```
clear

G=6.7e-11;                % gravitational constant

mEarth = 5.9742e24;       % mass of the earth
rEarth = 6.378e6;         % radius of the earth

dt = 0.25;                 % length of each subinterval
n = (92*60 + 50) / dt;         % number of subintervals in 92 minutes 50 sec


% paramters for orbit 402km above earth
t(1) = 0;                 % start time
x(1) = 0;                 % initial x position
y(1) = rEarth + 402000;   % initial y position at alt. 300km
vx(1) = 7706;                % initial x velocity
vy(1) = 0;                % initial x velocity

for i=2:n+1
    t(i) = t(i-1) + dt;          % time at start of interval i
    x(i) = x(i-1) + vx(i-1)*dt;  % x at start of interval i
    y(i) = y(i-1) + vy(i-1)*dt;  % y at start of interval i

    R = sqrt(x(i-1)^2+y(i-1)^2);  % R at start of interval i-1
    Ag = G*mEarth/R^2;          % gravity at start of interval i-1

    vx(i)= vx(i-1) - Ag*(x(i-1))/R*dt;  % x velocity at start of interval i
    vy(i)= vy(i-1) - Ag*(y(i-1))/R*dt;  % y velocity at start of interval i
end

plot(x,y)

hold on

% here we draw a circle for the earth
for i=1:101
   ang=2*pi*i/100;
   xE(i)= rEarth*cos(ang);
   yE(i)= rEarth*sin(ang);
end

plot(xE,yE)                       % draw the earth
hold off
axis square
```