.60692	- .08914	.65952	.29159	+0.169	1.247	0.551
4190.5	278.786	1.308	.72746	.59758	+ .11109	.65279	.30120	-0.209	1.230	0.567
4200.5	294.599	-2.112	0.72802	2.59166	+0.30284	-0.59620	-0.28781	-0.569	+1.121	+0.541
4210.5	310.410	2.756	.72821	.58961	.47152	.49418	.25248	0.886	0.928	0.474
4220.5	326.235	3.191	.72803	.59153	.60429	.35452	.19793	1.136	0.666	0.372
4230.5	342.086	3.385	.72749	.59732	.69101	.18784	.12829	1.302	0.354	0.242
4240.5	357.969	-3.322	0.72663	2.60657	+0.72495	-0.00683	-0.04886	-1.371	+0.013	+0.092
4250.5	13.890	3.005	.72551	.61862	.70333	+ .17470	+ .03432	1.336	-0.332	-0.065
4260.5	29.852	2.455	.72422	.63259	.62755	.34276	.11484	1.198	0.654	0.219
4270.5	45.857	1.713	.72286	.64746	.50322	.48429	.18647	0.966	0.930	0.358
4280.5	61.908	-0.836	0.72154	2.66207	+0.33973	+0.58811	+0.24359	-0.656	-1.135	-0.470
4290.5	78.009	+0.110	.72035	.67527	+ .14966	.64590	.28163	-0.290	1.253	0.546
4300.5	94.159	1.051	.71939	.68597	- .05216	.65290	.29753	+0.102	1.272	0.580
4310.5	110.354	1.910	.71874	.69325	.24986	.60836	.28994	0.488	1.188	0.566
4320.5	126.586	+2.618	0.71845	2.69652	-0.42777	+0.51566	+0.25940	+0.837	-1.008	-0.507
4330.5	142.837	3.117	.71855	.69546	.57178	.38209	.20830	1.118	0.747	0.407
4340.5	159.087	3.368	.71902	.69018	.67049	.21825	.14070	1.308	0.426	0.275
4350.5	175.312	3.351	.71983	.68112	.71619	+ .03715	+ .06197	1.393	-0.072	-0.121
4360.5	191.489	+3.068	0.72091	2.66906	-0.70545	-0.14689	-0.02165	+1.366	+0.284	+0.042
4370.5	207.601	2.545	.72218	.65499	.63936	.31942	.10358	1.231	0.615	0.199
4380.5	223.638	1.825	.72354	.64007	.52337	.46703	.17742	1.002	0.894	0.340
4390.5	239.602	0.967	.72488	.62546	.36674	.57840	.23750	0.698	1.101	0.452
4400.5	255.501	+0.038	0.72610	2.61225	-0.18178	-0.64513	-0.27926	+0.344	+1.222	+0.529
4410.5	271.351	-0.891	.72710	.60144	+ .01714	.66231	.29956	-0.032	1.250	0.565
4420.5	287.171	1.751	.72782	.59377	.21476	.62882	.29695	0.404	1.183	0.559
4430.5	302.980	2.477	.72819	.58980	.39601	.54738	.27169	0.744	1.028	0.510
4440.5	318.795	-3.015	0.72819	2.58980	+0.54710	-0.42424	-0.22574	-1.028	+0.797	+0.424
4450.5	334.631	3.326	.72782	.59377	.65653	.26880	.16260	1.235	0.506	0.306
4460.5	350.497	3.384	.72710	.60144	.71587	- .09286	.08706	1.351	+0.175	0.164
4470.5	6.398	3.184	.72610	.61228	.72046	+ .09017	- .00486	1.365	-0.171	+0.009
4480.5	22.339	-2.740	0.72487	2.62551	+0.66971	+0.26626	+0.07770	-1.275	-0.507	-0.148
4490.5	38.322	2.083	.72353	.64017	.56726	.42179	.15427	1.086	0.808	0.295
4500.5	54.350	1.261	.72217	.65514	.42080	.54457	.21885	0.810	1.049	0.421
4510.5	70.427	-0.339	.72089	.66924	.24150	.62484	.26634	0.468	1.210	0.516
4520.5	86.554	+0.614	0.71981	2.68135	+0.04327	+0.65608	+0.29294	-0.084	-1.276	-0.570
4530.5	102.729	1.520	.71899	.69044	- .15837	.63560	.29645	+0.309	1.240	0.578
4540.5	118.946	2.308	.71852	.69576	.34747	.56487	.27651	0.679	1.104	0.541
4550.5	135.192	2.911	.71843	.69683	.50904	.44938	.23467	0.996	0.879	0.459
4560.5	151.446	+3.283	0.71872	2.69356	-0.63026	+0.29828	+0.17422	+1.231	-0.583	-0.340
4570.5	167.688	3.393	.71937	.68622	.70159	+ .12355	.09998	1.367	-0.241	0.195
4580.5	183.891	3.233	.72034	.67545	.71753	- .06094	+ .01785	1.392	+0.118	-0.035
4590.5	200.037	2.818	.72153	.66216	.67704	.24065	- .06570	1.307	0.465	+0.127
4600.5	216.112	+2.185	0.72287	2.64743	-0.58356	-0.40153	-0.14411	+1.120	+0.771	+0.277

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Earth only		
	Longitude	Latitude			x	y	z	X	Y	Z
	<i>l</i>	<i>b</i>	<i>r</i>							
244	°	°								
4120.5	340.471	+0.001	1.00858	0.97470	+0.95056	-0.30932	-0.13413	-0.832	+0.271	+0.117
4130.5	350.183	.000	.00602	.98216	0.99129	.15736	.06824	.875	.139	+ .060
4140.5	359.947	.000	.00327	.99024	1.00327	- .00085	- .00038	.893	+ .001	.000
4150.5	9.765	- .001	1.00043	0.99872	0.98593	+ .15568	+ .06750	.885	- .140	- .061
4160.5	19.640	-0.002	0.99756	1.00736	+0.93953	+0.30762	+0.13338	-0.850	-0.278	-0.121
4170.5	29.571	.002	.99476	.01590	.86519	.45040	.19529	.790	.411	.178
4180.5	39.557	.003	.99210	.02407	.76491	.57967	.25134	.704	.533	.231
4190.5	49.594	.003	.98968	.03162	.64151	.69141	.29980	.595	.641	.278
4200.5	59.677	-0.004	0.98756	1.03828	+0.49859	+0.78210	+0.33912	-0.465	-0.730	-0.316
4210.5	69.800	.004	.98581	.04380	.34039	.84882	.36805	.319	.796	.345
4220.5	79.955	.004	.98449	.04800	+ .17171	.88939	.38564	- .162	.837	.363
4230.5	90.132	.004	.98364	.05072	- .00227	.90246	.39131	+ .002	.852	.369
4240.5	100.322	-0.004	0.98329	1.05184	-0.17619	+0.88754	+0.38484	+0.166	-0.839	-0.364
4250.5	110.514	.004	.98345	.05133	.34463	.84507	.36643	.325	.798	.346
4260.5	120.697	.003	.98412	.04920	.50239	.77638	.33665	.474	.732	.317
4270.5	130.861	.003	.98527	.04553	.64459	.68365	.29644	.605	.642	.278
4280.5	140.997	-0.002	0.98686	1.04047	-0.76690	+0.56983	+0.24709	+0.717	-0.533	-0.231
4290.5	151.096	.002	.98885	.03420	.86567	.43850	.19014	.804	.407	.177
4300.5	161.151	- .001	.99118	.02695	.93802	.29379	.12740	.865	.271	.118
4310.5	171.157	.000	.99376	.01896	.98195	+ .14016	+ .06078	.899	- .128	- .056
4320.5	181.108	0.000	0.99652	1.01050	-0.99634	-0.01769	-0.00766	+0.904	+0.016	+0.007
4330.5	191.004	+ .001	0.99938	1.00185	.98101	.17501	.07588	.883	.158	.068
4340.5	200.842	.002	1.00226	0.99327	.93667	.32717	.14186	.836	.292	.127
4350.5	210.625	.002	.00505	.98499	.86487	.46974	.20367	.765	.416	.180
4360.5	220.355	+0.003	1.00769	0.97727	-0.76791	-0.59865	-0.25957	+0.674	+0.526	+0.228
4370.5	230.036	.003	.01011	.97028	.64879	.71030	.30799	.566	.619	.268
4380.5	239.674	.004	.01222	.96422	.51109	.80160	.34758	.443	.694	.301
4390.5	249.275	.004	.01398	.95922	.35883	.87009	.37727	.309	.750	.325
4400.5	258.847	+0.004	1.01533	0.95539	-0.19640	-0.91393	-0.39628	+0.169	+0.784	+0.340
4410.5	268.397	.004	.01624	.95282	- .02844	.93200	.40412	+ .024	.798	.346
4420.5	277.934	.004	.01668	.95158	+ .14033	.92384	.40058	- .120	.790	.342
4430.5	287.467	.004	.01665	.95167	.30516	.88973	.38579	.261	.761	.330
4440.5	297.006	+0.003	1.01614	0.95310	+0.46141	-0.83062	-0.36016	-0.395	+0.711	+0.308
4450.5	306.559	.003	.01517	.95584	.60468	.74813	.32440	.519	.642	.279
4460.5	316.134	.002	.01376	.95983	.73088	.64453	.27948	.630	.556	.241
4470.5	325.739	.002	.01196	.96498	.83637	.52267	.22664	.725	.453	.196
4480.5	335.383	+0.001	1.00980	0.97116	+0.91802	-0.38592	-0.16734	-0.801	+0.337	+0.146
4490.5	345.070	+ .001	.00736	.97824	0.97335	.23811	.10325	.855	.209	.091
4500.5	354.807	.000	.00470	.98603	1.00058	- .08343	- .03619	.886	+ .074	+ .032
4510.5	4.597	- .001	1.00189	0.99434	0.99867	+ .07367	+ .03194	.892	- .066	- .029
4520.5	14.443	-0.001	0.99903	1.00293	+0.96745	+0.22860	+0.09912	-0.872	-0.206	-0.089
4530.5	24.345	.002	.99618	.01156	.90760	.37676	.16336	.825	.342	.148
4540.5	34.303	.003	.99344	.01995	.82065	.51366	.22272	.752	.471	.204
4550.5	44.315	.003	.99089	.02785	.70899	.63510	.27538	.655	.586	.254
4560.5	54.375	-0.003	0.98860	1.03499	+0.57584	+0.73726	+0.31968	-0.535	-0.686	-0.297
4570.5	64.479	.004	.98666	.04111	.42510	.81690	.35421	.398	.764	.331
4580.5	74.618	.004	.98512	.04601	.26130	.87144	.37786	.246	.819	.355
4590.5	84.785	.004	.98403	.04950	+ .08944	.89907	.38984	- .084	.848	.368
4600.5	94.970	-0.004	0.98342	1.05144	-0.08519	+0.89886	+0.38975	+0.080	-0.849	-0.368

MARS

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude	Latitude			x	y	z	X	Y	Z
	<i>l</i>	<i>b</i>	<i>r</i>							
243	°	°								
6920.5	240.320	-0.358	1.52245	0.28338	-0.75385	-1.20969	-0.53501	+0.020	+0.033	+0.015
6930.5	245.588	.524	.50940	.29079	0.62380	1.25544	0.55950	.017	.035	.016
6940.5	250.949	.687	.49636	.29846	0.48839	1.29040	0.57919	.014	.037	.017
6950.5	256.404	0.847	.48345	.30632	0.34867	1.31397	0.59376	.010	.038	.017
6960.5	261.955	-1.002	1.47078	0.31431	-0.20581	-1.32563	-0.60295	+0.006	+0.040	+0.018
6970.5	267.601	.150	.45849	.32232	-0.06103	1.32498	0.60654	+ .002	.041	.019
6980.5	273.342	.289	.44668	.33028	+0.08432	1.31170	0.60435	- .003	.041	.019
6990.5	279.176	.417	.43551	.33805	0.22884	1.28561	0.59626	.007	.042	.019
7000.5	285.098	-1.532	1.42508	0.34553	+0.37107	-1.24668	-0.58221	-0.012	+0.041	+0.019
7010.5	291.105	.632	.41553	.35257	0.50950	1.19501	0.56221	.017	.040	.019
7020.5	297.190	.715	.40696	.35905	0.64262	1.13089	0.53635	.022	.039	.018
7030.5	303.345	.779	.39950	.36482	0.76891	1.05477	0.50481	.027	.037	.018
7040.5	309.561	-1.823	1.39323	0.36977	+0.88690	-0.96728	-0.46782	-0.031	+0.034	+0.017
7050.5	315.828	.846	.38824	.37377	0.99520	0.86922	0.42571	.036	.031	.015
7060.5	322.134	.847	.38460	.37673	1.09251	0.76156	0.37891	.039	.027	.014
7070.5	328.467	.825	.38236	.37856	1.17765	0.64542	0.32789	.043	.023	.012
7080.5	334.814	-1.780	1.38156	0.37922	+1.24961	-0.52206	-0.27320	-0.045	+0.019	+0.010
7090.5	341.161	.714	.38219	.37870	1.30756	0.39285	0.21544	.047	.014	.008
7100.5	347.494	.627	.38427	.37700	1.35088	0.25924	0.15528	.049	.009	.006
7110.5	353.803	.521	.38774	.37417	1.37915	-0.12274	0.09338	.049	+ .004	.003
7120.5	0.072	-1.397	1.39258	0.37029	+1.39216	+0.01512	-0.03045	-0.049	-0.001	+0.001
7130.5	6.292	.258	.39870	.36545	1.38994	0.15281	+0.03281	.049	.005	- .001
7140.5	12.451	1.105	.40603	.35977	1.37270	0.28886	0.09572	.047	.010	.003
7150.5	18.542	0.942	.41446	.35337	1.34086	0.42184	0.15762	.045	.014	.005
7160.5	24.555	-0.770	1.42391	0.34638	+1.29502	+0.55042	+0.21787	-0.043	-0.018	-0.007
7170.5	30.484	.592	.43423	.33896	1.23591	0.67337	0.27589	.040	.022	.009
7180.5	36.325	.410	.44532	.33121	1.16442	0.78958	0.33115	.037	.025	.010
7190.5	42.075	.228	.45705	.32328	1.08151	0.89806	0.38317	.033	.028	.012
7200.5	47.730	-0.046	1.46929	0.31527	+0.98827	+0.99795	+0.43153	-0.030	-0.030	-0.013
7210.5	53.291	+ .134	.48191	.30728	0.88581	1.08855	0.47586	.026	.032	.014
7220.5	58.757	.309	.49479	.29940	0.77530	1.16927	0.51588	.022	.033	.015
7230.5	64.128	.478	.50782	.29171	0.65792	1.23963	0.55133	.018	.035	.015
7240.5	69.408	+0.641	1.52086	0.28427	+0.53486	+1.29930	+0.58203	-0.015	-0.035	-0.016
7250.5	74.599	.795	.53382	.27713	0.40730	1.34805	0.60783	.011	.036	.016
7260.5	79.704	0.940	.54659	.27032	0.27639	1.38576	0.62865	.007	.036	.016
7270.5	84.726	1.076	.55907	.26388	0.14327	1.41239	0.64445	- .004	.036	.016
7280.5	89.671	+1.202	1.57117	0.25783	+0.00903	+1.42799	+0.65522	0.000	-0.035	-0.016
7290.5	94.541	.317	.58280	.25219	-0.12529	1.43271	0.66099	+ .003	.035	.016
7300.5	99.343	.421	.59390	.24695	0.25867	1.42674	0.66184	.006	.034	.016
7310.5	104.080	.514	.60439	.24214	0.39017	1.41035	0.65784	.009	.033	.015
7320.5	108.758	+1.595	1.61421	0.23775	-0.51888	+1.38386	+0.64914	+0.012	-0.031	-0.015
7330.5	113.382	.665	.62330	.23378	0.64394	1.34763	0.63587	.014	.030	.014
7340.5	117.956	.724	.63161	.23023	0.76455	1.30209	0.61821	.017	.029	.014
7350.5	122.487	.771	.63909	.22709	0.87996	1.24767	0.59633	.019	.027	.013
7360.5	126.980	+1.808	1.64571	0.22436	-0.98945	+1.18488	+0.57045	+0.021	-0.025	-0.012
7370.5	131.438	.832	.65144	.22203	1.09239	1.11422	0.54078	.023	.024	.011
7380.5	135.869	.846	.65623	.22011	1.18814	1.03625	0.50756	.025	.022	.011
7390.5	140.277	.849	.66008	.21858	1.27617	0.95152	0.47103	.027	.020	.010
7400.5	144.666	+1.840	1.66296	0.21745	-1.35594	+0.86065	+0.43146	+0.028	-0.018	-0.009

MARS

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude	Latitude			x	y	z	X	Y	Z
	<i>l</i>	<i>b</i>	<i>r</i>							
243	°	°								
7400.5	144.666	+1.840	1.66296	0.21745	-1.35594	+0.86065	+0.43146	+0.028	-0.018	-0.009
7410.5	149.043	.821	.66486	.21670	1.42699	0.76423	0.38912	.030	.016	.008
7420.5	153.413	.792	.66578	.21635	1.48890	0.66292	0.34428	.031	.014	.007
7430.5	157.780	.752	.66569	.21638	1.54127	0.55737	0.29724	.032	.012	.006
7440.5	162.150	+1.702	1.66462	0.21680	-1.58378	+0.44825	+0.24829	+0.033	-0.009	-0.005
7450.5	166.528	.642	.66255	.21761	1.61614	0.33626	0.19775	.034	.007	.004
7460.5	170.919	.572	.65951	.21881	1.63809	0.22210	0.14594	.034	.005	.003
7470.5	175.328	.492	.65550	.22040	1.64944	+0.10651	0.09319	.035	-.002	.002
7480.5	179.761	+1.404	1.65054	0.22239	-1.65003	-0.00977	+0.03983	+0.035	0.000	-0.001
7490.5	184.223	.306	.64466	.22479	1.63977	0.12599	-0.01379	.035	+ .003	.000
7500.5	188.719	.199	.63789	.22758	1.61861	0.24137	0.06732	.035	.005	+ .001
7510.5	193.254	1.084	.63026	.23080	1.58655	0.35513	0.12040	.035	.008	.003
7520.5	197.834	+0.961	1.62182	0.23442	-1.54367	-0.46645	-0.17265	+0.035	+0.010	+0.004
7530.5	202.464	.830	.61260	.23847	1.49008	0.57454	0.22370	.034	.013	.005
7540.5	207.149	.693	.60265	.24293	1.42598	0.67857	0.27318	.033	.016	.006
7550.5	211.894	.548	.59205	.24782	1.35163	0.77773	0.32069	.032	.018	.008
7560.5	216.704	+0.398	1.58084	0.25312	-1.26739	-0.87118	-0.36584	+0.031	+0.021	+0.009
7570.5	221.584	.243	.56911	.25884	1.17365	0.95811	0.40826	.029	.024	.010
7580.5	226.540	+ .084	.55693	.26497	1.07093	1.03770	0.44755	.027	.026	.011
7590.5	231.574	- .079	.54438	.27148	0.95983	1.10915	0.48334	.025	.029	.013
7600.5	236.693	-0.243	1.53156	0.27836	-0.84102	-1.17170	-0.51524	+0.022	+0.031	+0.014
7610.5	241.898	.409	.51856	.28556	0.71529	1.22460	0.54290	.020	.033	.015
7620.5	247.194	.573	.50549	.29307	0.58352	1.26716	0.56597	.016	.036	.016
7630.5	252.582	.736	.49247	.30081	0.44671	1.29873	0.58414	.013	.037	.017
7640.5	258.066	-0.895	1.47960	0.30872	-0.30592	-1.31875	-0.59711	+0.009	+0.039	+0.018
7650.5	263.645	1.048	.46702	.31673	0.16235	1.32673	0.60463	.005	.040	.018
7660.5	269.320	.193	.45484	.32476	-0.01726	1.32228	0.60648	+ .001	.041	.019
7670.5	275.089	.329	.44319	.33268	+0.12799	1.30514	0.60252	-.004	.042	.019
7680.5	280.951	-1.454	1.43221	0.34039	+0.27198	-1.27516	-0.59262	-0.009	+0.042	+0.019
7690.5	286.900	.564	.42201	.34777	0.41322	1.23236	0.57677	.014	.041	.019
7700.5	292.932	.659	.41272	.35468	0.55021	1.17688	0.55498	.019	.040	.019
7710.5	299.040	.737	.40446	.36097	0.68143	1.10907	0.52738	.024	.038	.018
7720.5	305.215	-1.795	1.39733	0.36653	+0.80538	-1.02942	-0.49415	-0.028	+0.036	+0.017
7730.5	311.449	.832	.39142	.37121	0.92059	0.93863	0.45557	.033	.033	.016
7740.5	317.731	.848	.38682	.37492	1.02571	0.83754	0.41199	.037	.030	.015
7750.5	324.048	.842	.38360	.37755	1.11946	0.72717	0.36384	.040	.026	.013
7760.5	330.388	-1.813	1.38178	0.37904	+1.20071	-0.60869	-0.31164	-0.044	+0.022	+0.011
7770.5	336.738	.762	.38142	.37934	1.26852	0.48339	0.25595	.046	.018	.009
7780.5	343.084	.690	.38249	.37845	1.32210	0.35267	0.19738	.048	.013	.007
7790.5	349.413	.597	.38500	.37640	1.36090	0.21800	0.13661	.049	.008	.005
7800.5	355.712	-1.485	1.38891	0.37323	+1.38456	-0.08091	-0.07432	-0.049	+0.003	+0.003
7810.5	1.969	.356	.39416	.36903	1.39294	+0.05707	-0.01121	.049	-.002	.000
7820.5	8.173	.212	.40067	.36391	1.38614	0.19444	+0.05202	.048	.007	-.002
7830.5	14.313	1.056	.40837	.35797	1.36442	0.32971	0.11470	.047	.011	.004
7840.5	20.382	-0.890	1.41714	0.35137	+1.32826	+0.46150	+0.17617	-0.045	-0.016	-0.006
7850.5	26.371	.716	.42689	.34422	1.27831	0.58850	0.23580	.042	.019	.008
7860.5	32.274	.536	.43748	.33666	1.21534	0.70952	0.29304	.039	.023	.009
7870.5	38.088	.354	.44880	.32883	1.14028	0.82348	0.34737	.036	.026	.011
7880.5	43.809	-0.172	1.46072	0.32085	+1.05413	+0.92944	+0.39832	-0.032	-0.029	-0.012

MARS

Julian Date	Heliocentric		Radius Vector r	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude l	Latitude b			x	y	z	X	Y	Z
243	°	°								
7880.5	43.809	-0.172	1.46072	0.32085	+1.05413	+0.92944	+0.39832	-0.032	-0.029	-0.012
7890.5	49.435	+0.010	.47311	.31282	0.95797	1.02658	0.44549	.029	.031	.013
7900.5	54.966	.188	.48584	.30485	0.85295	1.11423	0.48854	.025	.032	.014
7910.5	60.403	.361	.49879	.29701	0.74024	1.19184	0.52720	.021	.034	.015
7920.5	65.746	+0.529	1.51185	0.28939	+0.62101	+1.25899	+0.56122	-0.017	-0.035	-0.016
7930.5	70.998	.689	.52489	.28202	0.49647	1.31536	0.59044	.013	.035	.016
7940.5	76.161	.840	.53781	.27498	0.36779	1.36077	0.61474	.010	.036	.016
7950.5	81.240	0.983	.55051	.26828	0.23610	1.39511	0.63403	.006	.036	.016
7960.5	86.237	+1.116	1.56288	0.26195	+0.10254	+1.41838	+0.64830	-0.003	-0.036	-0.016
7970.5	91.158	.238	.57486	.25602	-0.03182	1.43066	0.65755	+0.001	.035	.016
7980.5	96.006	.350	.58634	.25050	0.16594	1.43211	0.66182	.004	.034	.016
7990.5	100.787	.450	.59726	.24540	0.29884	1.42295	0.66118	.007	.033	.016
8000.5	105.505	+1.540	1.60755	0.24072	-0.42957	+1.40346	+0.65574	+0.010	-0.032	-0.015
8010.5	110.165	.618	.61715	.23646	0.55725	1.37397	0.64564	.013	.031	.015
8020.5	114.773	.684	.62600	.23261	0.68103	1.33488	0.63102	.015	.030	.014
8030.5	119.333	.740	.63406	.22919	0.80013	1.28659	0.61205	.018	.028	.013
8040.5	123.851	+1.784	1.64128	0.22618	-0.91381	+1.22959	+0.58894	+0.020	-0.027	-0.013
8050.5	128.332	.816	.64762	.22358	1.02137	1.16436	0.56189	.022	.025	.012
8060.5	132.781	.838	.65305	.22138	1.12218	1.09142	0.53112	.024	.023	.011
8070.5	137.204	.848	.65755	.21958	1.21565	1.01134	0.49687	.026	.021	.010
8080.5	141.606	+1.847	1.66110	0.21818	-1.30122	+0.92469	+0.45939	+0.027	-0.019	-0.010
8090.5	145.991	.836	.66368	.21717	1.37839	0.83207	0.41895	.029	.017	.009
8100.5	150.365	.814	.66527	.21655	1.44671	0.73410	0.37582	.030	.015	.008
8110.5	154.733	.781	.66586	.21631	1.50576	0.63144	0.33028	.031	.013	.007
8120.5	159.100	+1.738	1.66547	0.21647	-1.55518	+0.52473	+0.28262	+0.032	-0.011	-0.006
8130.5	163.472	.685	.66408	.21701	1.59464	0.41466	0.23316	.033	.009	.005
8140.5	167.854	.622	.66171	.21794	1.62386	0.30193	0.18220	.034	.006	.004
8150.5	172.250	.549	.65836	.21926	1.64262	0.18725	0.13006	.034	.004	.003
8160.5	176.667	+1.466	1.65406	0.22098	-1.65072	+0.07137	+0.07709	+0.035	-0.002	-0.002
8170.5	181.108	.375	.64881	.22309	1.64803	-0.04499	+0.02361	.035	+0.001	-0.001
8180.5	185.580	.274	.64266	.22561	1.63447	0.16104	-0.03003	.035	.003	+0.001
8190.5	190.088	.165	.63562	.22854	1.61000	0.27602	0.08346	.035	.006	.002
8200.5	194.637	+1.047	1.62774	0.23187	-1.57465	-0.38913	-0.13633	+0.035	+0.009	+0.003
8210.5	199.232	0.922	.61905	.23562	1.52850	0.49957	0.18827	.034	.011	.004
8220.5	203.878	.789	.60961	.23979	1.47170	0.60653	0.23889	.034	.014	.005
8230.5	208.581	.649	.59947	.24439	1.40446	0.70918	0.28781	.033	.017	.007
8240.5	213.346	+0.503	1.58868	0.24940	-1.32708	-0.80671	-0.33465	+0.032	+0.019	+0.008
8250.5	218.178	.351	.57732	.25483	1.23990	0.89828	0.37903	.030	.022	.009
8260.5	223.081	.195	.56545	.26067	1.14339	0.98308	0.42054	.029	.025	.010
8270.5	228.060	+0.035	.55316	.26690	1.03806	1.06029	0.45881	.027	.027	.012
8280.5	233.120	-0.129	1.54053	0.27352	-0.92455	-1.12914	-0.49346	+0.024	+0.030	+0.013
8290.5	238.264	.294	.52766	.28049	0.80355	1.18885	0.52412	.022	.032	.014
8300.5	243.496	.459	.51465	.28778	0.67590	1.23869	0.55043	.019	.034	.015
8310.5	248.820	.623	.50160	.29535	0.54250	1.27799	0.57205	.015	.036	.016
8320.5	254.237	-0.785	1.48863	0.30314	-0.40437	-1.30613	-0.58867	+0.012	+0.038	+0.017
8330.5	259.749	0.942	.47586	.31108	0.26262	1.32256	0.60002	.008	.039	.018
8340.5	265.356	1.093	.46340	.31909	-0.11846	1.32682	0.60585	+0.004	.040	.018
8350.5	271.059	.236	.45139	.32708	+0.02681	1.31857	0.60596	-0.001	.041	.019
8360.5	276.855	-1.368	1.43994	0.33494	+0.17182	-1.29756	-0.60021	-0.006	+0.042	+0.019

Julian Date	Heliocentric		Radius Vector r	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude l	Latitude b			x	y	z	X	Y	Z
243	°	°								
8360.5	276.855	-1.368	1.43994	0.33494	+0.17182	-1.29756	-0.60021	-0.006	+0.042	+0.019
8370.5	282.742	.489	.42920	.34255	0.31511	1.26371	0.58852	.010	.041	.019
8380.5	288.715	.595	.41927	.34979	0.45522	1.21705	0.57087	.015	.041	.019
8390.5	294.769	.684	.41029	.35651	0.59061	1.15782	0.54732	.020	.039	.019
8400.5	300.897	-1.756	1.40236	0.36259	+0.71977	-1.08639	-0.51800	-0.025	+0.038	+0.018
8410.5	307.090	.808	.39559	.36789	0.84121	1.00331	0.48313	.030	.035	.017
8420.5	313.337	.839	.39007	.37230	0.95350	0.90933	0.44300	.034	.032	.016
8430.5	319.629	.849	.38587	.37569	1.05530	0.80534	0.39800	.038	.029	.014
8440.5	325.953	-1.836	1.38306	0.37799	+1.14538	-0.69241	-0.34859	-0.041	+0.025	+0.013
8450.5	332.296	.800	.38166	.37914	1.22266	0.57175	0.29528	.044	.021	.011
8460.5	338.645	.743	.38171	.37910	1.28624	0.44468	0.23866	.047	.016	.009
8470.5	344.986	.664	.38320	.37787	1.33541	0.31262	0.17936	.048	.011	.006
8480.5	351.306	-1.565	1.38611	0.37550	+1.36967	-0.17708	-0.11806	-0.049	+0.006	+0.004
8490.5	357.594	.448	.39039	.37204	1.38873	-0.03956	-0.05545	.049	+ .001	+ .002
8500.5	3.836	.314	.39600	.36757	1.39251	+0.09839	+0.00777	.049	- .003	.000
8510.5	10.021	.167	.40286	.36221	1.38117	0.23528	0.07091	.048	.008	- .002
8520.5	16.141	-1.007	1.41086	0.35608	+1.35504	+0.36965	+0.13329	-0.046	-0.013	-0.005
8530.5	22.187	0.838	.41992	.34931	1.31465	0.50014	0.19427	.044	.017	.006
8540.5	28.151	.662	.42991	.34204	1.26068	0.62547	0.25325	.041	.020	.008
8550.5	34.029	.482	.44072	.33440	1.19396	0.74448	0.30966	.038	.024	.010
8560.5	39.816	-0.299	1.45222	0.32651	+1.11544	+0.85613	+0.36302	-0.035	-0.027	-0.011
8570.5	45.510	- .117	.46428	.31851	1.02614	0.95953	0.41288	.031	.029	.013
8580.5	51.109	+ .064	.47678	.31049	0.92718	1.05389	0.45885	.028	.031	.014
8590.5	56.613	.241	.48959	.30255	0.81970	1.13858	0.50061	.024	.033	.014
8600.5	62.022	+0.413	1.50259	0.29477	+0.70489	+1.21309	+0.53790	-0.020	-0.034	-0.015
8610.5	67.339	.578	.51566	.28721	0.58393	1.27703	0.57049	.016	.035	.016
8620.5	72.565	.736	.52869	.27993	0.45800	1.33012	0.59825	.012	.036	.016
8630.5	77.703	0.884	.54156	.27297	0.32828	1.37221	0.62105	.009	.036	.016
8640.5	82.757	+1.024	1.55419	0.26637	+0.19591	+1.40321	+0.63883	-0.005	-0.036	-0.016
8650.5	87.732	.154	.56647	.26016	+0.06198	1.42317	0.65159	- .002	.035	.016
8660.5	92.630	.273	.57831	.25434	-0.07242	1.43217	0.65933	+ .002	.035	.016
8670.5	97.458	.381	.58965	.24894	0.20628	1.43040	0.66211	.005	.034	.016
8680.5	102.219	+1.478	1.60041	0.24396	-0.33862	+1.41810	+0.66002	+0.008	-0.033	-0.015
8690.5	106.919	.564	.61051	.23939	0.46853	1.39556	0.65316	.011	.032	.015
8700.5	111.563	.639	.61990	.23525	0.59511	1.36315	0.64168	.013	.031	.014
8710.5	116.156	.702	.62853	.23153	0.71756	1.32124	0.62574	.016	.029	.014
8720.5	120.703	+1.754	1.63636	0.22823	-0.83510	+1.27029	+0.60550	+0.018	-0.028	-0.013
8730.5	125.209	.795	.64332	.22534	0.94700	1.21076	0.58118	.020	.026	.013
8740.5	129.679	.824	.64941	.22285	1.05259	1.14315	0.55299	.022	.024	.012
8750.5	134.119	.842	.65457	.22077	1.15124	1.06801	0.52115	.024	.023	.011
8760.5	138.534	+1.849	1.65880	0.21909	-1.24238	+0.98590	+0.48590	+0.026	-0.021	-0.010
8770.5	142.930	.845	.66205	.21780	1.32546	0.89739	0.44751	.028	.019	.009
8780.5	147.310	.830	.66434	.21691	1.40000	0.80311	0.40623	.029	.017	.008
8790.5	151.681	.805	.66563	.21640	1.46556	0.70367	0.36235	.030	.015	.008
8800.5	156.048	+1.769	1.66593	0.21629	-1.52174	+0.59972	+0.31614	+0.031	-0.012	-0.007
8810.5	160.416	.723	.66523	.21656	1.56819	0.49194	0.26792	.032	.010	.006
8820.5	164.789	.667	.66354	.21722	1.60458	0.38100	0.21797	.033	.008	.005
8830.5	169.174	.601	.66086	.21827	1.63067	0.26762	0.16663	.034	.006	.003
8840.5	173.576	+1.525	1.65722	0.21972	-1.64623	+0.15251	+0.11421	+0.035	-0.003	-0.002

MARS

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude	Latitude			x	y	z	X	Y	Z
	<i>l</i>	<i>b</i>	<i>r</i>							
243	°	°								
8840.5	173.576	+1.525	1.65722	0.21972	-1.64623	+0.15251	+0.11421	+0.035	-0.003	-0.002
8850.5	177.999	.440	.65261	.22156	1.65108	+0.03641	0.06105	.035	- .001	- .001
8860.5	182.448	.345	.64708	.22380	1.64512	-0.07992	+0.00749	.035	+ .002	.000
8870.5	186.931	.242	.64064	.22644	1.62827	0.19573	-0.04612	.035	.004	+ .001
8880.5	191.450	+1.130	1.63333	0.22950	-1.60051	-0.31023	-0.09942	+0.035	+0.007	+0.002
8890.5	196.012	1.010	.62518	.23297	1.56188	0.42262	0.15205	.035	.009	.003
8900.5	200.622	0.883	.61624	.23685	1.51250	0.53209	0.20362	.034	.012	.005
8910.5	205.285	.748	.60656	.24116	1.45252	0.63783	0.25377	.034	.015	.006
8920.5	210.007	+0.606	1.59620	0.24589	-1.38218	-0.73903	-0.30211	+0.033	+0.017	+0.007
8930.5	214.791	.458	.58521	.25104	1.30179	0.83484	0.34825	.031	.020	.008
8940.5	219.645	.305	.57367	.25660	1.21173	0.92446	0.39180	.030	.023	.010
8950.5	224.571	+ .147	.56164	.26258	1.11248	1.00706	0.43238	.028	.025	.011
8960.5	229.575	-0.014	1.54922	0.26894	-1.00460	-1.08183	-0.46960	+0.026	+0.028	+0.012
8970.5	234.661	.178	.53650	.27568	0.88873	1.14800	0.50308	.023	.030	.013
8980.5	239.833	.343	.52356	.28276	0.76561	1.20480	0.53246	.021	.033	.014
8990.5	245.094	.509	.51051	.29015	0.63610	1.25153	0.55739	.018	.035	.015
9000.5	250.447	-0.672	1.49746	0.29781	-0.50114	-1.28752	-0.57753	+0.014	+0.037	+0.016
9010.5	255.894	.833	.48453	.30566	0.36176	1.31217	0.59259	.011	.038	.017
9020.5	261.437	0.988	.47183	.31364	0.21913	1.32496	0.60229	.007	.040	.018
9030.5	267.075	1.137	.45949	.32166	-0.07447	1.32546	0.60640	+ .002	.041	.019
9040.5	272.808	-1.277	1.44764	0.32962	+0.07090	-1.31336	-0.60475	-0.002	+0.041	+0.019
9050.5	278.634	.406	.43640	.33742	0.21557	1.28846	0.59720	.007	.042	.019
9060.5	284.549	.522	.42590	.34493	0.35808	1.25070	0.58370	.012	.041	.019
9070.5	290.550	.624	.41626	.35203	0.49693	1.20020	0.56425	.017	.040	.019
9080.5	296.628	-1.708	1.40760	0.35856	+0.63061	-1.13720	-0.53892	-0.022	+0.039	+0.018
9090.5	302.778	.774	.40003	.36441	0.75760	1.06216	0.50789	.026	.037	.018
9100.5	308.990	.820	.39365	.36943	0.87643	0.97568	0.47138	.031	.034	.017
9110.5	315.254	.844	.38855	.37352	0.98568	0.87854	0.42973	.035	.031	.015
9120.5	321.558	-1.847	1.38479	0.37657	+1.08405	-0.77171	-0.38333	-0.039	+0.028	+0.014
9130.5	327.889	.827	.38243	.37850	1.17035	0.65629	0.33267	.042	.024	.012
9140.5	334.235	.785	.38150	.37927	1.24356	0.53354	0.27829	.045	.019	.010
9150.5	340.583	.721	.38202	.37884	1.30283	0.40480	0.22079	.047	.015	.008
9160.5	346.920	-1.636	1.38397	0.37724	+1.34751	-0.27153	-0.16081	-0.049	+0.010	+0.006
9170.5	353.231	.531	.38733	.37450	1.37717	-0.13523	0.09905	.049	+ .005	.004
9180.5	359.504	.409	.39206	.37071	1.39158	+0.00257	-0.03618	.049	.000	+ .001
9190.5	5.729	.270	.39808	.36594	1.39075	0.14035	+0.02708	.049	- .005	- .001
9200.5	11.895	-1.119	1.40531	0.36032	+1.37487	+0.27661	+0.09005	-0.047	-0.010	-0.003
9210.5	17.991	0.956	.41366	.35397	1.34435	0.40992	0.15206	.046	.014	.005
9220.5	24.011	.785	.42303	.34702	1.29976	0.53895	0.21249	.043	.018	.007
9230.5	29.949	.608	.43329	.33962	1.24184	0.66246	0.27074	.040	.022	.009
9240.5	35.798	-0.426	1.44432	0.33190	+1.17144	+0.77932	+0.32627	-0.037	-0.025	-0.010
9250.5	41.555	.244	.45601	.32397	1.08955	0.88854	0.37860	.034	.028	.012
9260.5	47.219	- .062	.46821	.31596	0.99721	0.98925	0.42731	.030	.030	.013
9270.5	52.787	+ .118	.48081	.30797	0.89555	1.08073	0.47202	.026	.032	.014
9280.5	58.261	+0.294	1.49368	0.30008	+0.78574	+1.16236	+0.51244	-0.023	-0.033	-0.015
9290.5	63.641	.463	.50669	.29237	0.66894	1.23369	0.54832	.019	.035	.015
9300.5	68.929	.626	.51974	.28490	0.54636	1.29435	0.57945	.015	.035	.016
9310.5	74.127	.781	.53271	.27773	0.41917	1.34411	0.60571	.011	.036	.016
9320.5	79.239	+0.928	1.54551	0.27089	+0.28853	+1.38283	+0.62699	-0.007	-0.036	-0.016

MARS

47

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude	Latitude			x	y	z	X	Y	Z
	<i>l</i>	<i>b</i>	<i>r</i>							
243	°	°								
93205	79.239	+0.928	1.54551	0.27089	+0.28853	+1.38283	+0.62699	-0.007	-0.036	-0.016
93305	84.268	1.064	.55802	.26441	0.15558	1.41048	0.64325	.004	.036	.016
93405	89.219	.191	.57016	.25833	+0.02140	1.42709	0.65448	- .001	.035	.016
93505	94.096	.307	.58184	.25265	-0.11295	1.43280	0.66071	+ .003	.035	.016
93605	98.903	+1.412	1.59299	0.24738	-0.24645	+1.42781	+0.66200	+0.006	-0.034	-0.016
93705	103.645	.505	.60354	.24253	0.37816	1.41237	0.65845	.009	.033	.015
93805	108.328	.588	.61343	.23810	0.50715	1.38680	0.65018	.012	.032	.015
93905	112.956	.659	.62259	.23409	0.63258	1.35147	0.63732	.014	.030	.014
94005	117.534	+1.719	1.63098	0.23049	-0.75363	+1.30677	+0.62006	+0.017	-0.029	-0.014
94105	122.069	.767	.63854	.22731	0.86955	1.25317	0.59856	.019	.027	.013
94205	126.564	.804	.64525	.22455	0.97962	1.19114	0.57305	.021	.026	.012
94305	131.025	.830	.65106	.22218	1.08318	1.12120	0.54372	.023	.024	.012
94405	135.457	+1.845	1.65595	0.22022	-1.17963	+1.04389	+0.51083	+0.025	-0.022	-0.011
94505	139.866	.848	.65990	.21865	1.26839	0.95978	0.47460	.027	.020	.010
94605	144.256	.841	.66287	.21748	1.34896	0.86947	0.43531	.028	.018	.009
94705	148.634	.823	.66487	.21670	1.42084	0.77356	0.39321	.029	.016	.008
94805	153.003	+1.794	1.66588	0.21631	-1.48361	+0.67269	+0.34860	+0.031	-0.014	-0.007
94905	157.369	.756	.66589	.21630	1.53690	0.56752	0.30175	.032	.012	.006
95005	161.738	.706	.66491	.21669	1.58035	0.45872	0.25298	.033	.010	.005
95105	166.114	.647	.66294	.21746	1.61367	0.34698	0.20258	.034	.007	.004
95205	170.502	+1.578	1.65998	0.21862	-1.63661	+0.23301	+0.15088	+0.034	-0.005	-0.003
95305	174.909	.500	.65606	.22018	1.64896	0.11753	0.09821	.035	- .002	.002
95405	179.339	.412	.65119	.22213	1.65058	+0.00129	+0.04490	.035	.000	- .001
95505	183.797	.315	.64539	.22449	1.64135	-0.11496	-0.00871	.035	+ .002	.000
95605	188.289	+1.209	1.63870	0.22725	-1.62122	-0.23044	-0.06226	+0.035	+0.005	+0.001
95705	192.819	1.095	.63114	.23042	1.59020	0.34437	0.11539	.035	.008	.003
95805	197.394	0.972	.62276	.23401	1.54833	0.45596	0.16773	.035	.010	.004
95905	202.018	.842	.61360	.23802	1.49575	0.56438	0.21891	.034	.013	.005
96005	206.697	+0.705	1.60372	0.24245	-1.43264	-0.66883	-0.26855	+0.033	+0.016	+0.006
96105	211.436	.562	.59316	.24730	1.35926	0.76848	0.31626	.032	.018	.007
96205	216.239	.412	.58199	.25257	1.27593	0.86250	0.36165	.031	.021	.009
96305	221.113	.258	.57029	.25826	1.18308	0.95008	0.40435	.029	.023	.010
96405	226.060	+0.099	1.55814	0.26435	-1.08119	-1.03040	-0.44395	+0.027	+0.026	+0.011
96505	231.087	- .064	.54560	.27084	0.97085	1.10266	0.48008	.025	.029	.012
96605	236.197	.228	.53279	.27769	0.85274	1.16609	0.51236	.023	.031	.014
96705	241.394	.393	.51979	.28487	0.72763	1.21994	0.54044	.020	.033	.015
96805	246.682	-0.558	1.50671	0.29236	-0.59639	-1.26350	-0.56396	+0.017	+0.035	+0.016
96905	252.062	.721	.49366	.30008	0.46000	1.29615	0.58261	.013	.037	.017
97005	257.537	0.880	.48076	.30800	0.31954	1.31729	0.59608	.009	.039	.018
97105	263.107	1.034	.46813	.31601	0.17617	1.32643	0.60412	.005	.040	.018
97205	268.774	-1.180	1.45590	0.32405	-0.03115	-1.32318	-0.60652	+0.001	+0.041	+0.019
97305	274.535	.317	.44419	.33199	+0.11415	1.30725	0.60311	- .004	.042	.019
97405	280.388	.442	.43312	.33974	0.25833	1.27849	0.59378	.008	.042	.019
97505	286.330	.554	.42284	.34716	0.39990	1.23689	0.57849	.013	.041	.019
97605	292.355	-1.651	1.41345	0.35413	+0.53737	-1.18260	-0.55726	-0.018	+0.040	+0.019
97705	298.457	.730	.40508	.36049	0.66921	1.11593	0.53019	.023	.038	.018
97805	304.628	.790	.39783	.36613	0.79392	1.03737	0.49748	.028	.036	.017
97905	310.858	.829	.39180	.37091	0.91002	0.94759	0.45939	.032	.034	.016
98005	317.136	-1.847	1.38707	0.37472	+1.01615	-0.84742	-0.41625	-0.036	+0.030	+0.015

MARS

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude	Latitude			x	y	z	X	Y	Z
	l	b	r							
2434	°	°								
9800.5	317.136	-1.847	1.38707	0.37472	+1.01615	-0.84742	-0.41625	-0.036	+0.030	+0.015
9810.5	323.452	.843	.38370	.37746	1.11103	0.73787	0.36852	.040	.027	.013
9820.5	329.791	.817	.38175	.37906	1.19351	0.62008	0.31667	.043	.022	.011
9830.5	336.142	.768	.38125	.37948	1.26262	0.49536	0.26127	.046	.018	.009
9840.5	342.490	-1.697	1.38218	0.37871	+1.31756	-0.36507	-0.20294	-0.048	+0.013	+0.007
9850.5	348.823	.606	.38456	.37676	1.35776	0.23070	0.14234	.049	.008	.005
9860.5	355.126	.495	.38834	.37369	1.38284	-0.09376	0.08016	.049	+ .003	.003
9870.5	1.389	.368	.39346	.36959	1.39265	+0.04422	-0.01708	.049	- .002	+ .001
9880.5	7.599	-1.225	1.39986	0.36454	+1.38725	+0.18172	+0.04618	-0.048	-0.006	-0.002
9890.5	13.747	1.070	.40745	.35867	1.36690	0.31726	0.10894	.047	.011	.004
9900.5	19.824	0.905	.41614	.35211	1.33205	0.44945	0.17055	.045	.015	.006
9910.5	25.822	.731	.42580	.34500	1.28334	0.57696	0.23039	.042	.019	.008
9920.5	31.734	-0.552	1.43633	0.33747	+1.22154	+0.69859	+0.28788	-0.039	-0.023	-0.009
9930.5	37.558	.370	.44760	.32965	1.14754	0.81325	0.34249	.036	.026	.011
9940.5	43.288	.188	.45948	.32167	1.06236	0.92000	0.39378	.033	.028	.012
9950.5	48.924	- .006	.47184	.31363	0.96708	1.01799	0.44132	.029	.031	.013
9960.5	54.465	+0.172	1.48456	0.30564	+0.86282	+1.10655	+0.48477	-0.025	-0.032	-0.014
9970.5	59.911	.346	.49751	.29778	0.75076	1.18512	0.52384	.021	.034	.015
9980.5	65.263	.514	.51058	.29012	0.63208	1.25325	0.55829	.018	.035	.015
9990.5	70.524	.675	.52364	.28272	0.50797	1.31062	0.58796	.014	.035	.016
0000.5	75.695	+0.827	1.53659	0.27563	+0.37962	+1.35705	+0.61272	-0.010	-0.036	-0.016
0010.5	80.782	0.971	.54933	.26889	0.24816	1.39241	0.63248	.006	.036	.016
0020.5	85.786	1.104	.56176	.26252	+0.11473	1.41670	0.64721	- .003	.036	.016
0030.5	90.714	.227	.57378	.25655	-0.01960	1.42999	0.65692	.000	.035	.016
0040.5	95.568	+1.340	1.58533	0.25098	-0.15378	+1.43243	+0.66164	+0.004	-0.034	-0.016
0050.5	100.355	.442	.59632	.24583	0.28683	1.42423	0.66145	.007	.033	.016
0060.5	105.078	.532	.60668	.24111	0.41779	1.40568	0.65645	.010	.032	.015
0070.5	109.743	.611	.61636	.23680	0.54578	1.37711	0.64677	.012	.031	.015
0080.5	114.354	+1.679	1.62529	0.23292	-0.66995	+1.33888	+0.63255	+0.015	-0.030	-0.014
0090.5	118.918	.735	.63343	.22946	0.78950	1.29144	0.61398	.017	.028	.013
0100.5	123.439	.780	.64074	.22640	0.90370	1.23522	0.59124	.020	.027	.013
0110.5	127.923	.813	.64717	.22376	1.01185	1.17073	0.56455	.022	.025	.012
0120.5	132.375	+1.836	1.65270	0.22152	-1.11330	+1.09850	+0.53411	+0.024	-0.023	-0.011
0130.5	136.799	.847	.65729	.21969	1.20746	1.01906	0.50018	.025	.021	.011
0140.5	141.201	.847	.66094	.21824	1.29378	0.93300	0.46299	.027	.019	.010
0150.5	145.587	.837	.66361	.21719	1.37174	0.84092	0.42281	.029	.017	.009
0160.5	149.961	+1.815	1.66529	0.21653	-1.44089	+0.74343	+0.37992	+0.030	-0.015	-0.008
0170.5	154.329	.784	.66599	.21626	1.50082	0.64118	0.33460	.031	.013	.007
0180.5	158.695	.742	.66569	.21638	1.55114	0.53483	0.28713	.032	.011	.006
0190.5	163.066	.689	.66440	.21688	1.59154	0.42506	0.23783	.033	.009	.005
0200.5	167.445	+1.627	1.66213	0.21777	-1.62173	+0.31256	+0.18700	+0.034	-0.007	-0.004
0210.5	171.839	.555	.65888	.21906	1.64147	0.19804	0.13496	.034	.004	.003
0220.5	176.253	.474	.65466	.22074	1.65058	+0.08225	0.08206	.035	- .002	.002
0230.5	180.691	.383	.64951	.22281	1.64891	-0.03408	+0.02861	.035	+ .001	- .001
0240.5	185.159	+1.283	1.64344	0.22529	-1.63638	-0.15019	-0.02502	+0.035	+0.003	+0.001
0250.5	189.662	.175	.63649	.22817	1.61294	0.26529	0.07848	.035	.006	.002
0260.5	194.206	1.058	.62869	.23146	1.57861	0.37860	0.13141	.035	.008	.003
0270.5	198.796	0.933	.62008	.23517	1.53348	0.48932	0.18345	.035	.011	.004
0280.5	203.436	+0.801	1.61071	0.23930	-1.47769	-0.59663	-0.23420	+0.034	+0.014	+0.005

0480-5	312-734	-1.837	1.39043	0.37201	+0.94306	-0.91875	-0.44703	-0.034	+0.033	+0.016
0490-5	319-023	.848	.38609	.37552	1.04592	0.81566	0.40247	.038	.029	.014
0500-5	325-346	.838	.38312	.37794	1.13717	0.70352	0.35345	.041	.025	.013
0510-5	331-689	.804	.38158	.37920	1.21572	0.58352	0.30048	.044	.021	.011
0520-5	338-039	-1.749	1.38148	0.37929	+1.28064	-0.45698	-0.24414	-0.046	+0.017	+0.009
0530-5	344-384	.672	.38283	.37818	1.33121	0.32532	0.18506	.048	.012	.007
0540-5	350-708	.575	.38560	.37591	1.36690	0.19003	0.12391	.049	.007	.004
0550-5	357-001	.459	.38976	.37255	1.38740	-0.05261	-0.06139	.049	+ .002	+ .002
0560-5	3-249	-1.327	1.39525	0.36817	+1.39263	+0.08538	+0.00181	-0.049	-0.003	0.000
0570-5	9-442	.180	.40199	.36288	1.38270	0.22245	0.06500	.048	.008	- .002
0580-5	15-570	1.022	4.0990	.35681	1.35794	0.35713	0.12748	.046	.012	.004
0590-5	21-624	0.853	.41886	.35009	1.31886	0.48806	0.18863	.044	.016	.006
0600-5	27-598	-0.678	1.42878	0.34285	+1.26612	+0.61394	+0.24782	-0.042	-0.020	-0.008
0610-5	33-485	.498	.43952	.33523	1.20056	0.73359	0.30451	.039	.024	.010
0620-5	39-282	.316	.45097	.32736	1.12308	0.84599	0.35818	.035	.026	.011
0630-5	44-986	- .133	.46299	.31936	1.03474	0.95020	0.40839	.032	.029	.012
0640-5	50-595	+0.048	1.47546	0.31133	+0.93662	+1.04544	+0.45474	-0.028	-0.031	-0.014
0650-5	56-109	.225	.48826	.30337	0.82988	1.13106	0.49690	.024	.033	.014
0660-5	61-527	.398	.50125	.29556	0.71569	1.20654	0.53461	.020	.034	.015
0670-5	66-853	.563	.51433	.28797	0.59524	1.27147	0.56765	.016	.035	.016
0680-5	72-088	+0.722	1.52737	0.28065	+0.46971	+1.32558	+0.59586	-0.013	-0.036	-0.016
0690-5	77-235	0.871	.54027	.27366	0.34028	1.36869	0.61912	.009	.036	.016
0700-5	82-298	1.012	.55293	.26702	0.20810	1.40073	0.63737	.005	.036	.016
0710-5	87-280	.143	.56525	.26076	+0.07426	1.42170	0.65059	- .002	.035	.016
0720-5	92-186	+1.263	1.57715	0.25490	-0.06015	+1.43171	+0.65879	+0.001	-0.035	-0.016
0730-5	97-021	.372	.58855	.24946	0.19411	1.43092	0.66203	.005	.034	.016
0740-5	101-788	.470	.59937	.24443	0.32664	1.41958	0.66038	.008	.033	.015
0750-5	106-494	.557	.60955	.23982	0.45681	1.39797	0.65395	.010	.032	.015
0760-5	111-143	+1.633	1.61902	0.23564	-0.58374	+1.36644	+0.64289	+0.013	-0.031	-0.014

MARS

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude	Latitude			x	y	z	X	Y	Z
	l	b	r							
244	°	°								
0760.5	111.143	+1.633	1.61902	0.23564	-0.58374	+1.36644	+0.64289	+0.013	-0.031	-0.014
0770.5	115.740	.697	.62774	.23187	0.70661	1.32539	0.62734	.016	.029	.014
0780.5	120.291	.750	.63565	.22852	0.82463	1.27525	0.60750	.018	.028	.013
0790.5	124.801	.791	.64271	.22559	0.93708	1.21649	0.58354	.020	.026	.013
0800.5	129.275	+1.821	1.64889	0.22306	-1.04328	+1.14961	+0.55569	+0.022	-0.025	-0.012
0810.5	133.717	.840	.65415	.22094	1.14259	1.07515	0.52418	.024	.023	.011
0820.5	138.134	.848	.65848	.21922	1.23444	0.99365	0.48924	.026	.021	.010
0830.5	142.531	.845	.66184	.21789	1.31829	0.90572	0.45112	.027	.019	.009
0840.5	146.912	+1.831	1.66423	0.21695	-1.39364	+0.81194	+0.41010	+0.029	-0.017	-0.009
0850.5	151.284	.807	.66562	.21641	1.46004	0.71295	0.36644	.030	.015	.008
0860.5	155.650	.772	.66603	.21625	1.51710	0.60940	0.32044	.031	.013	.007
0870.5	160.017	.727	.66544	.21648	1.56445	0.50195	0.27239	.032	.010	.006
0880.5	164.389	+1.672	1.66385	0.21710	-1.60179	+0.39129	+0.22260	+0.033	-0.008	-0.005
0890.5	168.772	.606	.66128	.21811	1.62884	0.27811	0.17138	.034	.006	.004
0900.5	173.171	.532	.65773	.21951	1.64538	0.16314	0.11905	.035	.003	.003
0910.5	177.591	.447	.65323	.22131	1.65124	+0.04712	0.06594	.035	-0.001	-0.001
0920.5	182.038	+1.354	1.64779	0.22351	-1.64629	-0.06922	+0.01241	+0.035	+0.001	0.000
0930.5	186.516	.251	.64144	.22611	1.63045	0.18510	-0.04120	.035	.004	+0.001
0940.5	191.030	.140	.63422	.22912	1.60371	0.29974	0.09454	.035	.007	.002
0950.5	195.587	1.021	.62616	.23255	1.56610	0.41235	0.14724	.035	.009	.003
0960.5	200.192	+0.894	1.61730	0.23639	-1.51772	-0.52212	-0.19893	+0.034	+0.012	+0.004
0970.5	204.849	.760	.60770	.24065	1.45873	0.62824	0.24922	.034	.014	.006
0980.5	209.563	.619	.59740	.24533	1.38936	0.72988	0.29774	.033	.017	.007
0990.5	214.341	.471	.58647	.25044	1.30990	0.82623	0.34410	.031	.020	.008
1000.5	219.186	+0.319	1.57499	0.25596	-1.22075	-0.91645	-0.38790	+0.030	+0.022	+0.009
1010.5	224.104	+0.161	.56301	.26189	1.12236	0.99974	0.42877	.028	.025	.011
1020.5	229.099	.000	.55063	.26821	1.01527	1.07528	0.46632	.026	.028	.012
1030.5	234.176	-0.163	.53793	.27491	0.90014	1.14229	0.50017	.024	.030	.013
1040.5	239.338	-0.328	1.52502	0.28195	-0.77770	-1.20001	-0.52995	+0.021	+0.032	+0.014
1050.5	244.589	.493	.51198	.28931	0.64877	1.24772	0.55531	.018	.035	.015
1060.5	249.932	.657	.49893	.29693	0.51430	1.28475	0.57592	.015	.036	.016
1070.5	255.369	.818	.48598	.30476	0.37532	1.31051	0.59147	.011	.038	.017
1080.5	260.900	-0.974	1.47325	0.31273	-0.23296	-1.32445	-0.60169	+0.007	+0.040	+0.018
1090.5	266.528	1.123	.46087	.32075	-0.08846	1.32615	0.60635	+0.003	.041	.019
1100.5	272.250	.264	.44897	.32872	+0.05688	1.31527	0.60525	-0.002	.041	.019
1110.5	278.066	.394	.43766	.33654	0.20166	1.29161	0.59828	.006	.042	.019
1120.5	283.971	-1.512	1.42707	0.34408	+0.34442	-1.25510	-0.58535	-0.011	+0.041	+0.019
1130.5	289.962	.614	.41733	.35122	0.48368	1.20582	0.56647	.016	.041	.019
1140.5	296.032	.700	.40856	.35782	0.61791	1.14403	0.54171	.021	.039	.019
1150.5	302.174	.768	.40087	.36375	0.74559	1.07013	0.51122	.026	.037	.018
1160.5	308.379	-1.816	1.39435	0.36888	+0.86526	-0.98474	-0.47523	-0.031	+0.035	+0.017
1170.5	314.637	.842	.38910	.37308	0.97549	0.88860	0.43406	.035	.032	.015
1180.5	320.936	.847	.38519	.37625	1.07496	0.78267	0.38811	.039	.028	.014
1190.5	327.265	.830	.38266	.37831	1.16247	0.66804	0.33784	.042	.024	.012
1200.5	333.610	-1.789	1.38157	0.37922	+1.23699	-0.54594	-0.28379	-0.045	+0.020	+0.010
1210.5	339.958	.727	.38191	.37893	1.29764	0.41772	0.22656	.047	.015	.008
1220.5	346.296	.644	.38370	.37747	1.34375	0.28482	0.16680	.049	.010	.006
1230.5	352.611	.541	.38689	.37486	1.37488	0.14874	0.10517	.049	+0.005	.004
1240.5	358.889	-1.421	1.39146	0.37118	+1.39077	-0.01101	-0.04238	-0.049	0.000	+0.002

Julian Date	Heliocentric		Radius Vector r	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude l	Latitude b			x	y	z	X	Y	Z
244	°	°								
12405	358.889	-1.421	1.39146	0.37118	+1.39077	-0.01101	-0.04238	-0.049	0.000	+0.002
12505	5.120	.284	.39733	.36653	1.39140	+0.12684	+0.02088	.049	- .004	- .001
12605	11.293	1.133	.40442	.36100	1.37696	0.26332	0.08392	.048	.009	.003
12705	17.398	0.972	.41265	.35473	1.34783	0.39700	0.14606	.046	.013	.005
12805	23.428	-0.801	1.42190	0.34785	+1.30456	+0.52652	+0.20667	-0.043	-0.018	-0.007
12905	29.375	.624	.43206	.34050	1.24787	0.65063	0.26516	.041	.021	.009
13005	35.235	.443	.44302	.33280	1.17862	0.76820	0.32099	.038	.024	.010
13105	41.003	.261	.45463	.32489	1.09776	0.87821	0.37365	.034	.027	.012
13205	46.678	-0.078	1.46678	0.31689	+1.00636	+0.97979	+0.42273	-0.031	-0.030	-0.013
13305	52.257	+ .102	.47935	.30888	0.90553	1.07219	0.46785	.027	.032	.014
13405	57.742	.278	.49220	.30097	0.79642	1.15481	0.50870	.023	.033	.015
13505	63.133	.448	.50521	.29323	0.68022	1.22715	0.54503	.019	.034	.015
13605	68.431	+0.612	1.51826	0.28573	+0.55811	+1.28885	+0.57663	-0.015	-0.035	-0.016
13705	73.639	.767	.53126	.27852	0.43129	1.33966	0.60335	.011	.036	.016
13805	78.761	0.914	.54408	.27164	0.30091	1.37945	0.62511	.008	.036	.016
13905	83.799	1.052	.55663	.26512	0.16810	1.40815	0.64185	.004	.036	.016
14005	88.759	+1.179	1.56882	0.25899	+0.03398	+1.42580	+0.65355	-0.001	-0.035	-0.016
14105	93.643	.296	.58057	.25326	-0.10041	1.43254	0.66025	+ .002	.035	.016
14205	98.458	.402	.59179	.24794	0.23405	1.42855	0.66201	.006	.034	.016
14305	103.207	.497	.60242	.24304	0.36598	1.41408	0.65891	.009	.033	.015
14405	107.896	+1.581	1.61238	0.23856	-0.49528	+1.38945	+0.65107	+0.011	-0.032	-0.015
14505	112.530	.653	.62163	.23450	0.62109	1.35501	0.63864	.014	.030	.014
14605	117.113	.714	.63010	.23086	0.74259	1.31118	0.62178	.016	.029	.014
14705	121.652	.763	.63776	.22764	0.85902	1.25839	0.60067	.019	.027	.013
14805	126.151	+1.801	1.64456	0.22483	-0.96967	+1.19712	+0.57552	+0.021	-0.026	-0.012
14905	130.615	.828	.65047	.22242	1.07388	1.12790	0.54654	.023	.024	.012
15005	135.051	.843	.65546	.22041	1.17102	1.05125	0.51396	.025	.022	.011
15105	139.462	.848	.65951	.21881	1.26052	0.96775	0.47804	.026	.020	.010
15205	143.854	+1.842	1.66259	0.21759	-1.34187	+0.87799	+0.43901	+0.028	-0.018	-0.009
15305	148.232	.825	.66469	.21677	1.41458	0.78257	0.39717	.029	.016	.008
15405	152.602	.797	.66580	.21634	1.47822	0.68214	0.35278	.031	.014	.007
15505	156.968	.759	.66592	.21629	1.53240	0.57734	0.30613	.032	.012	.006
15605	161.336	+1.711	1.66504	0.21664	-1.57677	+0.46885	+0.25752	+0.033	-0.010	-0.005
15705	165.711	.653	.66317	.21737	1.61104	0.35735	0.20726	.033	.007	.004
15805	170.099	.584	.66031	.21849	1.63496	0.24356	0.15567	.034	.005	.003
15905	174.503	.507	.65649	.22001	1.64830	0.12819	0.10307	.035	- .003	.002
16005	178.930	+1.420	1.65172	0.22192	-1.65092	+0.01200	+0.04980	+0.035	0.000	-0.001
16105	183.386	.323	.64602	.22423	1.64271	-0.10428	-0.00379	.035	+ .002	.000
16205	187.874	.218	.63942	.22695	1.62359	0.21986	0.05736	.035	.005	+ .001
16305	192.400	1.105	.63195	.23008	1.59358	0.33397	0.11054	.035	.007	.002
16405	196.970	+0.983	1.62365	0.23363	-1.55272	-0.44580	-0.16297	+0.035	+0.010	+0.004
16505	201.589	.854	.61457	.23759	1.50114	0.55455	0.21427	.034	.013	.005
16605	206.262	.718	.60476	.24198	1.43900	0.65939	0.26406	.033	.015	.006
16705	210.995	.575	.59427	.24678	1.36657	0.75952	0.31197	.032	.018	.007
16805	215.791	+0.426	1.58317	0.25201	-1.28416	-0.85410	-0.35759	+0.031	+0.021	+0.009
16905	220.657	.272	.57152	.25766	1.19218	0.94231	0.40055	.029	.023	.010
17005	225.597	+ .113	.55941	.26371	1.09112	1.02334	0.44045	.028	.026	.011
17105	230.615	- .049	.54692	.27015	0.98156	1.09638	0.47692	.025	.028	.012
17205	235.717	-0.213	1.53413	0.27696	-0.86415	-1.16066	-0.50958	+0.023	+0.031	+0.015

MARS

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude	Latitude			x	y	z	X	Y	Z
	<i>l</i>	<i>b</i>	<i>r</i>							
244	°	°								
1720.5	235.717	-0.213	1.53413	0.27696	-0.86415	-1.16066	-0.50958	+0.023	+0.031	+0.013
1730.5	240.905	.378	.52115	.28411	0.73967	1.21544	0.53806	.020	.033	.015
1740.5	246.182	.543	.50808	.29156	0.60898	1.25999	0.56202	.017	.035	.016
1750.5	251.553	.706	.49503	.29926	0.47304	1.29369	0.58113	.014	.037	.017
1760.5	257.018	-0.865	1.48211	0.30715	-0.33292	-1.31593	-0.59510	+0.010	+0.039	+0.017
1770.5	262.578	1.020	.46946	.31516	0.18979	1.32623	0.60367	.006	.040	.018
1780.5	268.235	.166	.45718	.32319	-0.04489	1.32416	0.60661	+ .001	.041	.019
1790.5	273.986	.304	.44542	.33114	+0.10044	1.30944	0.60375	- .003	.041	.019
1800.5	279.829	-1.431	1.43429	0.33891	+0.24477	-1.28190	-0.59498	-0.008	+0.042	+0.019
1810.5	285.762	.544	.42393	.34636	0.38665	1.24153	0.58025	.013	.041	.019
1820.5	291.778	.642	.41446	.35337	0.52457	1.18844	0.55959	.018	.040	.019
1830.5	297.872	.723	.40599	.35980	0.65700	1.12294	0.53307	.023	.039	.018
1840.5	304.035	-1.785	1.39863	0.36551	+0.78244	-1.04549	-0.50089	-0.027	+0.037	+0.018
1850.5	310.259	.826	.39248	.37037	0.89942	0.95676	0.46330	.032	.034	.016
1860.5	316.532	.846	.38762	.37427	1.00656	0.85756	0.42064	.036	.031	.015
1870.5	322.843	.844	.38413	.37711	1.10256	0.74887	0.37332	.040	.027	.013
1880.5	329.180	-1.820	1.38204	0.37883	+1.18627	-0.63184	-0.32185	-0.043	+0.023	+0.012
1890.5	335.529	.773	.38139	.37936	1.25669	0.50773	0.26677	.046	.018	.010
1900.5	341.876	.704	.38219	.37870	1.31303	0.37793	0.20870	.048	.014	.008
1910.5	348.210	.615	.38442	.37687	1.35467	0.24390	0.14830	.049	.009	.005
1920.5	354.515	-1.506	1.38806	0.37392	+1.38123	-0.10716	-0.08624	-0.049	+0.004	+0.003
1930.5	0.781	.380	.39305	.36992	1.39251	+0.03078	-0.02323	.049	- .001	+ .001
1940.5	6.996	.239	.39932	.36497	1.38857	0.16837	+0.04003	.048	.006	- .001
1950.5	13.150	1.085	.40679	.35918	1.36965	0.30416	0.10287	.047	.010	.004
1960.5	19.232	-0.921	1.41536	0.35270	+1.33619	+0.43672	+0.16462	-0.045	-0.015	-0.006
1970.5	25.237	.748	.42491	.34565	1.28880	0.56473	0.22465	.043	.019	.007
1980.5	31.158	.569	.43534	.33817	1.22823	0.68697	0.28238	.040	.022	.009
1990.5	36.990	.388	.44652	.33039	1.15538	0.80235	0.33730	.037	.025	.011
2000.5	42.729	-0.205	1.45833	0.32243	+1.07124	+0.90990	+0.38892	-0.033	-0.028	-0.012
2010.5	48.374	- .023	.47063	.31441	0.97688	1.00877	0.43684	.029	.030	.013
2020.5	53.925	+ .155	.48329	.30642	0.87343	1.09827	0.48070	.026	.032	.014
2030.5	59.380	.330	.49621	.29856	0.76207	1.17783	0.52020	.022	.034	.015
2040.5	64.741	+0.498	1.50925	0.29088	+0.64397	+1.24698	+0.55511	-0.018	-0.035	-0.015
2050.5	70.011	.660	.52229	.28347	0.52033	1.30541	0.58525	.014	.035	.016
2060.5	75.193	.813	.53524	.27636	0.39233	1.35290	0.61048	.010	.036	.016
2070.5	80.288	0.957	.54799	.26959	0.26111	1.38934	0.63073	.007	.036	.016
2080.5	85.301	+1.092	1.56043	0.26319	+0.12780	+1.41470	+0.64594	-0.003	-0.036	-0.016
2090.5	90.237	.216	.57249	.25718	-0.00650	1.42904	0.65613	.000	.035	.016
2100.5	95.100	.330	.58407	.25158	0.14077	1.43252	0.66133	+ .003	.034	.016
2110.5	99.894	.432	.59511	.24639	0.27398	1.42534	0.66161	.006	.034	.016
2120.5	104.624	+1.524	1.60553	0.24163	-0.40520	+1.40776	+0.65706	+0.009	-0.033	-0.015
2130.5	109.295	.604	.61527	.23728	0.53353	1.38013	0.64782	.012	.031	.015
2140.5	113.913	.672	.62427	.23336	0.65812	1.34281	0.63403	.015	.030	.014
2150.5	118.483	.730	.63250	.22985	0.77817	1.29622	0.61587	.017	.029	.014
2160.5	123.009	+1.776	1.63989	0.22676	-0.89293	+1.24082	+0.59352	+0.019	-0.027	-0.013
2170.5	127.497	.810	.64641	.22407	1.00171	1.17710	0.56718	.021	.025	.012
2180.5	131.952	.834	.65203	.22179	1.10384	1.10557	0.53709	.023	.023	.011
2190.5	136.380	.846	.65673	.21991	1.19874	1.02679	0.50347	.025	.022	.011
2200.5	140.785	+1.847	1.66047	0.21843	-1.28584	+0.94133	+0.46658	+0.027	-0.020	-0.010

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude	Latitude			x	y	z	X	Y	Z
	l	b	r							
244	°	°								
22005	140.785	+1.847	1.66047	0.21843	-1.28584	+0.94133	+0.46658	+0.027	-0.020	-0.010
22105	145.173	.838	.66325	.21733	1.36463	0.84979	0.42668	.028	.018	.009
22205	149.549	.817	.66504	.21663	1.43465	0.75278	0.38403	.030	.016	.008
22305	153.918	.787	.66585	.21632	1.49547	0.65095	0.33892	.031	.013	.007
22405	158.285	+1.745	1.66566	0.21639	-1.54673	+0.54496	+0.29164	+0.032	-0.011	-0.006
22505	162.655	.694	.66447	.21686	1.58809	0.43547	0.24249	.033	.009	.005
22605	167.034	.633	.66230	.21771	1.61926	0.32320	0.19179	.034	.007	.004
22705	171.427	.562	.65916	.21895	1.64001	0.20884	0.13986	.034	.004	.003
22805	175.838	+1.481	1.65505	0.22058	-1.65013	+0.09313	+0.08702	+0.035	-0.002	-0.002
22905	180.274	.391	.64999	.22261	1.64949	-0.02318	+0.03361	.035	.000	.001
23005	184.739	.292	.64402	.22505	1.63798	0.13934	-0.02002	.035	+ .003	.000
23105	189.239	.185	.63716	.22789	1.61558	0.25457	0.07351	.035	.006	+ .002
23205	193.779	+1.069	1.62945	0.23114	-1.58228	-0.36809	-0.12651	+0.035	+0.008	+0.003
23305	198.364	0.945	.62092	.23481	1.53817	0.47908	0.17864	.035	.011	.004
23405	202.999	.813	.61163	.23889	1.48337	0.58675	0.22953	.034	.013	.005
23505	207.690	.675	.60162	.24340	1.41810	0.69026	0.27880	.033	.016	.006
23605	212.442	+0.530	1.59095	0.24833	-1.34261	-0.78881	-0.32606	+0.032	+0.019	+0.008
23705	217.259	.379	.57970	.25367	1.25727	0.88155	0.37092	.031	.021	.009
23805	222.147	.224	.56792	.25943	1.16250	0.96768	0.41300	.029	.024	.010
23905	227.110	+ .064	.55571	.26559	1.05881	1.04639	0.45191	.027	.027	.011
24005	232.153	-0.099	1.54313	0.27214	-0.94681	-1.11687	-0.48727	+0.025	+0.029	+0.013
24105	237.279	.263	.53030	.27904	0.82719	1.17836	0.51870	.022	.031	.014
24205	242.493	.428	.51730	.28628	0.70075	1.23012	0.54585	.019	.034	.015
24305	247.798	.593	.50424	.29380	0.56838	1.27147	0.56838	.016	.036	.016
24405	253.196	-0.755	1.49124	0.30155	-0.43108	-1.30176	-0.58597	+0.012	+0.038	+0.017
24505	258.689	0.913	.47840	.30947	0.28994	1.32045	0.59834	.009	.039	.018
24605	264.277	1.065	.46586	.31749	0.14615	1.32706	0.60523	+ .004	.040	.018
24705	269.960	.209	.45374	.32549	-0.00100	1.32121	0.60643	.000	.041	.019
24805	275.738	-1.344	1.44216	0.33340	+0.14415	-1.30264	-0.60181	-0.005	+0.042	+0.019
24905	281.607	.467	.43125	.34108	0.28788	1.27123	0.59124	.009	.041	.019
25005	287.564	.575	.42114	.34841	0.42870	1.22701	0.57472	.014	.041	.019
25105	293.603	.668	.41195	.35526	0.56510	1.17015	0.55228	.019	.040	.019
25205	299.717	-1.743	1.40379	0.36148	+0.69556	-1.10100	-0.52404	-0.024	+0.038	+0.018
25305	305.898	.799	.39678	.36696	0.81859	1.02010	0.49020	.029	.036	.017
25405	312.136	.834	.39099	.37156	0.93274	0.92812	0.45105	.033	.033	.016
25505	318.421	.848	.38651	.37517	1.03663	0.82596	0.40694	.037	.030	.015
25605	324.741	-1.839	1.38341	0.37770	+1.12904	-0.71464	-0.35832	-0.041	+0.026	+0.013
25705	331.082	.808	.38173	.37908	1.20884	0.59534	0.30570	.044	.022	.011
25805	337.431	.754	.38149	.37928	1.27509	0.46937	0.24966	.046	.017	.009
25905	343.776	.679	.38269	.37829	1.32706	0.33814	0.19081	.048	.012	.007
26005	350.103	-1.584	1.38532	0.37614	+1.36418	-0.20313	-0.12984	-0.049	+0.007	+0.005
26105	356.399	.470	.38935	.37288	1.38615	-0.06586	0.06741	.049	+ .002	+ .002
26205	2.651	.340	.39471	.36860	1.39283	+0.07214	-0.00425	.049	- .003	.000
26305	8.850	.194	.40133	.36339	1.38435	0.20936	+0.05897	.048	.007	- .002
26405	14.984	-1.037	1.40913	0.35740	+1.36099	+0.34434	+0.12155	-0.047	-0.012	-0.004
26505	21.046	0.869	.41799	.35073	1.32325	0.47568	0.18285	.044	.016	.006
26605	27.027	.694	.42782	.34354	1.27180	0.60209	0.24226	.042	.020	.008
26705	32.923	.515	.43849	.33595	1.20742	0.72240	0.29921	.039	.023	.010
26805	38.729	-0.333	1.44988	0.32810	+1.13106	+0.83553	+0.35318	-0.035	-0.026	-0.011

MARS

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude	Latitude			x	y	z	X	Y	Z
	l	b	r							
244	°	°								
2680.5	38.729	-0.333	1.44988	0.32810	+1.13106	+0.83553	+0.35318	-0.035	-0.026	-0.011
2690.5	44.441	-0.150	.46185	.32011	1.04371	0.94056	0.40374	.032	.029	.012
2700.5	50.059	+0.031	.47428	.31207	0.94649	1.03670	0.45048	.028	.031	.013
2710.5	55.581	.209	.48705	.30410	0.84053	1.12327	0.49306	.024	.033	.014
2720.5	61.009	+0.382	1.50003	0.29628	+0.72700	+1.19974	+0.53120	-0.021	-0.034	-0.015
2730.5	66.344	.548	.51310	.28867	0.60710	1.26570	0.56470	.017	.035	.016
2740.5	71.587	.707	.52615	.28133	0.48202	1.32086	0.59337	.013	.036	.016
2750.5	76.742	.858	.53906	.27431	0.35292	1.36504	0.61711	.009	.036	.016
2760.5	81.812	+0.999	1.55174	0.26763	+0.22096	+1.39814	+0.63585	-0.006	-0.036	-0.016
2770.5	86.802	1.130	.56410	.26134	+0.08724	1.42017	0.64955	-0.002	.036	.016
2780.5	91.715	.252	.57603	.25545	-0.04716	1.43122	0.65823	+0.001	.035	.016
2790.5	96.556	.362	.58747	.24997	0.18120	1.43146	0.66193	.004	.034	.016
2800.5	101.330	+1.461	1.59834	0.24490	-0.31391	+1.42112	+0.66074	+0.007	-0.033	-0.015
2810.5	106.042	.549	.60858	.24026	0.44435	1.40048	0.65477	.010	.032	.015
2820.5	110.696	.626	.61811	.23603	0.57163	1.36989	0.64414	.013	.031	.015
2830.5	115.298	.691	.62689	.23223	0.69492	1.32974	0.62902	.015	.030	.014
2840.5	119.854	+1.745	1.63487	0.22885	-0.81344	+1.28044	+0.60957	+0.018	-0.028	-0.013
2850.5	124.367	.787	.64201	.22588	0.92645	1.22248	0.58600	.020	.026	.013
2860.5	128.845	.819	.64826	.22332	1.03328	1.15636	0.55851	.022	.025	.012
2870.5	133.290	.838	.65361	.22116	1.13329	1.08259	0.52733	.024	.023	.011
2880.5	137.710	+1.847	1.65801	0.21940	-1.22588	+1.00174	+0.49270	+0.026	-0.021	-0.010
2890.5	142.109	.845	.66146	.21804	1.31051	0.91438	0.45487	.027	.019	.009
2900.5	146.492	.833	.66393	.21707	1.38670	0.82113	0.41411	.029	.017	.009
2910.5	150.865	.809	.66542	.21649	1.45398	0.72260	0.37069	.030	.015	.008
2920.5	155.233	+1.775	1.66591	0.21629	-1.51195	+0.61945	+0.32490	+0.031	-0.013	-0.007
2930.5	159.600	.731	.66541	.21649	1.56024	0.51233	0.27703	.032	.011	.006
2940.5	163.972	.677	.66392	.21707	1.59855	0.40194	0.22738	.033	.008	.005
2950.5	168.355	.612	.66144	.21805	1.62659	0.28896	0.17627	.034	.006	.004
2960.5	172.753	+1.538	1.65798	0.21941	-1.64414	+0.17412	+0.12403	+0.035	-0.004	-0.003
2970.5	177.171	.455	.65357	.22117	1.65102	+0.05815	0.07098	.035	-0.001	-0.002
2980.5	181.615	.362	.64822	.22333	1.64710	-0.05821	+0.01747	.035	+0.001	.000
2990.5	186.091	.261	.64196	.22590	1.63229	0.17417	-0.03616	.035	.004	+0.001
3000.5	190.603	+1.150	1.63482	0.22887	-1.60659	-0.28897	-0.08955	+0.035	+0.006	+0.002
3010.5	195.156	1.032	.62684	.23226	1.57000	0.40181	0.14233	.035	.009	.003
3020.5	199.756	0.906	.61806	.23606	1.52263	0.51189	0.19412	.034	.012	.004
3030.5	204.409	.772	.60853	.24028	1.46463	0.61840	0.24457	.034	.014	.006
3040.5	209.118	+0.631	1.59830	0.24492	-1.39622	-0.72051	-0.29327	+0.033	+0.017	+0.007
3050.5	213.890	.485	.58744	.24998	1.31770	0.81739	0.33985	.032	.020	.008
3060.5	218.729	.333	.57601	.25546	1.22944	0.90823	0.38392	.030	.022	.009
3070.5	223.641	.176	.56408	.26135	1.13189	0.99221	0.42508	.028	.025	.011
3080.5	228.629	+0.015	1.55174	0.26764	-1.02560	-1.06851	-0.46295	+0.026	+0.027	+0.012
3090.5	233.698	-0.148	.53907	.27430	0.91119	1.13635	0.49716	.024	.030	.013
3100.5	238.852	.313	.52617	.28131	0.78940	1.19498	0.52734	.021	.032	.014
3110.5	244.095	.478	.51314	.28864	0.66104	1.24366	0.55313	.018	.034	.015
3120.5	249.429	-0.642	1.50009	0.29624	-0.52705	-1.28172	-0.57420	+0.015	+0.036	+0.016
3130.5	254.857	.803	.48714	.30405	0.38844	1.30855	0.59023	.011	.038	.017
3140.5	260.380	0.960	.47439	.31201	0.24635	1.32362	0.60096	.007	.040	.018
3150.5	265.999	1.110	.46197	.32002	-0.10199	1.32648	0.60614	+0.003	.041	.019
3160.5	271.713	-1.251	1.45002	0.32801	+0.04333	-1.31679	-0.60559	-0.001	+0.041	+0.019

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude	Latitude			x	y	z	X	Y	Z
	<i>l</i>	<i>b</i>	<i>r</i>							
244	°	°								
3160.5	271.713	-1.251	1.45002	0.32801	+0.04333	-1.31679	-0.60559	-0.001	+0.041	+0.019
3170.5	277.520	.383	.43865	.33584	0.18822	1.29432	0.59917	.006	.042	.019
3180.5	283.417	.501	.42799	.34342	0.33124	1.25901	0.58680	.011	.041	.019
3190.5	289.400	.605	.41817	.35060	0.47088	1.21092	0.56847	.016	.041	.019
3200.5	295.463	-1.693	1.40931	0.35726	+0.60565	-1.15028	-0.54425	-0.021	+0.039	+0.019
3210.5	301.599	.762	.40152	.36325	0.73401	1.07750	0.51428	.026	.037	.018
3220.5	307.799	.812	.39489	.36845	0.85449	0.99314	0.47879	.030	.035	.017
3230.5	314.052	.841	.38953	.37274	0.96566	0.89798	0.43809	.034	.032	.016
3240.5	320.348	-1.847	1.38549	0.37600	+1.06619	-0.79292	-0.39256	-0.038	+0.029	+0.014
3250.5	326.675	.832	.38284	.37816	1.15487	0.67905	0.34268	.042	.025	.012
3260.5	333.019	.794	.38162	.37917	1.23064	0.55760	0.28896	.045	.020	.010
3270.5	339.367	.733	.38184	.37899	1.29262	0.42989	0.23200	.047	.016	.008
3280.5	345.706	-1.652	1.38350	0.37762	+1.34012	-0.29737	-0.17245	-0.048	+0.011	+0.006
3290.5	352.023	.551	.38658	.37512	1.37266	0.16153	0.11097	.049	.006	.004
3300.5	358.305	.432	.39103	.37153	1.38998	-0.02390	-0.04825	.049	+ .001	+ .002
3310.5	4.541	.297	.39678	.36695	1.39204	+0.11400	+0.01499	.049	- .004	- .001
3320.5	10.719	-1.147	1.40377	0.36150	+1.37900	+0.25067	+0.07807	-0.048	-0.009	-0.003
3330.5	16.830	0.987	.41190	.35529	1.35123	0.38466	0.14032	.046	.013	.005
3340.5	22.866	.817	.42107	.34846	1.30926	0.51462	0.20110	.044	.017	.007
3350.5	28.821	.640	.43115	.34115	1.25380	0.63928	0.25981	.041	.021	.008
3360.5	34.688	-0.460	1.44203	0.33348	+1.18569	+0.75749	+0.31590	-0.038	-0.024	-0.010
3370.5	40.464	.277	.45359	.32559	1.10589	0.86825	0.36888	.034	.027	.011
3380.5	46.147	- .095	.46570	.31759	1.01544	0.97065	0.41831	.031	.029	.013
3390.5	51.735	+ .085	.47822	.30959	0.91545	1.06394	0.46381	.027	.032	.014
3400.5	57.229	+0.262	1.49105	0.30167	+0.80708	+1.14749	+0.50507	-0.023	-0.033	-0.015
3410.5	62.628	.433	.50404	.29391	0.69150	1.22082	0.54183	.019	.034	.015
3420.5	67.934	.597	.51710	.28639	0.56991	1.28353	0.57388	.016	.035	.016
3430.5	73.150	.753	.53010	.27915	0.44348	1.33538	0.60107	.012	.036	.016
3440.5	78.280	+0.901	1.54294	0.27224	+0.31339	+1.37620	+0.62330	-0.008	-0.036	-0.016
3450.5	83.325	1.040	.55551	.26569	0.18077	1.40595	0.64051	.005	.036	.016
3460.5	88.292	1.168	.56774	.25952	+0.04672	1.42465	0.65269	- .001	.035	.016
3470.5	93.183	.286	.57953	.25375	-0.08768	1.43242	0.65986	+ .002	.035	.016
3480.5	98.004	+1.393	1.59080	0.24840	-0.22143	+1.42943	+0.66207	+0.005	-0.034	-0.016
3490.5	102.759	.489	.60149	.24346	0.35356	1.41595	0.65943	.008	.033	.015
3500.5	107.453	.573	.61152	.23894	0.48315	1.39227	0.65203	.011	.032	.015
3510.5	112.091	.646	.62084	.23485	0.60932	1.35875	0.64003	.014	.031	.014
3520.5	116.679	+1.708	1.62939	0.23117	-0.73126	+1.31579	+0.62358	+0.016	-0.029	-0.014
3530.5	121.222	.758	.63713	.22791	0.84820	1.26384	0.60287	.018	.028	.013
3540.5	125.724	.798	.64401	.22505	0.95943	1.20336	0.57809	.021	.026	.012
3550.5	130.191	.825	.65001	.22261	1.06427	1.13487	0.54947	.023	.024	.012
3560.5	134.628	+1.842	1.65509	0.22057	-1.16211	+1.05891	+0.51722	+0.025	-0.022	-0.011
3570.5	139.041	.848	.65922	.21892	1.25236	0.97605	0.48161	.026	.020	.010
3580.5	143.435	.842	.66239	.21767	1.33450	0.88686	0.44287	.028	.018	.009
3590.5	147.814	.826	.66458	.21681	1.40805	0.79196	0.40128	.029	.016	.008
3600.5	152.184	+1.800	1.66578	0.21634	-1.47257	+0.69198	+0.35712	+0.030	-0.014	-0.007
3610.5	156.550	.762	.66599	.21626	1.52767	0.58757	0.31067	.032	.012	.006
3620.5	160.917	.715	.66520	.21657	1.57299	0.47941	0.26224	.033	.010	.005
3630.5	165.291	.658	.66342	.21727	1.60824	0.36817	0.21212	.033	.008	.004
3640.5	169.677	+1.590	1.66066	0.21835	-1.63315	+0.25457	+0.16065	+0.034	-0.005	-0.003

MARS

Julian Date	Heliocentric		Radius Vector r	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude l	Latitude b			x	y	z	X	Y	Z
244	°	°								
3640.5	169.677	+1.590	1.66066	0.21835	-1.63315	+0.25457	+0.16065	+0.034	-0.005	-0.003
3650.5	174.080	.514	.65692	.21984	1.64751	0.13932	0.10813	.035	- .003	.002
3660.5	178.504	.427	.65223	.22171	1.65115	+0.02317	0.05491	.035	.000	- .001
3670.5	182.957	.332	.64660	.22399	1.64397	-0.09313	+0.00134	.035	+ .002	.000
3680.5	187.441	+1.228	1.64008	0.22668	-1.62589	-0.20881	-0.05225	+0.035	+0.005	+0.001
3690.5	191.964	1.115	.63268	.22977	1.59691	0.32309	0.10548	.035	.007	.002
3700.5	196.530	0.994	.62445	.23328	1.55708	0.43517	0.15800	.035	.010	.004
3710.5	201.144	.866	.61544	.23721	1.50651	0.54425	0.20942	.034	.012	.005
3720.5	205.812	+0.730	1.60568	0.24156	-1.44536	-0.64950	-0.25938	+0.033	+0.015	+0.006
3730.5	210.538	.588	.59524	.24633	1.37389	0.75012	0.30748	.032	.018	.007
3740.5	215.329	.439	.58419	.25153	1.29242	0.84526	0.35333	.031	.020	.009
3750.5	220.188	.286	.57258	.25713	1.20133	0.93412	0.39656	.030	.023	.010
3760.5	225.121	+0.128	1.56050	0.26315	-1.10110	-1.01586	-0.43677	+0.028	+0.026	+0.011
3770.5	230.133	- .034	.54803	.26956	0.99231	1.08970	0.47359	.026	.028	.012
3780.5	235.226	.198	.53526	.27634	0.87561	1.15485	0.50662	.023	.031	.013
3790.5	240.406	.363	.52229	.28347	0.75176	1.21056	0.53551	.020	.033	.015
3800.5	245.676	-0.528	1.50922	0.29090	-0.62161	-1.25612	-0.55991	+0.017	+0.035	+0.016
3810.5	251.038	.691	.49616	.29859	0.48612	1.29087	0.57950	.014	.037	.017
3820.5	256.495	0.851	.48322	.30647	0.34634	1.31423	0.59397	.010	.039	.017
3830.5	262.047	1.005	.47053	.31447	0.20343	1.32567	0.60305	.006	.040	.018
3840.5	267.695	-1.153	1.45821	0.32251	-0.05864	-1.32479	-0.60653	+0.002	+0.041	+0.019
3850.5	273.438	.292	.44639	.33048	+0.08671	1.31127	0.60422	- .003	.041	.019
3860.5	279.274	.419	.43519	.33828	0.23121	1.28495	0.59601	.007	.042	.019
3870.5	285.199	.534	.42475	.34577	0.37339	1.24577	0.58184	.012	.041	.019
3880.5	291.208	-1.633	1.41518	0.35283	+0.51175	-1.19386	-0.56173	-0.017	+0.040	+0.019
3890.5	297.296	.716	.40661	.35932	0.64477	1.12951	0.53575	.022	.039	.018
3900.5	303.454	.779	.39914	.36511	0.77093	1.05316	0.50409	.027	.037	.018
3910.5	309.673	.823	.39287	.37006	0.88877	0.96544	0.46699	.031	.034	.017
3920.5	315.944	-1.845	1.38788	0.37406	+0.99689	-0.86717	-0.42478	-0.036	+0.031	+0.015
3930.5	322.253	.845	.38425	.37701	1.09399	0.75931	0.37787	.039	.027	.014
3940.5	328.589	.822	.38203	.37884	1.17889	0.64300	0.32676	.043	.023	.012
3950.5	334.938	.777	.38124	.37948	1.25059	0.51948	0.27199	.045	.019	.010
3960.5	341.288	-1.711	1.38190	0.37894	+1.30827	-0.39014	-0.21416	-0.047	+0.014	+0.008
3970.5	347.624	.623	.38400	.37722	1.35130	0.25643	0.15394	.049	.009	.006
3980.5	353.934	.516	.38751	.37436	1.37926	-0.11986	0.09200	.049	+ .004	.003
3990.5	0.206	.392	.39238	.37045	1.39196	+0.01804	-0.02904	.049	- .001	+ .001
4000.5	6.427	-1.252	1.39854	0.36557	+1.38942	+0.15574	+0.03423	-0.049	-0.005	-0.001
4010.5	12.587	1.099	.40591	.35986	1.37187	0.29177	0.09714	.047	.010	.003
4020.5	18.678	0.935	.41439	.35342	1.33972	0.42470	0.15902	.045	.014	.005
4030.5	24.692	.763	.42387	.34641	1.29357	0.55319	0.21924	.043	.018	.007
4040.5	30.621	-0.585	1.43424	0.33895	+1.23418	+0.67602	+0.27721	-0.040	-0.022	-0.009
4050.5	36.462	.404	.44537	.33118	1.16241	0.79208	0.33241	.037	.025	.011
4060.5	42.211	.221	.45714	.32322	1.07926	0.90039	0.38436	.033	.028	.012
4070.5	47.865	- .039	.46941	.31519	0.98579	1.00010	0.43264	.030	.030	.013
4080.5	53.424	+0.140	1.48207	0.30718	+0.88313	+1.09050	+0.47688	-0.026	-0.032	-0.014
4090.5	58.889	.315	.49498	.29929	0.77245	1.17099	0.51679	.022	.034	.015
4100.5	64.259	.484	.50803	.29159	0.65492	1.24112	0.55214	.018	.035	.015
4110.5	69.537	.646	.52110	.28414	0.53174	1.30055	0.58272	.014	.035	.016
4120.5	74.726	+0.800	1.53407	0.27699	+0.40409	+1.34905	+0.60841	-0.011	-0.036	-0.016

Julian Date	Heliocentric		Radius Vector	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Mars only		
	Longitude	Latitude			x	y	z	X	Y	Z
	l	b	r							
244	°	°								
4120.5	74.726	+0.800	1.53407	0.27699	+0.40409	+1.34905	+0.60841	-0.011	-0.036	-0.016
4130.5	79.829	0.945	.54686	.27018	0.27312	1.38650	0.62911	.007	.036	.016
4140.5	84.849	1.080	.55935	.26374	0.13997	1.41288	0.64479	- .004	.036	.016
4150.5	89.792	.205	.57146	.25769	+0.00572	1.42823	0.65543	.000	.035	.016
4160.5	94.660	+1.320	1.58310	0.25204	-0.12858	+1.43270	+0.66109	+0.003	-0.035	-0.016
4170.5	99.459	.423	.59420	.24682	0.26192	1.42649	0.66181	.006	.034	.016
4180.5	104.195	.516	.60469	.24201	0.39336	1.40987	0.65770	.009	.033	.015
4190.5	108.871	.597	.61450	.23762	0.52198	1.38315	0.64889	.012	.031	.015
4200.5	113.493	+1.666	1.62359	0.23365	-0.64694	+1.34671	+0.63551	+0.014	-0.030	-0.014
4210.5	118.066	.725	.63189	.23011	0.76743	1.30096	0.61774	.017	.029	.014
4220.5	122.595	.772	.63937	.22697	0.88270	1.24636	0.59577	.019	.027	.013
4230.5	127.086	.807	.64598	.22425	0.99205	1.18339	0.56980	.021	.025	.012
4240.5	131.543	+1.831	1.65169	0.22193	-1.09482	+1.11257	+0.54005	+0.023	-0.024	-0.011
4250.5	135.973	.845	.65648	.22001	1.19040	1.03444	0.50675	.025	.022	.011
4260.5	140.379	.847	.66031	.21849	1.27824	0.94958	0.47015	.027	.020	.010
4270.5	144.767	.838	.66318	.21736	1.35782	0.85859	0.43051	.028	.018	.009
4280.5	149.143	+1.819	1.66507	0.21662	-1.42867	+0.76207	+0.38811	+0.030	-0.016	-0.008
4290.5	153.512	.789	.66597	.21627	1.49036	0.66067	0.34322	.031	.014	.007
4300.5	157.878	.749	.66588	.21631	1.54252	0.55504	0.29613	.032	.011	.006
4310.5	162.247	.699	.66479	.21673	1.58482	0.44586	0.24715	.033	.009	.005
4320.5	166.624	+1.638	1.66271	0.21754	-1.61695	+0.33383	+0.19659	+0.034	-0.007	-0.004
4330.5	171.015	.568	.65966	.21875	1.63868	0.21964	0.14476	.034	.005	.003
4340.5	175.424	.488	.65564	.22035	1.64980	+0.10404	0.09199	.035	- .002	.002
4350.5	179.856	.399	.65067	.22234	1.65018	-0.01224	+0.03863	.035	.000	- .001
4360.5	184.318	+1.301	1.64479	0.22473	-1.63970	-0.12844	-0.01499	+0.035	+0.003	0.000
4370.5	188.813	.194	.63801	.22754	1.61832	0.24378	0.06851	.035	.005	+ .001
4380.5	193.348	1.079	.63037	.23075	1.58605	0.35748	0.12157	.035	.008	.003
4390.5	197.928	0.956	.62192	.23438	1.54295	0.46873	0.17379	.035	.011	.004
4400.5	202.557	+0.825	1.61269	0.23842	-1.48917	-0.57673	-0.22481	+0.034	+0.013	+0.005
4410.5	207.241	.687	.60274	.24289	1.42488	0.68067	0.27424	.033	.016	.006
4420.5	211.986	.543	.59213	.24778	1.35035	0.77971	0.32170	.032	.018	.008
4430.5	216.796	.393	.58092	.25309	1.26593	0.87303	0.36680	.031	.021	.009
4440.5	221.676	+0.238	1.56918	0.25881	-1.17204	-0.95982	-0.40915	+0.029	+0.024	+0.010
4450.5	226.631	+ .079	.55699	.26494	1.06918	1.03925	0.44837	.027	.026	.011
4460.5	231.665	- .083	.54444	.27145	0.95795	1.11054	0.48408	.025	.029	.013
4470.5	236.783	.248	.53161	.27833	0.83902	1.17291	0.51590	.022	.031	.014
4480.5	241.988	-0.413	1.51861	0.28554	-0.71320	-1.22562	-0.54347	+0.019	+0.033	+0.015
4490.5	247.284	.577	.50554	.29304	0.58136	1.26799	0.56645	.016	.036	.016
4500.5	252.672	.740	.49251	.30078	0.44449	1.29936	0.58452	.013	.037	.017
4510.5	258.155	0.898	.47963	.30870	0.30367	1.31917	0.59739	.009	.039	.018
4520.5	263.734	-1.051	1.46704	0.31672	-0.16009	-1.32695	-0.60481	+0.005	+0.040	+0.018
4530.5	269.409	.196	.45485	.32475	-0.01500	1.32229	0.60656	.000	.041	.019
4540.5	275.178	.331	.44320	.33268	+0.13021	1.30494	0.60249	- .004	.042	.019
4550.5	281.039	.455	.43221	.34040	0.27415	1.27476	0.59249	.009	.042	.019
4560.5	286.988	-1.565	1.42200	0.34778	+0.41531	-1.23175	-0.57654	-0.014	+0.041	+0.019
4570.5	293.020	.660	.41270	.35469	0.55221	1.17607	0.55465	.019	.040	.019
4580.5	299.128	.737	.40443	.36100	0.68331	1.10807	0.52695	.024	.038	.018
4590.5	305.304	.794	.39728	.36656	0.80711	1.02825	0.49363	.028	.036	.017
4600.5	311.538	-1.832	1.39136	0.37126	+0.92217	-0.93729	-0.45496	-0.033	+0.033	+0.016

BARYCENTRE S₄

HELIOCENTRIC EQUATORIAL CO-ORDINATES IN UNITS OF THE SEVENTH DECIMAL

J.D.	x	y	z	J.D.	x	y	z	J.D.	x	y	z
243				243				243			
59605	-14.395	- 1.207	- 0.820	64405	+27.876	+ 2.447	+ 1.436	69205	-15.331	+30.779	+14.412
59705	15.410	2.581	1.103	64505	25.199	5.602	3.084	69305	21.984	26.317	12.501
59805	16.367	4.545	1.628	64605	22.290	7.903	4.303	69405	27.176	20.798	10.043
59905	17.011	7.100	2.425	64705	19.428	9.432	5.111	69505	30.722	14.607	7.209
60005	-17.083	-10.171	- 3.484	64805	+16.841	+10.335	+ 5.563	69605	-32.555	+ 8.146	+ 4.183
60105	16.348	13.601	4.759	64905	14.682	10.806	5.738	69705	32.723	+ 1.798	+ 1.150
60205	14.625	17.164	6.168	65005	13.023	11.060	5.733	69805	31.375	- 4.091	- 1.721
60305	11.812	20.583	7.601	65105	11.854	11.308	5.650	69905	28.750	9.241	4.282
60405	- 7.897	-23.551	- 8.930	65205	+11.087	+11.734	+ 5.586	70005	-25.143	-13.446	- 6.421
60505	- 2.971	25.761	10.018	65305	10.572	12.476	5.621	70105	20.888	16.589	8.063
60605	+ 2.773	26.935	10.733	65405	10.115	13.615	5.814	70205	16.328	18.639	9.174
60705	9.057	26.845	10.962	65505	9.499	15.162	6.193	70305	11.787	19.649	9.761
60805	+15.527	-25.344	-10.620	65605	+ 8.512	+17.061	+ 6.757	70405	- 7.552	-19.745	- 9.868
60905	21.786	22.371	9.656	65705	6.962	19.190	7.476	70505	3.845	19.114	9.569
61005	27.420	17.969	8.064	65805	4.701	21.375	8.288	70605	- 0.817	17.981	8.965
61105	32.023	12.280	5.884	65905	+ 1.641	23.398	9.112	70705	+ 1.467	16.591	8.170
61205	+35.232	- 5.543	- 3.196	66005	- 2.234	+25.015	+ 9.847	70805	+ 3.030	-15.182	- 7.301
61305	36.753	+ 1.919	- 0.126	66105	6.860	25.980	10.384	70905	3.974	13.965	6.471
61405	36.379	9.718	+ 3.172	66205	12.091	26.060	10.615	71005	4.471	13.100	5.770
61505	34.014	17.422	6.516	66305	17.703	25.061	10.441	71105	4.742	12.682	5.264
61605	+29.680	+24.582	+ 9.709	66405	-23.403	+22.845	+ 9.784	71205	+ 5.031	-12.726	- 4.988
61705	23.524	30.760	12.556	66505	28.850	19.350	8.594	71305	5.579	13.170	4.935
61805	15.814	35.561	14.870	66605	33.673	14.604	6.857	71405	6.594	13.875	5.064
61905	+ 6.923	38.655	16.490	66705	37.504	8.728	4.602	71505	8.221	14.644	5.302
62005	- 2.683	+39.809	+17.293	66805	-40.005	+ 1.940	+ 1.899	71605	+10.533	-15.236	- 5.553
62105	12.485	38.903	17.201	66905	40.897	- 5.459	- 1.138	71705	13.506	15.400	5.705
62205	21.932	35.942	16.192	67005	39.990	13.099	4.364	71805	17.027	14.896	5.648
62305	30.490	31.059	14.300	67105	37.199	20.568	7.606	71905	20.897	13.520	5.279
62405	-37.672	+24.507	+11.617	67205	-32.561	-27.438	-10.678	72005	+24.847	-11.133	- 4.517
62505	43.074	16.644	8.284	67305	26.232	33.299	13.395	72105	28.556	7.673	3.315
62605	46.406	+ 7.906	4.483	67405	18.485	37.785	15.584	72205	31.683	- 3.165	- 1.659
62705	47.506	- 1.225	+ 0.424	67505	9.686	40.603	17.099	72305	33.892	+ 2.274	+ 0.426
62805	-46.351	-10.251	- 3.672	67605	- 0.280	-41.553	-17.831	72405	+34.876	+ 8.442	+ 2.871
62905	43.053	18.697	7.582	67705	+ 9.243	40.540	17.714	72505	34.391	15.057	5.575
63005	37.846	26.136	11.105	67805	18.375	37.583	16.732	72605	32.268	21.778	8.403
63105	31.068	32.219	14.066	67905	26.623	32.813	14.921	72705	28.439	28.227	11.198
63205	-23.133	-36.691	-16.329	68005	+33.540	-26.468	-12.364	72805	+22.941	+34.005	+13.790
63305	14.502	39.400	17.805	68105	38.749	18.877	9.189	72905	15.925	38.729	16.005
63405	- 5.652	40.307	18.455	68205	41.967	10.443	5.564	73005	+ 7.651	42.052	17.683
63505	+ 2.956	39.478	18.287	68305	43.024	- 1.619	- 1.682	73105	- 1.522	43.689	18.683
63605	+10.899	-37.075	-17.358	68405	+41.874	+ 7.120	+ 2.244	73205	-11.154	+43.446	+18.898
63705	17.823	33.344	15.766	68505	38.599	15.301	6.000	73305	20.753	41.234	18.267
63805	23.459	28.591	13.641	68605	33.406	22.488	9.379	73405	29.801	37.083	16.776
63905	27.638	23.162	11.138	68705	26.616	28.308	12.199	73505	37.796	31.143	14.466
64005	+30.294	-17.419	- 8.424	68805	+18.639	+32.473	+14.310	73605	-44.281	+23.677	+11.433
64105	31.470	11.707	5.667	68905	9.953	34.806	15.610	73705	48.881	15.053	7.817
64205	31.304	6.339	3.021	69005	+ 1.067	35.243	16.049	73805	51.331	+ 5.710	+ 3.801
64305	30.014	- 1.563	- 0.620	69105	- 7.517	33.844	15.630	73905	51.493	- 3.865	- 0.406
64405	+27.876	+ 2.447	+ 1.436	69205	-15.331	+30.779	+14.412	74005	-49.365	-13.172	- 4.583

BARYCENTRE S₄

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HELIOCENTRIC EQUATORIAL CO-ORDINATES IN UNITS OF THE SEVENTH DECIMAL

J.D.	x	y	z	J.D.	x	y	z	J.D.	x	y	z
243				243				243			
7400.5	-49.365	-13.172	-4.583	7880.5	+17.426	-33.678	-14.490	8360.5	+22.172	+6.323	+1.850
7410.5	45.082	21.733	8.512	7890.5	25.462	30.827	13.555	8370.5	21.648	10.864	3.605
7420.5	38.901	29.119	11.989	7900.5	32.900	26.255	11.859	8380.5	19.916	15.502	5.478
7430.5	31.185	34.980	14.840	7910.5	39.285	20.105	9.441	8390.5	16.902	19.933	7.348
7440.5	-22.374	-39.062	-16.933	7920.5	+44.202	-12.623	-6.389	8400.5	+12.620	+23.834	+9.076
7450.5	12.958	41.220	18.180	7930.5	47.306	-4.144	-2.832	8410.5	7.182	26.886	10.523
7460.5	-3.443	41.422	18.544	7940.5	48.345	+4.923	+1.064	8420.5	+0.795	28.797	11.552
7470.5	+5.676	39.749	18.039	7950.5	47.179	14.122	5.104	8430.5	-6.243	29.329	12.046
7480.5	+13.947	-36.383	-16.729	7960.5	+43.793	+22.972	+9.078	8440.5	-13.565	+28.315	+11.911
7490.5	20.985	31.598	14.720	7970.5	38.301	31.001	12.771	8450.5	20.749	25.683	11.092
7500.5	26.496	25.732	12.156	7980.5	30.942	37.771	15.979	8460.5	27.350	21.461	9.578
7510.5	30.286	19.173	9.207	7990.5	22.073	42.913	18.521	8470.5	32.929	15.790	7.403
7520.5	+32.277	-12.329	-6.057	8000.5	+12.142	+46.144	+20.251	8480.5	-37.088	+8.912	+4.652
7530.5	32.504	-5.599	-2.895	8010.5	+1.667	47.299	21.074	8490.5	39.500	+1.165	+1.452
7540.5	31.111	+0.649	+0.099	8020.5	-8.802	46.332	20.943	8500.5	39.936	-7.044	-2.032
7550.5	28.336	6.105	2.770	8030.5	18.720	43.328	19.873	8510.5	38.286	15.260	5.607
7560.5	+24.492	+10.538	+4.991	8040.5	-27.584	+38.494	+17.937	8520.5	-34.568	-23.015	-9.069
7570.5	19.935	13.808	6.677	8050.5	34.965	32.140	15.256	8530.5	28.930	29.859	12.213
7580.5	15.040	15.872	7.787	8060.5	40.542	24.659	11.995	8540.5	21.640	35.393	14.851
7590.5	10.165	16.779	8.325	8070.5	44.112	16.493	8.349	8550.5	13.069	39.287	16.821
7600.5	+5.626	+16.663	+8.335	8080.5	-45.606	+8.105	+4.526	8560.5	-3.664	-41.312	-17.999
7610.5	+1.671	15.722	7.898	8090.5	45.083	-0.057	+0.735	8570.5	+6.075	41.344	18.309
7620.5	-1.532	14.196	7.120	8100.5	42.721	7.589	-2.828	8580.5	15.632	39.375	17.723
7630.5	3.907	12.340	6.119	8110.5	38.792	14.154	5.993	8590.5	24.505	35.511	16.265
7640.5	-5.463	+10.403	+5.018	8120.5	-33.648	-19.499	-8.629	8600.5	+32.229	-29.961	-14.008
7650.5	6.289	8.602	3.931	8130.5	27.681	23.470	10.643	8610.5	38.413	23.030	11.073
7660.5	6.537	7.106	2.955	8140.5	21.303	26.011	11.989	8620.5	42.755	15.094	7.615
7670.5	6.402	6.025	2.162	8150.5	14.911	27.161	12.666	8630.5	45.060	-6.582	-3.821
7680.5	-6.100	+5.405	+1.594	8160.5	-8.866	-27.049	-12.718	8640.5	+45.255	+2.054	+0.106
7690.5	5.851	5.221	1.265	8170.5	-3.467	25.875	12.223	8650.5	43.387	10.365	3.961
7700.5	5.852	5.387	1.154	8180.5	+1.066	23.893	11.291	8660.5	39.624	17.933	7.542
7710.5	6.259	5.766	1.217	8190.5	4.602	21.389	10.052	8670.5	34.239	24.398	10.672
7720.5	-7.175	+6.179	+1.381	8200.5	+7.108	-18.652	-8.645	8680.5	+27.592	+29.480	+13.205
7730.5	8.634	6.421	1.562	8210.5	8.643	15.958	7.204	8690.5	20.103	32.999	15.037
7740.5	10.596	6.287	1.662	8220.5	9.347	13.537	5.854	8700.5	12.220	34.881	16.113
7750.5	12.944	5.584	1.588	8230.5	9.430	11.560	4.693	8710.5	+4.389	35.158	16.427
7760.5	-15.491	+4.159	+1.255	8240.5	+9.140	-10.121	-3.784	8720.5	-2.985	+33.966	+16.022
7770.5	17.992	+1.913	+0.598	8250.5	8.740	9.234	3.160	8730.5	9.558	31.521	14.984
7780.5	20.162	-1.178	-0.417	8260.5	8.479	8.831	2.810	8740.5	15.073	28.101	13.433
7790.5	21.698	5.059	1.791	8270.5	8.561	8.774	2.690	8750.5	19.372	24.022	11.511
7800.5	-22.313	-9.584	-3.487	8280.5	+9.126	-8.872	-2.725	8760.5	-22.397	+19.604	+9.371
7810.5	21.757	14.530	5.426	8290.5	10.234	8.906	2.821	8770.5	24.189	15.151	7.161
7820.5	19.852	19.603	7.498	8300.5	11.858	8.651	2.876	8780.5	24.872	10.928	5.019
7830.5	16.509	24.462	9.563	8310.5	13.884	7.905	2.789	8790.5	24.638	7.144	3.057
7840.5	-11.746	-28.744	-11.467	8320.5	+16.130	-6.510	-2.475	8800.5	-23.721	+3.937	+1.363
7850.5	-5.690	32.092	13.050	8330.5	18.354	4.370	1.869	8810.5	22.382	+1.373	-0.013
7860.5	+1.423	34.188	14.162	8340.5	20.286	-1.466	-0.940	8820.5	20.877	-0.555	1.055
7870.5	9.263	34.774	14.674	8350.5	21.645	+2.144	+0.312	8830.5	19.440	1.923	1.780
7880.5	+17.426	-33.678	-14.490	8360.5	+22.172	+6.323	+1.850	8840.5	-18.258	-2.862	-2.236

BARYCENTRE S₄

HELIOCENTRIC EQUATORIAL CO-ORDINATES IN UNITS OF THE SEVENTH DECIMAL

J.D.	x	y	z	J.D.	x	y	z	J.D.	x	y	z
243				243				243/4			
88405	-18.258	- 2.862	- 2.236	93205	+26.403	-12.307	- 5.998	98005	+27.121	+32.017	+13.892
88505	17.461	3.548	2.495	93305	27.185	6.980	3.405	98105	18.533	35.239	15.596
88605	17.108	4.178	2.647	93405	26.660	- 2.005	- 0.928	98205	9.607	36.576	16.449
88705	17.177	4.954	2.787	93505	25.044	+ 2.368	+ 1.300	98305	+ 0.848	36.066	16.443
88805	-17.573	- 6.058	- 3.011	93605	+22.609	+ 5.963	+ 3.179	98405	- 7.275	+33.859	+15.627
88905	18.129	7.633	3.402	93705	19.660	8.689	4.644	98505	14.360	30.202	14.098
89005	18.625	9.760	4.018	93805	16.509	10.544	5.673	98605	20.093	25.421	11.993
89105	18.811	12.452	4.888	93905	13.437	11.608	6.282	98705	24.275	19.887	9.477
89205	-18.428	-15.635	- 6.008	94005	+10.676	+12.027	+ 6.525	98805	-26.819	+13.993	+ 6.729
89305	17.240	19.161	7.333	94105	8.387	11.995	6.482	98905	27.754	8.117	3.932
89405	15.063	22.808	8.784	94205	6.647	11.732	6.250	99005	27.213	+ 2.602	+ 1.252
89505	11.784	26.298	10.254	94305	5.452	11.452	5.933	99105	25.416	- 2.269	- 1.163
89605	- 7.389	-29.327	-11.612	94405	+ 4.717	+11.349	+ 5.631	99205	-22.643	- 6.287	- 3.198
89705	- 1.960	31.582	12.723	94505	4.295	11.569	5.427	99305	19.216	9.330	4.778
89805	+ 4.318	32.779	13.452	94605	3.990	12.200	5.383	99405	15.467	11.357	5.864
89905	11.168	32.683	13.682	94705	3.586	13.262	5.532	99505	11.712	12.415	6.459
90005	+18.239	-31.133	-13.323	94805	+ 2.864	+14.707	+ 5.877	99605	- 8.231	-12.623	- 6.604
90105	25.132	28.059	12.321	94905	+ 1.626	16.423	6.390	99705	5.246	12.159	6.370
90205	31.425	23.491	10.664	95005	- 0.285	18.237	7.015	99805	2.906	11.243	5.853
90305	36.705	17.562	8.387	95105	2.965	19.936	7.669	99905	1.274	10.113	5.166
90405	+40.595	-10.501	- 5.567	95205	- 6.441	+21.279	+ 8.255	00005	- 0.331	- 9.006	- 4.423
90505	42.785	- 2.624	- 2.323	95305	10.658	22.017	8.665	00105	+ 0.026	8.131	3.736
90605	43.051	+ 5.683	+ 1.188	95405	15.479	21.915	8.790	00205	- 0.032	7.646	3.194
90705	41.275	13.989	4.788	95505	20.690	20.773	8.528	00305	0.284	7.648	2.866
90805	+37.461	+21.841	+ 8.280	95605	-26.006	+18.448	+ 7.801	00405	- 0.480	- 8.155	- 2.784
90905	31.736	28.791	11.462	95705	31.087	14.869	6.554	00505	- 0.377	9.104	2.944
91005	24.347	34.431	14.146	95805	35.568	10.055	4.770	00605	+ 0.239	10.358	3.305
91105	15.655	38.417	16.162	95905	39.076	+ 4.117	+ 2.474	00705	1.525	11.715	3.794
91205	+ 6.110	+40.495	+17.379	96005	-41.271	- 2.735	- 0.267	00805	+ 3.559	-12.934	- 4.314
91305	- 3.772	40.523	17.711	96105	41.865	10.206	3.344	00905	6.330	13.755	4.751
91405	13.445	38.481	17.124	96205	40.659	17.931	6.613	01005	9.731	13.928	4.989
91505	22.369	34.480	15.643	96305	37.558	25.499	9.903	01105	13.569	13.241	4.924
91605	-30.049	+28.752	+13.348	96405	-32.586	-32.480	-13.028	01205	+17.577	-11.540	- 4.470
91705	36.068	21.634	10.370	96505	25.889	38.456	15.799	01305	21.437	8.747	3.570
91805	40.115	13.547	6.886	96605	17.729	43.055	18.042	01405	24.804	4.877	2.207
91905	42.009	+ 4.961	+ 3.097	96705	- 8.468	45.970	19.606	01505	27.334	- 0.030	- 0.401
92005	-41.702	- 3.633	- 0.776	96805	+ 1.453	-46.990	-20.375	01605	+28.712	+ 5.599	+ 1.788
92105	39.286	11.761	4.517	96905	11.543	46.005	20.279	01705	28.680	11.741	4.261
92205	34.972	18.994	7.921	97005	21.290	43.020	19.295	01805	27.057	18.063	6.888
92305	29.079	24.978	10.812	97105	30.193	38.153	17.451	01905	23.755	24.187	9.513
92405	-22.004	-29.448	-13.051	97205	+37.791	-31.631	-14.826	02005	+18.799	+29.718	+11.968
92505	14.194	32.243	14.545	97305	43.693	23.772	11.545	02105	12.321	34.267	14.080
92605	- 6.115	33.311	15.249	97405	47.597	14.974	7.770	02205	+ 4.567	37.481	15.684
92705	+ 1.776	32.705	15.166	97505	49.313	- 5.686	- 3.693	02305	- 4.115	39.068	16.637
92805	+ 9.063	-30.576	-14.347	97605	+48.776	+ 3.613	+ 0.473	02405	-13.297	+38.821	+16.829
92905	15.391	27.157	12.883	97705	46.045	12.447	4.513	02505	22.492	36.637	16.190
93005	20.489	22.743	10.901	97805	41.309	20.370	8.216	02605	31.185	32.531	14.703
93105	24.183	17.676	8.551	97905	34.868	26.994	11.394	02705	38.869	26.639	12.401
93205	+26.403	-12.307	- 5.998	98005	+27.121	+32.017	+13.892	02805	-45.083	+19.214	+ 9.375

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HELIOCENTRIC EQUATORIAL CO-ORDINATES IN UNITS OF THE SEVENTH DECIMAL

J.D.	x	y	z	J.D.	x	y	z	J.D.	x	y	z
244				244				244			
0280.5	-45.083	+19.214	+ 9.375	0760.5	-19.022	-25.345	- 9.741	1240.5	+21.923	- 2.939	- 0.944
0290.5	49.441	10.611	5.761	0770.5	13.332	29.433	11.644	1250.5	23.784	- 0.345	- 0.114
0300.5	51.665	+ 1.265	+ 1.737	0780.5	- 6.482	32.310	13.097	1260.5	25.318	+ 2.982	+ 1.023
0310.5	51.602	- 8.341	- 2.490	0790.5	+ 1.205	33.703	13.964	1270.5	26.249	6.987	2.469
0320.5	-49.237	-17.706	- 6.698	0800.5	+ 9.332	-33.423	-14.144	1280.5	+26.318	+11.534	+ 4.187
0330.5	44.689	26.346	10.667	0810.5	17.449	31.379	13.573	1290.5	25.305	16.417	6.107
0340.5	38.204	33.824	14.191	0820.5	25.083	27.588	12.234	1300.5	23.054	21.370	8.133
0350.5	30.137	39.777	17.091	0830.5	31.771	22.176	10.158	1310.5	19.486	26.088	10.140
0360.5	-20.922	-43.940	-19.229	0840.5	+37.089	-15.372	- 7.424	1320.5	+14.613	+30.245	+11.991
0370.5	11.047	46.151	20.511	0850.5	40.677	- 7.501	4.156	1330.5	8.546	33.516	13.544
0380.5	- 1.024	46.367	20.892	0860.5	42.269	+ 1.041	- 0.516	1340.5	+ 1.491	35.604	14.661
0390.5	+ 8.649	44.653	20.382	0870.5	41.705	9.803	+ 3.306	1350.5	- 6.255	36.262	15.220
0400.5	+17.508	-41.181	-19.037	0880.5	+38.951	+18.308	+ 7.102	1360.5	-14.320	+35.315	+15.125
0410.5	25.156	36.212	16.960	0890.5	34.102	26.084	10.658	1370.5	22.280	32.681	14.317
0420.5	31.281	30.081	14.290	0900.5	27.378	32.686	13.767	1380.5	29.679	28.379	12.780
0430.5	35.673	23.170	11.195	0910.5	19.120	37.738	16.246	1390.5	36.070	22.542	10.545
0440.5	+38.235	-15.888	- 7.859	0920.5	+ 9.762	+40.946	+17.946	1400.5	-41.039	+15.404	+ 7.693
0450.5	38.985	8.637	4.471	0930.5	- 0.189	42.128	18.763	1410.5	44.243	+ 7.300	4.350
0460.5	38.049	- 1.793	- 1.213	0940.5	10.187	41.227	18.645	1420.5	45.436	- 1.362	+ 0.680
0470.5	35.650	+ 4.324	+ 1.754	0950.5	19.689	38.310	17.602	1430.5	44.487	10.126	- 3.125
0480.5	+32.085	+ 9.469	+ 4.298	0960.5	-28.186	+33.570	+15.696	1440.5	-41.398	-18.516	- 6.857
0490.5	27.706	13.486	6.328	0970.5	35.244	27.305	13.046	1450.5	36.299	26.074	10.308
0500.5	22.880	16.316	7.794	0980.5	40.528	19.898	9.811	1460.5	29.444	32.382	13.284
0510.5	17.964	17.992	8.692	0990.5	43.825	11.788	6.181	1470.5	21.191	37.099	15.617
0520.5	+13.278	+18.632	+ 9.059	1000.5	-45.051	+ 3.436	+ 2.367	1480.5	-11.982	-39.974	-17.174
0530.5	9.076	18.421	8.970	1010.5	44.252	- 4.709	- 1.425	1490.5	- 2.312	40.866	17.871
0540.5	5.533	17.584	8.523	1020.5	41.593	12.237	4.995	1500.5	+ 7.301	39.747	17.672
0550.5	2.737	16.370	7.832	1030.5	37.341	18.801	8.172	1510.5	16.350	36.703	16.592
0560.5	+ 0.689	+15.019	+ 7.017	1040.5	-31.839	-24.139	-10.817	1520.5	+24.363	-31.930	-14.697
0570.5	- 0.689	13.744	6.187	1050.5	25.477	28.086	12.833	1530.5	30.935	25.716	12.099
0580.5	1.538	12.713	5.440	1060.5	18.668	30.571	14.169	1540.5	35.749	18.426	8.949
0590.5	2.043	12.034	4.844	1070.5	11.814	31.626	14.820	1550.5	38.596	10.480	5.429
0600.5	- 2.413	+11.753	+ 4.445	1080.5	- 5.285	-31.369	-14.822	1560.5	+39.382	- 2.324	- 1.737
0610.5	2.860	11.847	4.254	1090.5	+ 0.610	29.991	14.251	1570.5	38.138	+ 5.593	+ 1.920
0620.5	3.573	12.231	4.254	1100.5	5.639	27.741	13.214	1580.5	35.013	12.851	5.343
0630.5	4.707	12.770	4.398	1110.5	9.656	24.903	11.838	1590.5	30.266	19.085	8.352
0640.5	- 6.358	+13.283	+ 4.618	1120.5	+12.614	-21.768	-10.261	1600.5	+24.241	+24.008	+10.796
0650.5	8.558	13.570	4.827	1130.5	14.557	18.614	8.621	1610.5	17.350	27.429	12.570
0660.5	11.265	13.423	4.930	1140.5	15.614	15.680	7.044	1620.5	10.035	29.261	13.610
0670.5	14.360	12.649	4.833	1150.5	15.981	13.145	5.630	1630.5	+ 2.735	29.528	13.908
0680.5	-17.653	+11.093	+ 4.451	1160.5	+15.901	-11.117	- 4.452	1640.5	- 4.140	+28.352	+13.501
0690.5	20.895	8.652	3.719	1170.5	15.630	9.620	3.544	1650.5	10.245	25.941	12.469
0700.5	23.796	5.299	2.599	1180.5	15.417	8.600	2.903	1660.5	15.317	22.567	10.931
0710.5	26.046	+ 1.087	+ 1.089	1190.5	15.469	7.929	2.490	1670.5	19.188	18.541	9.024
0720.5	-27.348	- 3.844	- 0.773	1200.5	+15.930	- 7.429	- 2.237	1680.5	-21.795	+14.182	+ 6.899
0730.5	27.442	9.269	2.911	1210.5	16.866	6.886	2.053	1690.5	23.169	9.796	4.708
0740.5	26.137	14.895	5.215	1220.5	18.259	6.083	1.839	1700.5	23.430	5.651	2.588
0750.5	23.329	20.377	7.544	1230.5	20.004	4.819	1.498	1710.5	22.764	+ 1.960	+ 0.654
0760.5	-19.022	-25.345	- 9.741	1240.5	+21.923	- 2.939	- 0.944	1720.5	-21.406	- 1.131	- 1.005

BARYCENTRE S₄

HELIOCENTRIC EQUATORIAL CO-ORDINATES IN UNITS OF THE SEVENTH DECIMAL

J.D.	x	y	z	J.D.	x	y	z	J.D.	x	y	z
244				244				244			
1720.5	-21.406	- 1.131	- 1.005	2200.5	+ 1.104	-31.422	-14.542	2680.5	+50.935	+ 8.692	+ 2.770
1730.5	19.615	3.550	2.334	2210.5	7.654	28.735	13.423	2690.5	47.813	17.737	6.916
1740.5	17.649	5.298	3.314	2220.5	13.061	25.005	11.764	2700.5	42.647	25.864	10.724
1750.5	15.748	6.443	3.959	2230.5	17.136	20.560	9.711	2710.5	35.733	32.677	13.999
1760.5	-14.108	- 7.113	- 4.314	2240.5	+19.796	-15.752	- 7.427	2720.5	+27.464	+37.863	+16.584
1770.5	12.867	7.480	4.448	2250.5	21.061	10.920	5.074	2730.5	18.306	41.210	18.361
1780.5	12.092	7.742	4.451	2260.5	21.050	6.375	2.806	2740.5	+ 8.766	42.623	19.264
1790.5	11.776	8.100	4.418	2270.5	19.966	- 2.372	- 0.758	2750.5	- 0.646	42.128	19.282
1800.5	-11.831	- 8.741	- 4.446	2280.5	+18.071	+ 0.909	+ 0.967	2760.5	- 9.450	+39.863	+18.459
1810.5	12.103	9.815	4.619	2290.5	15.667	3.369	2.302	2770.5	17.229	36.071	16.887
1820.5	12.379	11.412	4.999	2300.5	13.057	4.998	3.220	2780.5	23.657	31.070	14.700
1830.5	12.413	13.554	5.622	2310.5	10.525	5.871	3.736	2790.5	28.513	25.233	12.062
1840.5	-11.950	-16.181	- 6.485	2320.5	+ 8.306	+ 6.129	+ 3.900	2800.5	-31.696	+18.952	+ 9.154
1850.5	10.752	19.154	7.551	2330.5	6.560	5.963	3.790	2810.5	33.219	12.614	6.158
1860.5	8.632	22.262	8.746	2340.5	5.373	5.593	3.503	2820.5	33.200	6.570	3.247
1870.5	5.472	25.237	9.966	2350.5	4.741	5.234	3.142	2830.5	31.848	+ 1.115	+ 0.573
1880.5	- 1.246	-27.780	-11.086	2360.5	+ 4.585	+ 5.084	+ 2.808	2840.5	-29.436	- 3.531	- 1.746
1890.5	+ 3.971	29.583	11.972	2370.5	4.756	5.294	2.588	2850.5	26.279	7.228	3.625
1900.5	10.005	30.361	12.491	2380.5	5.060	5.958	2.544	2860.5	22.708	9.926	5.021
1910.5	16.587	29.880	12.526	2390.5	5.277	7.103	2.713	2870.5	19.042	11.657	5.930
1920.5	+23.373	-27.974	-11.985	2400.5	+ 5.181	+ 8.686	+ 3.101	2880.5	-15.564	-12.526	- 6.385
1930.5	29.970	24.569	10.814	2410.5	4.568	10.599	3.681	2890.5	12.504	12.702	6.454
1940.5	35.959	19.689	8.999	2420.5	3.272	12.674	4.400	2900.5	10.018	12.395	6.228
1950.5	40.926	13.460	6.571	2430.5	+ 1.186	14.698	5.178	2910.5	8.182	11.841	5.816
1960.5	+44.494	- 6.107	- 3.606	2440.5	- 1.727	+16.430	+ 5.916	2920.5	- 6.986	-11.272	- 5.331
1970.5	46.345	+ 2.057	- 0.221	2450.5	5.426	17.618	6.507	2930.5	6.336	10.894	4.882
1980.5	46.250	10.650	+ 3.430	2460.5	9.785	18.022	6.839	2940.5	6.072	10.873	4.563
1990.5	44.087	19.239	7.167	2470.5	14.599	17.435	6.810	2950.5	5.977	11.305	4.439
2000.5	+39.848	+27.369	+10.792	2480.5	-19.593	+15.703	+ 6.335	2960.5	- 5.808	-12.215	- 4.548
2010.5	33.654	34.588	14.104	2490.5	24.434	12.744	5.358	2970.5	5.322	13.545	4.886
2020.5	25.746	40.479	16.909	2500.5	28.761	8.563	3.855	2980.5	4.302	15.162	5.416
2030.5	16.481	44.688	19.036	2510.5	32.203	+ 3.260	+ 1.844	2990.5	2.588	16.868	6.067
2040.5	+ 6.307	+46.948	+20.346	2520.5	-34.414	- 2.971	- 0.612	3000.5	- 0.097	-18.421	- 6.741
2050.5	- 4.258	47.104	20.748	2530.5	35.104	9.846	3.412	3010.5	+ 3.167	19.559	7.325
2060.5	14.663	45.125	20.203	2540.5	34.063	17.010	6.416	3020.5	7.103	20.029	7.702
2070.5	24.357	41.107	18.729	2550.5	31.185	24.060	9.457	3030.5	11.523	19.608	7.764
2080.5	-32.832	+35.271	+16.402	2560.5	-26.482	-30.571	-12.352	3040.5	+16.161	-18.136	- 7.422
2090.5	39.652	27.947	13.349	2570.5	20.088	36.127	14.914	3050.5	20.699	15.523	6.615
2100.5	44.489	19.552	9.743	2580.5	12.252	40.353	16.969	3060.5	24.788	11.772	5.321
2110.5	47.140	10.558	5.787	2590.5	- 3.327	42.941	18.365	3070.5	28.076	6.975	3.553
2120.5	-47.538	+ 1.458	+ 1.700	2600.5	+ 6.256	-43.671	-18.983	3080.5	+30.240	- 1.313	- 1.370
2130.5	45.753	- 7.262	- 2.296	2610.5	16.010	42.428	18.752	3090.5	31.007	+ 4.949	+ 1.135
2140.5	41.983	15.165	5.992	2620.5	25.428	39.208	17.644	3100.5	30.181	11.483	3.833
2150.5	36.532	21.878	9.205	2630.5	34.009	34.122	15.687	3110.5	27.658	17.914	6.573
2160.5	-29.789	-27.121	-11.791	2640.5	+41.289	-27.390	-12.954	3120.5	+23.443	+23.845	+ 9.184
2170.5	22.194	30.715	13.646	2650.5	46.873	19.324	9.566	3130.5	17.653	28.883	11.492
2180.5	14.214	32.589	14.718	2660.5	50.453	10.318	5.686	3140.5	10.517	32.667	13.331
2190.5	- 6.306	32.780	15.003	2670.5	51.832	- 0.820	- 1.503	3150.5	+ 2.365	34.892	14.553
2200.5	+ 1.104	-31.422	-14.542	2680.5	+50.935	+ 8.692	+ 2.770	3160.5	- 6.384	+35.337	+15.041

BARYCENTRE S₄

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HELIOCENTRIC EQUATORIAL CO-ORDINATES IN UNITS OF THE SEVENTH DECIMAL

J.D.	x	y	z	J.D.	x	y	z	J.D.	x	y	z
244				244				244			
31605	- 6.384	+35.337	+15.041	36405	-32.766	- 6.784	- 2.034	41205	+13.035	- 1.734	+ 0.462
31705	15.253	33.882	14.720	36505	32.665	12.604	4.355	41305	13.374	1.517	0.523
31805	23.730	30.525	13.563	36605	31.138	18.635	6.845	41405	14.218	1.102	0.584
31905	31.309	25.385	11.598	36705	28.076	24.534	9.365	41505	15.475	- 0.280	0.745
32005	-37.524	+18.696	+ 8.905	36805	-23.469	-29.927	-11.757	41605	+16.976	+ 1.116	+ 1.096
32105	41.982	10.798	5.614	36905	17.425	34.445	13.856	41705	18.495	3.195	1.705
32205	44.392	+ 2.113	+ 1.898	37005	10.158	37.747	15.504	41805	19.766	5.991	2.610
32305	44.587	- 6.885	- 2.041	37105	- 1.984	39.551	16.563	41905	20.511	9.462	3.817
32405	-42.537	-15.699	- 5.987	37205	+ 6.704	-39.653	-16.923	42005	+20.468	+13.484	+ 5.296
32505	38.347	23.848	9.718	37305	15.455	37.948	16.516	42105	19.410	17.863	6.982
32605	32.250	30.894	13.030	37405	23.793	34.440	15.318	42205	17.170	22.341	8.782
32705	24.586	36.470	15.744	37505	31.250	29.239	13.354	42305	13.661	26.619	10.577
32805	-15.781	-40.305	-17.717	37605	+37.388	-22.564	-10.697	42405	+ 8.880	+30.374	+12.232
32905	- 6.317	42.230	18.853	37705	41.836	14.725	7.466	42505	+ 2.928	33.281	13.604
33005	+ 3.300	42.194	19.106	37805	44.308	- 6.113	- 3.817	42605	- 4.003	35.041	14.555
33105	12.572	40.254	18.480	37905	44.627	+ 2.828	+ 0.063	42705	11.625	35.400	14.962
33205	+21.035	-36.577	-17.029	38005	+42.739	+11.622	+ 3.965	42805	-19.574	+34.177	+14.726
33305	28.289	31.418	14.854	38105	38.716	19.793	7.677	42905	27.430	31.279	13.785
33405	34.016	25.108	12.091	38205	32.761	26.892	10.990	43005	34.742	26.716	12.117
33505	38.003	18.028	8.906	38305	25.193	32.530	13.716	43105	41.058	20.607	9.750
33605	+40.144	-10.586	- 5.485	38405	+16.432	+36.402	+15.700	43205	-45.959	+13.181	+ 6.761
33705	40.452	- 3.189	- 2.017	38505	+ 6.972	38.309	16.831	43305	49.094	+ 4.762	+ 3.270
33805	39.048	+ 3.784	+ 1.315	38605	- 2.649	38.173	17.051	43405	50.203	- 4.247	- 0.561
33905	36.152	10.006	4.346	38705	11.891	36.044	16.359	43505	49.145	13.390	4.539
34005	+32.062	+15.223	+ 6.942	38805	-20.245	+32.096	+14.812	43605	-45.904	-22.190	- 8.459
34105	27.127	19.273	9.005	38905	27.270	26.610	12.516	43705	40.599	30.181	12.110
34205	21.724	22.085	10.485	39005	32.622	19.955	9.626	43805	33.471	36.938	15.294
34305	16.216	23.688	11.371	39105	36.077	12.558	6.327	43905	24.870	42.107	17.836
34405	+10.932	+24.194	+11.700	39205	-37.536	+ 4.870	+ 2.823	44005	-15.232	-45.422	-19.602
34505	6.138	23.784	11.542	39305	37.033	- 2.661	- 0.680	44105	- 5.049	46.728	20.497
34605	+ 2.022	22.685	10.995	39405	34.721	9.628	3.985	44205	+ 5.159	45.980	20.479
34705	- 1.316	21.147	10.176	39505	30.852	15.683	6.920	44305	14.878	43.250	19.557
34805	- 3.864	+19.417	+ 9.203	39605	-25.762	-20.563	- 9.346	44405	+23.628	-38.718	-17.790
34905	5.689	17.715	8.191	39705	19.833	24.094	11.164	44505	30.993	32.660	15.283
35005	6.927	16.217	7.238	39805	13.475	26.206	12.321	44605	36.638	25.433	12.183
35105	7.756	15.043	6.421	39905	7.086	26.922	12.808	44705	40.337	17.449	8.667
35205	- 8.384	+14.247	+ 5.787	40005	- 1.034	-26.358	-12.661	44805	+41.979	- 9.152	- 4.933
35305	9.021	13.816	5.353	40105	+ 4.369	24.702	11.954	44905	41.574	- 0.990	- 1.185
35405	9.862	13.677	5.106	40205	8.888	22.202	10.792	45005	39.253	+ 6.614	+ 2.376
35505	11.063	13.699	5.005	40305	12.376	19.143	9.303	45105	35.256	13.287	5.566
35605	-12.730	+13.712	+ 4.984	40405	+14.782	-15.817	- 7.626	45205	+29.914	+18.731	+ 8.234
35705	14.899	13.517	4.960	40505	16.148	12.507	5.900	45305	23.624	22.742	10.265
35805	17.537	12.909	4.839	40605	16.602	9.458	4.252	45405	16.819	25.221	11.591
35905	20.533	11.697	4.528	40705	16.343	6.856	2.788	45505	9.934	26.174	12.197
36005	-23.704	+ 9.722	+ 3.941	40805	+15.616	- 4.815	- 1.581	45605	+ 3.377	+25.711	+12.112
36105	26.807	6.879	3.013	40905	14.686	3.366	0.671	45705	- 2.505	24.027	11.411
36205	29.555	+ 3.134	1.704	41005	13.810	2.461	- 0.057	45805	7.445	21.380	10.206
36305	31.642	- 1.465	+ 0.011	41105	13.207	1.978	+ 0.298	45905	11.270	18.073	8.629
36405	-32.766	- 6.784	- 2.034	41205	+13.035	- 1.734	+ 0.462	46005	-13.908	+14.417	+ 6.830

JUPITER

Julian Date	Heliocentric		Radius Vector r	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Jupiter only		
	Longitude l	Latitude b			x	y	z	X	Y	Z
243	°	°		0.00						
6920.5	253.7201	+0.5781	5.31842	664740	-1.49084	-4.70479	-1.98192	+ 2.8000	+ 8.8361	+ 3.7223
6930.5	254.5147	.5618	.31521	665947	1.41904	4.71986	1.99014	2.6700	8.8805	3.7445
6940.5	255.3103	.5453	.31197	667166	1.34697	4.73400	1.99797	2.5390	8.9234	3.7661
6950.5	256.1069	.5288	.30870	668397	1.27463	4.74721	2.00541	2.4071	8.9648	3.7871
6960.5	256.9044	+0.5121	5.30542	669640	-1.20204	-4.75948	-2.01244	+ 2.2742	+ 9.0047	+ 3.8075
6970.5	257.7029	.4953	.30211	670895	1.12921	4.77080	2.01908	2.1404	9.0431	3.8272
6980.5	258.5024	.4783	.29878	672161	1.05615	4.78118	2.02532	2.0057	9.0798	3.8462
6990.5	259.3029	.4613	.29542	673439	0.98288	4.79060	2.03115	1.8701	9.1150	3.8647
7000.5	260.1045	+0.4441	5.29205	674727	-0.90942	-4.79907	-2.03658	+ 1.7337	+ 9.1486	+ 3.8824
7010.5	260.9071	.4269	.28866	676027	0.83578	4.80658	2.04161	1.5963	9.1806	3.8995
7020.5	261.7107	.4095	.28525	677337	0.76197	4.81313	2.04622	1.4582	9.2109	3.9159
7030.5	262.5153	.3920	.28181	678658	0.68800	4.81871	2.05042	1.3192	9.2396	3.9316
7040.5	263.3210	+0.3745	5.27836	679990	-0.61390	-4.82332	-2.05421	+ 1.1794	+ 9.2666	+ 3.9465
7050.5	264.1277	.3568	.27490	681332	0.53967	4.82697	2.05759	1.0389	9.2918	3.9608
7060.5	264.9355	.3391	.27141	682683	0.46534	4.82963	2.06055	0.8975	9.3154	3.9744
7070.5	265.7444	.3212	.26791	684045	0.39091	4.83133	2.06310	0.7555	9.3373	3.9873
7080.5	266.5543	+0.3033	5.26440	685416	-0.31640	-4.83204	-2.06523	+ 0.6127	+ 9.3574	+ 3.9994
7090.5	267.3654	.2852	.26087	686797	0.24182	4.83177	2.06693	0.4692	9.3757	4.0107
7100.5	268.1775	.2671	.25732	688187	0.16720	4.83052	2.06822	0.3251	9.3922	4.0214
7110.5	268.9907	.2490	.25377	689585	0.09254	4.82829	2.06909	0.1803	9.4070	4.0312
7120.5	269.8050	+0.2307	5.25020	690993	-0.01787	-4.82507	-2.06953	+ 0.0349	+ 9.4199	+ 4.0403
7130.5	270.6204	.2124	.24661	692409	+0.05681	4.82086	2.06955	- 0.1111	9.4310	4.0486
7140.5	271.4370	.1940	.24302	693834	0.13148	4.81566	2.06915	0.2577	9.4402	4.0562
7150.5	272.2547	.1755	.23942	695266	0.20612	4.80948	2.06832	0.4049	9.4475	4.0629
7160.5	273.0735	+0.1570	5.23580	696707	+0.28072	-4.80230	-2.06706	- 0.5526	+ 9.4530	+ 4.0689
7170.5	273.8934	.1384	.23218	698154	0.35526	4.79413	2.06538	0.7008	9.4565	4.0740
7180.5	274.7144	.1198	.22855	699610	0.42973	4.78497	2.06327	0.8494	9.4581	4.0783
7190.5	275.5366	.1011	.22491	701072	0.50411	4.77483	2.06074	0.9985	9.4578	4.0818
7200.5	276.3600	+0.0823	5.22127	702541	+0.57839	-4.76368	-2.05777	- 1.1480	+ 9.4555	+ 4.0845
7210.5	277.1845	.0636	.21762	704017	0.65254	4.75155	2.05438	1.2980	9.4512	4.0863
7220.5	278.0102	.0447	.21396	705499	0.72656	4.73843	2.05056	1.4482	9.4450	4.0873
7230.5	278.8370	.0259	.21030	706986	0.80043	4.72432	2.04631	1.5988	9.4367	4.0875
7240.5	279.6650	+0.0070	5.20664	708480	+0.87413	-4.70922	-2.04164	- 1.7497	+ 9.4264	+ 4.0867
7250.5	280.4941	- 0.119	.20297	709979	0.94764	4.69313	2.03653	1.9009	9.4141	4.0851
7260.5	281.3244	.0308	.19930	711483	1.02096	4.67605	2.03100	2.0523	9.3997	4.0827
7270.5	282.1559	.0498	.19563	712992	1.09406	4.65799	2.02504	2.2039	9.3832	4.0793
7280.5	282.9886	-0.0688	5.19196	714506	+1.16693	-4.63894	-2.01865	- 2.3557	+ 9.3647	+ 4.0751
7290.5	283.8225	.0878	.18829	716023	1.23956	4.61892	2.01183	2.5076	9.3441	4.0699
7300.5	284.6575	.1068	.18462	717545	1.31192	4.59791	2.00459	2.6597	9.3214	4.0639
7310.5	285.4937	.1258	.18095	719070	1.38400	4.57593	1.99692	2.8118	9.2965	4.0570
7320.5	286.3311	-0.1448	5.17729	720599	+1.45579	-4.55297	-1.98883	- 2.9639	+ 9.2695	+ 4.0491
7330.5	287.1697	.1637	.17362	722130	1.52727	4.52904	1.98031	3.1160	9.2404	4.0403
7340.5	288.0095	.1827	.16997	723664	1.59842	4.50415	1.97137	3.2681	9.2091	4.0306
7350.5	288.8505	.2017	.16631	725201	1.66922	4.47828	1.96200	3.4201	9.1757	4.0200
7360.5	289.6927	-0.2207	5.16266	726739	+1.73967	-4.45146	-1.95222	- 3.5720	+ 9.1401	+ 4.0084
7370.5	290.5360	.2396	.15902	728279	1.80975	4.42368	1.94201	3.7238	9.1023	3.9959
7380.5	291.3806	.2585	.15539	729820	1.87944	4.39494	1.93139	3.8754	9.0623	3.9825
7390.5	292.2263	.2774	.15176	731362	1.94871	4.36525	1.92034	4.0267	9.0201	3.9681
7400.5	293.0733	-0.2962	5.14815	732905	+2.01757	-4.33462	-1.90889	- 4.1778	+ 8.9757	+ 3.9527

Julian Date	Heliocentric		Radius Vector r	$\frac{1}{r^3}$	Heliocentric Equatorial Co-ordinates			Attractions on the Sun Jupiter + Saturn		
	Longitude l	Latitude b			x	y	z	X	Y	Z
243	°	°		0.00						
6920.5	278.8916	+0.6153	10.06306	0.98132	+1.55531	-9.16375	-3.85641	+ 2.6710	+ 9.5960	+4.0421
6930.5	279.1923	.6026	.06272	0.98142	1.60741	9.15496	3.85503	2.5367	9.6398	4.0642
6940.5	279.4929	.5900	.06237	0.98152	1.65946	9.14591	3.85354	2.4013	9.6820	4.0858
6950.5	279.7937	.5773	.06199	0.98163	1.71146	9.13659	3.85193	2.2651	9.7228	4.1066
6960.5	280.0944	+0.5645	10.06160	0.98174	+1.76341	-9.12700	-3.85021	+ 2.1279	+ 9.7619	+4.1269
6970.5	280.3951	.5518	.06120	0.98186	1.81531	9.11714	3.84838	1.9898	9.7996	4.1465
6980.5	280.6959	.5391	.06078	0.98199	1.86716	9.10702	3.84643	1.8508	9.8356	4.1654
6990.5	280.9967	.5263	.06034	0.98212	1.91895	9.09664	3.84438	1.7109	9.8700	4.1837
7000.5	281.2975	+0.5135	10.05988	0.98225	+1.97069	-9.08598	-3.84221	+ 1.5701	+ 9.9028	+4.2013
7010.5	281.5984	.5007	.05941	0.98239	2.02237	9.07506	3.83992	1.4284	9.9340	4.2183
7020.5	281.8993	.4879	.05892	0.98253	2.07399	9.06388	3.83753	1.2860	9.9635	4.2345
7030.5	282.2002	.4751	.05842	0.98268	2.12555	9.05243	3.83502	1.1427	9.9913	4.2500
7040.5	282.5011	+0.4622	10.05790	0.98283	+2.17704	-9.04071	-3.83240	+ 0.9986	+10.0174	+4.2649
7050.5	282.8021	.4494	.05736	0.98299	2.22848	9.02873	3.82967	0.8537	10.0419	4.2790
7060.5	283.1031	.4365	.05681	0.98315	2.27985	9.01649	3.82683	0.7081	10.0646	4.2924
7070.5	283.4041	.4236	.05624	0.98332	2.33115	9.00398	3.82387	0.5618	10.0855	4.3050
7080.5	283.7052	+0.4107	10.05565	0.98349	+2.38238	-8.99121	-3.82080	+ 0.4147	+10.1047	+4.3169
7090.5	284.0063	.3978	.05505	0.98367	2.43354	8.97817	3.81762	0.2670	10.1220	4.3281
7100.5	284.3074	.3849	.05443	0.98385	2.48463	8.96487	3.81433	+ 0.1185	10.1376	4.3385
7110.5	284.6086	.3720	.05379	0.98404	2.53565	8.95131	3.81093	- 0.0306	10.1514	4.3481
7120.5	284.9098	+0.3590	10.05314	0.98423	+2.58660	-8.93749	-3.80741	- 0.1803	+10.1633	+4.3570
7130.5	285.2110	.3461	.05247	0.98442	2.63747	8.92340	3.80379	0.3306	10.1733	4.3651
7140.5	285.5123	.3331	.05178	0.98463	2.68826	8.90905	3.80005	0.4814	10.1815	4.3724
7150.5	285.8136	.3201	.05108	0.98483	2.73897	8.89444	3.79620	0.6329	10.1878	4.3789
7160.5	286.1150	+0.3071	10.05036	0.98504	+2.78960	-8.87957	-3.79224	- 0.7848	+10.1921	+4.3845
7170.5	286.4164	.2941	.04962	0.98526	2.84015	8.86444	3.78816	0.9372	10.1946	4.3894
7180.5	286.7179	.2811	.04887	0.98548	2.89062	8.84905	3.78398	1.0902	10.1951	4.3935
7190.5	287.0194	.2681	.04810	0.98571	2.94100	8.83339	3.77969	1.2435	10.1936	4.3967
7200.5	287.3209	+0.2551	10.04732	0.98594	+2.99129	-8.81748	-3.77528	- 1.3973	+10.1902	+4.3991
7210.5	287.6225	.2420	.04652	0.98617	3.04150	8.80131	3.77076	1.5514	10.1847	4.4006
7220.5	287.9242	.2290	.04570	0.98641	3.09162	8.78488	3.76613	1.7060	10.1773	4.4013
7230.5	288.2259	.2159	.04486	0.98666	3.14165	8.76820	3.76139	1.8608	10.1678	4.4011
7240.5	288.5276	+0.2029	10.04401	0.98691	+3.19158	-8.75125	-3.75655	- 2.0159	+10.1563	+4.4000
7250.5	288.8294	.1898	.04315	0.98717	3.24142	8.73405	3.75159	2.1713	10.1427	4.3981
7260.5	289.1312	.1767	.04226	0.98743	3.29117	8.71659	3.74651	2.3269	10.1270	4.3953
7270.5	289.4331	.1636	.04136	0.98769	3.34081	8.69887	3.74133	2.4828	10.1093	4.3916
7280.5	289.7351	+0.1505	10.04045	0.98796	+3.39036	-8.68090	-3.73604	- 2.6388	+10.0895	+4.3870
7290.5	290.0371	.1374	.03951	0.98824	3.43981	8.66267	3.73064	2.7949	10.0675	4.3815
7300.5	290.3392	.1243	.03856	0.98852	3.48916	8.64418	3.72513	2.9511	10.0435	4.3751
7310.5	290.6413	.1112	.03760	0.98880	3.53841	8.62544	3.71951	3.1074	10.0173	4.3678
7320.5	290.9435	+0.0981	10.03662	0.98910	+3.58755	-8.60645	-3.71378	- 3.2638	+ 9.9889	+4.3595
7330.5	291.2457	.0850	.03562	0.98939	3.63658	8.58720	3.70794	3.4201	9.9584	4.3504
7340.5	291.5480	.0719	.03460	0.98969	3.68551	8.56770	3.70199	3.5764	9.9257	4.3403
7350.5	291.8504	.0587	.03357	0.99000	3.73433	8.54795	3.69593	3.7325	9.8908	4.3292
7360.5	292.1528	+0.0456	10.03253	0.99031	+3.78304	-8.52794	-3.68976	- 3.8886	+ 9.8538	+4.3172
7370.5	292.4553	.0324	.03146	0.99062	3.83164	8.50769	3.68349	4.0446	9.8145	4.3043
7380.5	292.7578	.0193	.03038	0.99094	3.88012	8.48718	3.67710	4.2003	9.7730	4.2904
7390.5	293.0604	+ .0062	.02929	0.99127	3.92849	8.46642	3.67061	4.3558	9.7293	4.2756
7400.5	293.3631	-0.0070	10.02818	0.99160	+3.97674	-8.44541	-3.66400	- 4.5110	+ 9.6834	+4.2598