HW3 Problem 1

```
fprintf('\n');
clearvars -except function_list hw_pub toolsPath
close all
CelestialConstants; % import useful constants

r = [-5633.9; -2644.9; 2834.4];
v = [2.425; -7.103; -1.800];

[a,e,i,RAAN,w,f] = cart2OE(r,v,Earth.mu);
fprintf('Semi-major axis: %.2f km\n',a);
fprintf('Eccentricity: %.5f \n',e);
fprintf('Inclination: %.2f deg\n',i * 180/pi);
fprintf('Right Ascention of Asc. Node: %.2f deg\n',RAAN * 180/pi);
fprintf('Argument of Periapse: %.2f deg\n',w * 180/pi);
fprintf('True anomaly: %.2f deg\n',f * 180/pi);
```

```
Semi-major axis: 6993.51 km
Eccentricity: 0.02212
Inclination: 28.40 deg
Right Ascention of Asc. Node: 82.52 deg
Argument of Periapse: 118.25 deg
True anomaly: 1.13 deg
```

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