F74046022 陳冠仁 資訊 108 乙班

Prob1.

(a) G = 6.67384*10^-11

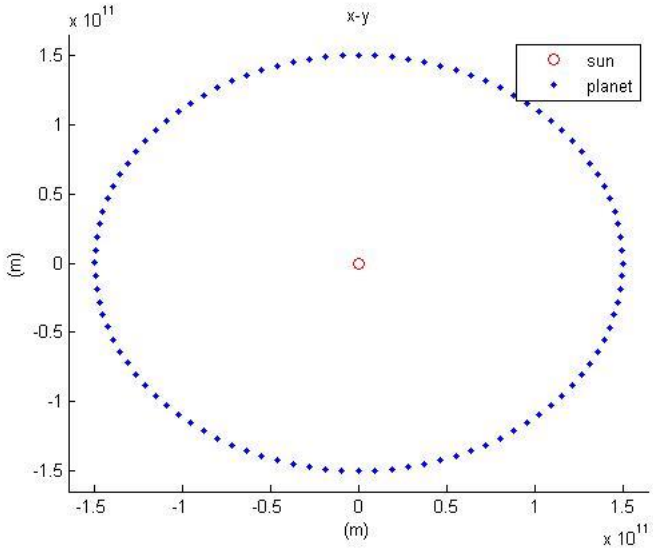
Ms = 2*10^30

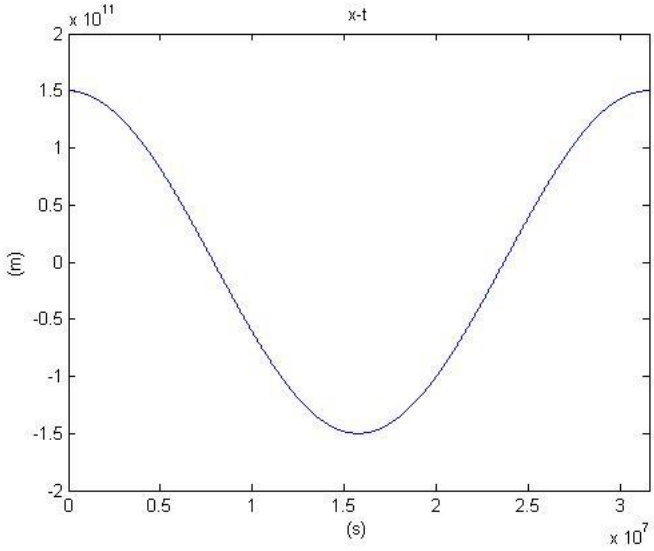
x”(t) = -G*Ms/(x(t)^2+y(t)^2)^(1.5)*x(t);

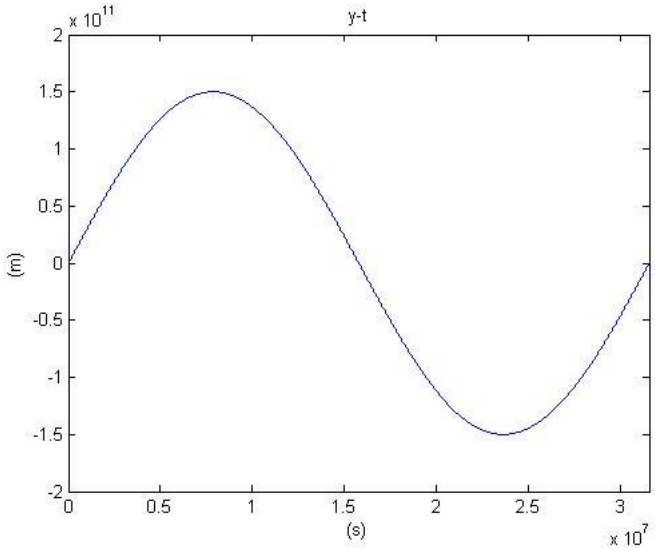
y”(t) = -G*Ms/(x(t)^2+y(t)^2)^(1.5)*y(t);

(b) Vc = 29830.275448 m/s

(c)

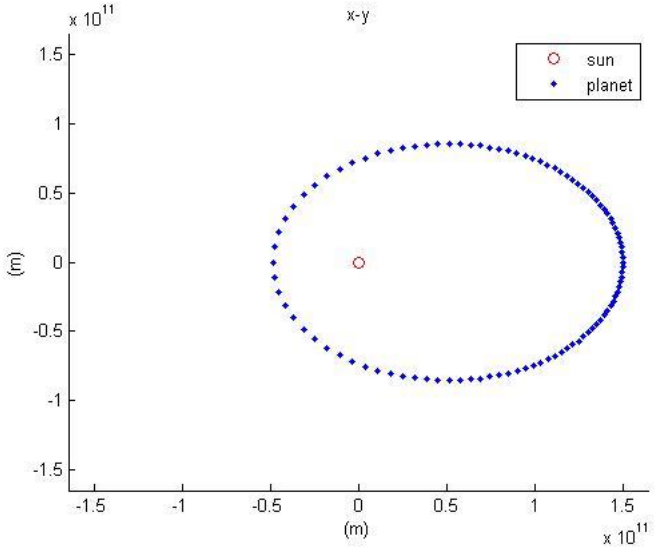


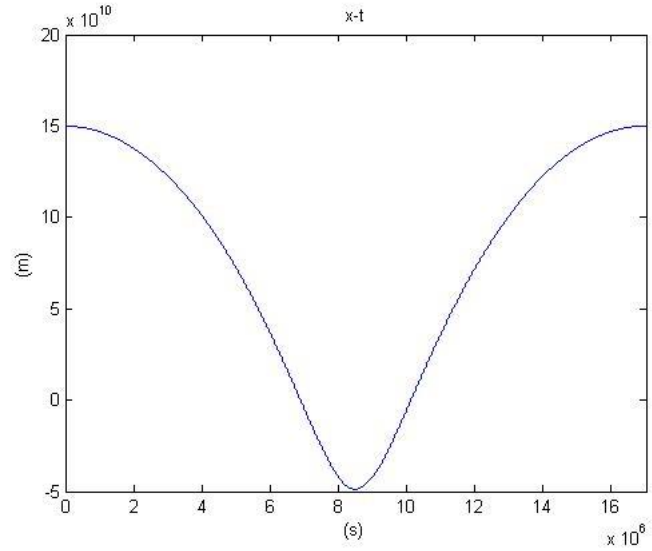


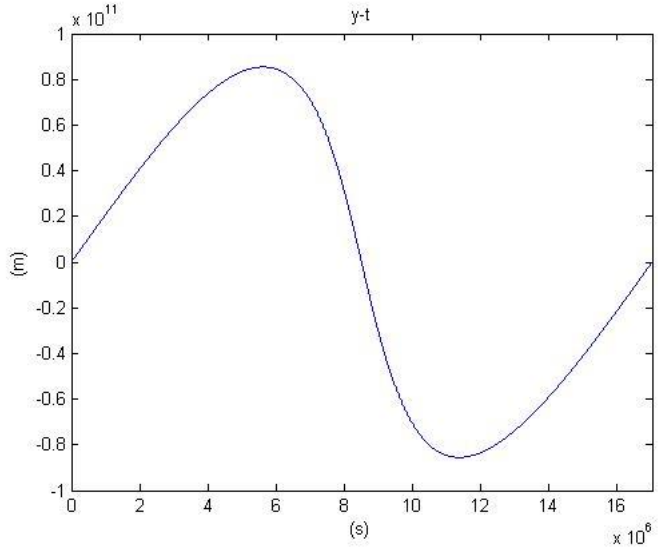


period = 31594940 s

(d)





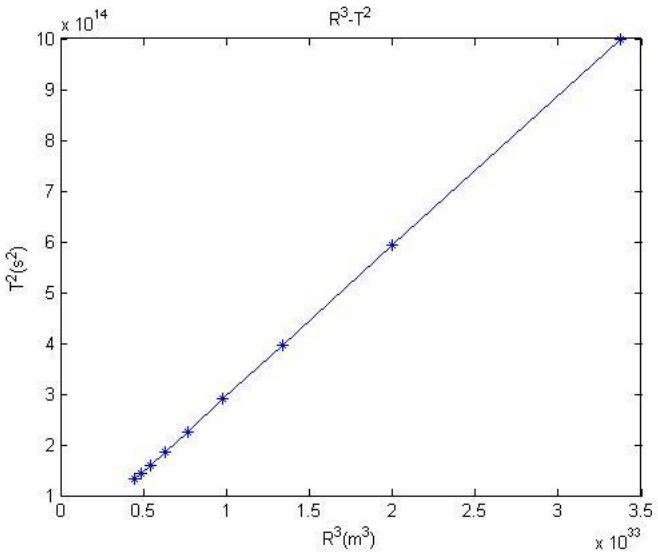


(e) period = 17027540 s

semi-major axis = 9.933841E+10 m

(f)

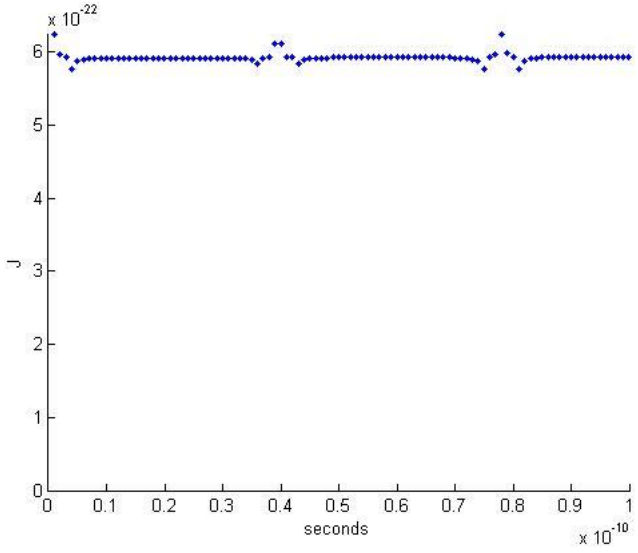
k	period(s)	semi-major axis(m)
0.2	11514220	7.653212E+10
0.3	11969300	7.853508E+10
0.4	12658780	8.152258E+10
0.5	13647740	8.571501E+10
0.6	15043620	9.146409E+10
0.7	17027540	9.933841E+10
0.8	19920900	1.102948E+11
0.9	24338660	1.260512E+11
1.0	31594940	1.500009E+11



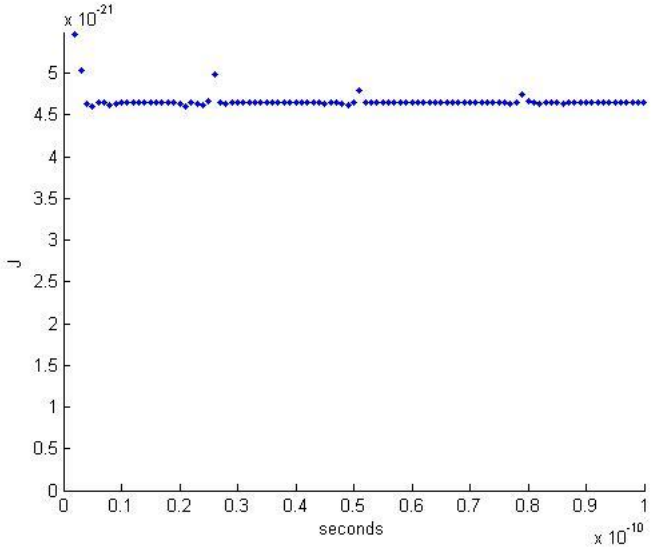
Prob2.

(a) gas

time step = 10^-15 (s)



(b) time step = 10^-15 (s)



(c) time step = 10^-15 (s)