Orbital Mechanics (2023-24)

Assignment 1: Interplanetary Explorer Mission

POLITECNICO MILANO 1863

Group ID	Departure	Flyby	Arrival	Earliest Departure	Latest Arrival
2301	Mercury	Earth	Jupiter	00:00:00 01/01/2028	00:00:00 01/01/2058
2302	Mars	Earth	Asteroid N.84	00:00:00 01/01/2028	00:00:00 01/01/2058
2303	Saturn	Earth	Venus	00:00:00 01/01/2028	00:00:00 01/01/2058
2304	Mercury	Venus	Asteroid N.81	00:00:00 01/01/2028	00:00:00 01/01/2058
2305	Mars	Earth	Asteroid N.86	00:00:00 01/01/2028	00:00:00 01/01/2058
2306	Jupiter	Mars	Earth	00:00:00 01/01/2028	00:00:00 01/01/2058
2307	Earth	Venus	Mercury	00:00:00 01/01/2028	00:00:00 01/01/2058
2308	Mars	Earth	Venus	00:00:00 01/01/2028	00:00:00 01/01/2058
2309	Saturn	Jupiter	Asteroid N.18	00:00:00 01/01/2028	00:00:00 01/01/2058
2310	Saturn	Earth	Asteroid N.65	00:00:00 01/01/2028	00:00:00 01/01/2058
2311	Saturn	Jupiter	Mars	00:00:00 01/01/2028	00:00:00 01/01/2058
2312	Saturn	Earth	Asteroid N.46	00:00:00 01/01/2028	00:00:00 01/01/2058
2313	Mercury	Venus	Asteroid N.67	00:00:00 01/01/2028	00:00:00 01/01/2058
2314	Mars	Earth	Asteroid N.35	00:00:00 01/01/2028	00:00:00 01/01/2058
2315	Jupiter	Mars	Asteroid N.29	00:00:00 01/01/2028	00:00:00 01/01/2058
2316	Saturn	Jupiter	Asteroid N.19	00:00:00 01/01/2028	00:00:00 01/01/2058
2317	Mercury	Earth	Asteroid N.18	00:00:00 01/01/2028	00:00:00 01/01/2058
2318	Venus	Jupiter	Saturn	00:00:00 01/01/2028	00:00:00 01/01/2058
2319	Mars	Earth	Asteroid N.65	00:00:00 01/01/2028	00:00:00 01/01/2058
2320	Jupiter	Mars	Asteroid N.84	00:00:00 01/01/2028	00:00:00 01/01/2058
2321	Venus	Earth	Asteroid N.49	00:00:00 01/01/2028	00:00:00 01/01/2058
2322	Uranus	Jupiter	Earth	00:00:00 01/01/2028	00:00:00 01/01/2058
2323	Saturn	Jupiter	Asteroid N.68	00:00:00 01/01/2028	00:00:00 01/01/2058
2324	Saturn	Mars	Venus	00:00:00 01/01/2028	00:00:00 01/01/2058
2325	Venus	Earth	Mars	00:00:00 01/01/2028	00:00:00 01/01/2058
2326	Mercury	Earth	Mars	00:00:00 01/01/2028	00:00:00 01/01/2058
2327	Mercury	Venus	Asteroid N.31	00:00:00 01/01/2028	00:00:00 01/01/2058
2328	Jupiter	Mars	Asteroid N.88	00:00:00 01/01/2028	00:00:00 01/01/2058
2329	Jupiter	Mars	Asteroid N.32	00:00:00 01/01/2028	00:00:00 01/01/2058
2330	Mars	Earth	Mercury	00:00:00 01/01/2028	00:00:00 01/01/2058
2331	Mercury	Venus	Asteroid N.48	00:00:00 01/01/2028	00:00:00 01/01/2058
2332	Jupiter	Mars	Asteroid N.59	00:00:00 01/01/2028	00:00:00 01/01/2058
2333	Jupiter	Mars	Asteroid N.82	00:00:00 01/01/2028	00:00:00 01/01/2058
2334	Mars	Venus	Mercury	00:00:00 01/01/2028	00:00:00 01/01/2058
2335	Venus	Earth	Asteroid N.31	00:00:00 01/01/2028	00:00:00 01/01/2058
2336	Saturn	Jupiter	Mars	00:00:00 01/01/2028	00:00:00 01/01/2058
2337	Mercury	Earth	Asteroid N.21	00:00:00 01/01/2028	00:00:00 01/01/2058
2338	Mercury	Venus	Asteroid N.42	00:00:00 01/01/2028	00:00:00 01/01/2058
2339	Mercury	Venus	Asteroid N.45	00:00:00 01/01/2028	00:00:00 01/01/2058
2340	Mars	Jupiter	Saturn	00:00:00 01/01/2028	00:00:00 01/01/2058
2341	Saturn	Jupiter	Asteroid N.59	00:00:00 01/01/2028	00:00:00 01/01/2058
2342	Mars	Earth	Asteroid N.80	00:00:00 01/01/2028	00:00:00 01/01/2058
2343	Saturn	Jupiter	Asteroid N.29	00:00:00 01/01/2028	00:00:00 01/01/2058
2344	Saturn	Jupiter	Earth	00:00:00 01/01/2028	00:00:00 01/01/2058
2345	Jupiter	Mars	Asteroid N.29	00:00:00 01/01/2028	00:00:00 01/01/2058
2346	Saturn	Jupiter	Asteroid N.79	00:00:00 01/01/2028	00:00:00 01/01/2058
2347	Mercury	Earth	Saturn	00:00:00 01/01/2028	00:00:00 01/01/2058
2348	Earth	Jupiter	Saturn	00:00:00 01/01/2028	00:00:00 01/01/2058
2349	Jupiter	Mars	Asteroid N.19	00:00:00 01/01/2028	00:00:00 01/01/2058
2350	Earth	Jupiter	Uranus	00:00:00 01/01/2028	00:00:00 01/01/2058
2351	Mercury	Earth	Asteroid N.63	00:00:00 01/01/2028	00:00:00 01/01/2058
2352	Venus	Earth	Asteroid N.29	00:00:00 01/01/2028	00:00:00 01/01/2058
2353	Mercury	Earth	Asteroid N.29	00:00:00 01/01/2028	00:00:00 01/01/2058
2354	Jupiter	Earth	Venus	00:00:00 01/01/2028	00:00:00 01/01/2058
2355	Saturn	Earth	Asteroid N.47	00:00:00 01/01/2028	00:00:00 01/01/2058
2356	Venus	Earth	Asteroid N.72	00:00:00 01/01/2028	00:00:00 01/01/2058
2357	Mars	Earth	Asteroid N.74	00:00:00 01/01/2028	00:00:00 01/01/2058
2358	Venus	Earth	Asteroid N.21	00:00:00 01/01/2028	00:00:00 01/01/2058
2359	Saturn	Jupiter	Venus	00:00:00 01/01/2028	00:00:00 01/01/2058
2360	Mercury	Earth	Asteroid N.35	00:00:00 01/01/2028	00:00:00 01/01/2058

Orbital Mechanics (2022-23)

Assignment 2: Planetary Explorer Mission

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In all cases, central planet is Earth

Group ID	a [10^4 km]	e [-]	i [deg]	Repeating GT ratio k:m	Perturbations		Parameters	
2301	2.6557	0.7020	61.9721	2:1	J2	SRP	cR = 1.0	A/M = 5.0000 m^2/kg
2302	4.2166	0.0752	41.049	1:1	J2	SRP	cR = 1.0	A/M = 3.0000 m^2/kg
2303	4.1972	0.0093	14.2576	1:1	J2	SRP	cR = 1.0	A/M = 10.000 m^2/kg
2304	2.7251	0.4485	11.3122	2:1	J2	SRP	cR = 1.0	A/M = 5.0000 m^2/kg
2305	4.2141	0.0202	6.5267	1:1	J2	SRP	cR = 1.0	A/M = 5.0000 m^2/kg
2306	2.8863	0.4221	10.1049	7:4	J2	SRP	cR = 1.0	A/M = 5.0000 m^2/kg
2307	1.7264	0.6098	49.257	15:4	J2	DRAG	cD = 2.1	A/M = 0.0113 m^2/kg
2308	2.6539	0.5557	71.7849	2:1	J2	SRP	cR = 1.0	A/M = 5.0000 m^2/kg
2309	2.6417	0.5394	19.1671	2:1	J2	SRP	cR = 1.0	A/M = 3.0000 m^2/kg
2310	1.3955	0.5193	49.6402	5:1	J2	DRAG	cD = 2.1	A/M = 0.0139 m^2/kg
2311	6.6936	0.5723	69.4975	1:2	J2	MOON		
2312	9.7498	0.8928	29.5241	2:7	J2	MOON		
2313	4.2168	0.0757	42.5494	1:1	J2	MOON		
2314	4.2155	0.3429	11.0856	1:1	J2	SRP	cR = 1.0	A/M = 3.0000 m^2/kg
2315	2.7977	0.1613	50.1394	13:7	J2	SRP	cR = 1.0	A/M = 7.0000 m^2/kg
2316	1.9141	0.6512	7.6058	13:4	J2	DRAG	cD = 2.1	A/M = 0,0043 m^2/kg
2317	2.6572	0.452	69.9142	2:1	J2	MOON		
2318	2.5171	0.612	23.9321	11:5	J2	SRP	cR = 1.0	A/M = 7.0000 m^2/kg
2319	4.2159	0.0007	32.5934	1:1	J2	MOON		
2320	3.468	0.5763	24.2526	2:1	J2	SRP	cR = 1.0	A/M = 5.0000 m^2/kg
2321	2.2151	0.6411	55.5581	13:5	J2	SRP	cR = 1.0	A/M = 5.0000 m^2/kg
2322	4.1670	0.8364	6.4822	1:1	J2	DRAG	cD = 2.1	A/M = 0,0136 m^2/kg
2323	2.7260	0.0131	62.971	15:8	J2	MOON		
2324	1.3964	0.5180	49.5391	5:1	J2	DRAG	cD = 2.1	A/M = 0.0135 m^2/kg
2325	4.3677	0.3326	0.6535	14:15	J2	SRP	cR = 1.0	A/M = 3.0000 m^2/kg
2326	1.8886	0.5797	64.2816	10:3	J2	SRP	cR = 1.0	A/M = 5.0000 m^2/kg
2327	2.6783	0.0081	63.4657	2:1	J2	MOON		
2328	2.6561	0.6309	67.6479	2:1	J2	MOON		
2329	9.7496	0.8929	29.5228	1:4	J2	MOON		
2330	7.2715	0.6108	135.1774	2:5	J2	MOON		
2331	1.5051	0.5456	54.9556	14:3	J2	DRAG	cD = 2.1	A/M = 0.0254 m^2/kg
2332	2.4502	0.6711	30.2446	9:4	J2	MOON		
2333	2.2651	0.6985	31.507	5:2	J2	DRAG	cD = 2.1	A/M = 0,0061 m^2/kg
2334	2.6563	0.6501	63.7109	2:1	J2	MOON		
2335	2.7926	0.4878	12.5856	9:5	J2	SRP	cR = 1.0	A/M = 3.0000 m^2/kg
2336	0.6846	0.0298	80.2068	15:1	J2	DRAG	cD = 2.1	A/M = 0.0043 m^2/kg
2337	4.2164	0.0007	0.1378	1:1	J2	MOON		
2338	4.2161	0.0035	54.2081	1:1	J2	SRP	cR = 1.0	A/M = 5.0000 m^2/kg
2339	1.1249	0.4115	6.3782	6:1	J2	DRAG	cD = 2.1	A/M = 0.0547 m^2/kg
2340	7.2776	0.7883	139.0873	2:5	J2	MOON		
2341	3.9689	0.8264	21.8645	6:5	J2	MOON		
2342	4.6078	0.8306	8.221	7:8	J2	MOON		
2343	2.6474	0.7060	63.2291	2:1	J2	MOON		
2344	11.5486	0.5732	9.9009	2:9	J2	MOON		
2345	0.7192	0.0493	82.395	14:1	J2	DRAG	cD = 2.1	A/M = 0,0136 m^2/kg
2346	0.8016	0.1678	50.3442	12:1	J2	DRAG	cD = 2.1	A/M = 0.0171 m^2/kg
2347	3.9587	0.7854	25.126	6:5	J2	MOON		
2348	1.2448	0.4627	49.7249	6:1	J2	DRAG	cD = 2.1	A/M = 0.0178 m^2/kg
2349	1.7830	0.6293	6.7913	11:3	J2	DRAG	cD = 2.1	A/M = 0,0072 m^2/kg
2350	1.2716	0.4801	28.5883	6:1	J2	DRAG	cD = 2.1	A/M = 0,0155 m^2/kg
2351	1.6325	0.5925	26.8909	4:1	J2	DRAG	cD = 2.1	A/M = 0.0091 m^2/kg
2352	1.6882	0.6026	19.3243	13:3	J2	DRAG	cD = 2.1	A/M = 0.0569 m^2/kg
2353	1.8515	0.6470	27.9963	14:5	J2	DRAG	cD = 2.1	A/M = 0.008 m^2/kg
2354	1.4834	0.5481	49.5167	14:3	J2	DRAG	cD = 2.1	A/M = 0.0112 m^2/kg
2355	4.2162	0.0021	30.4900	1:1	J2	SRP	cR = 1.0	A/M = 7.0000 m^2/kg
2356	8.0789	0.9009	39.5142	3:8	J2	SRP	cR = 1.0	A/M = 7.0000 m^2/kg