

Ch_6_Lesson_16_Ex_1.m

```

clear
tin = time;

G=6.7e-11;
mSun = 1.9e30;
rEarthOrbit = 150e9;

mEarth = 5.9742e24;
rEarth = 6.378e6;

SpD=60*60*24; % seconds per day
SpY = 365*SpD;

M=200; % save data every Mth iteration
Is=0;

t=0; T(1)=0;

% parameters for a earth orbit
xE=rEarthOrbit;
vxE=0;
yE=0;
vyE=28500;

% launch parameters for probe from 400 km orbit
xP=rEarthOrbit + rEarth + 400000;
vxP=3000;
yP=0;
LV=4908.87 % collision at 4908.86
vyP=28500 + 7000 + LV; % earth + orbit + launch velocity

TBstart = 28747260;
TB = 5*60; % apply boost for 5 minutes
BOOSTx = 0;
BOOSTy = 1.75

% outer control

dt=2;
N1=1*SpD/dt;
for i=1:N1
    juno1
end

dt=60;
N2=(2*SpY+26*SpD)/dt;
for i=i+1:i+N2
    juno1
    % apply mid course boost
    if (t >= TBstart && t < TBstart + TB)
        vyP = vyP + BOOSTy*dt;
        vxP = vxP + BOOSTx*dt;
    end
    t
end

dt=2;

```

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```
N3=10*SpD/dt;  
for i=i+1:i+N3  
juno1  
end
```

```
dt=120;  
N4=SpY/dt;  
for i=i+1:i+N4  
juno1  
end
```

```
II=1:Is;
```

```
plot(XP(II),YP(II),'r')  
hold on  
plot(XE(II),YE(II))
```

```
hold off  
time - tin
```