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Josh O

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------------ HW2 - Josh Oates ------------
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4.15

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------------P4.15------------
My calculations have the following results:
Velocity in Perifocal Frame [km/s]:
         0   12.2156         0

Position in Perifocal Frame [km]:
        6678           0           0

Velocity in ECI Frame [km/s]:
  -10.3559   -5.7627    2.9611

Velocity in Perifocal Frame [km]:
   1.0e+03 *

   -1.9838    5.3488    3.4715

H/C: norms of r and v in either frame should be equal:
Norm veci: 12.2156  Norm vp: 12.2156
Norm reci: 6678  Norm rp: 6678
```

5.6

```
Warning: joshfLambert: This function may be useful but it is not well tested
 and
complete argument validation has not been implimented.
------------P5.6------------
My calculations have the following results:
V1 in km/s:
```

```
   -4.8864    6.0226    3.0479

V2 in km/s:
   -6.9168    1.2549   -1.3988

H/C: We should be using the short side and theta1 < theta2 so this makes sense
```

6.8

```
------------P6.8------------
My calculations have the following results:
dv [km/s]: 1.1977
transit time [s]: 59.6542
H/C: transfer time is halff of the tranfer period. This period makes sense for
 something LEO MEOish.
```

6.23

```
------------P6.23------------
My calculations have the following results:
dv [km/s]: 3.4054
H/C: The orbital period used in the calculation makes sense for a MEO orbit.
```

6.25

```
Warning: joshCOE will assume that R and V are normal if the inputs are scalar
ie: the craft is in a circular orbit or is at periapse or apoapse
------------P6.25------------
My calculations have the following results:
Delta gamma [degrees]: -8.1813
Delta v [km/s]: 0.91545
H/C: We would imagine a moderate delta v for a manuver like this. This seems
 to make sense for a small apseline rotation.
```

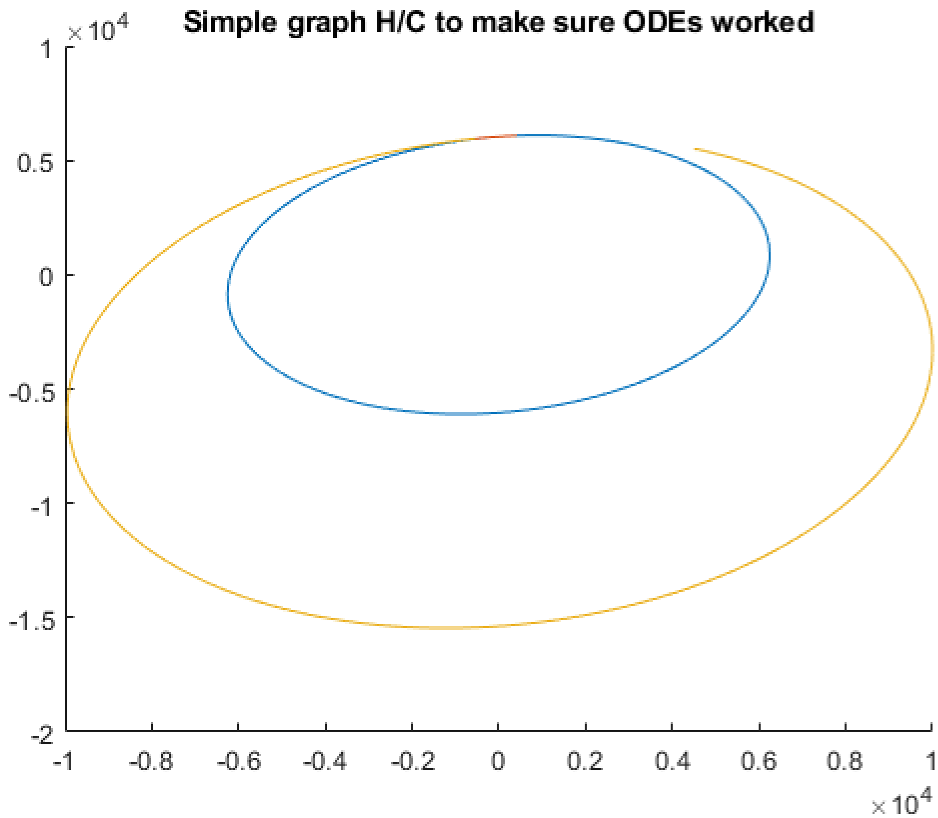
6.31

on paper

6.44

```
------------P6.44------------
My calculations have the following results:
A) dv [km/s]: 2.7927
B) dv [km/s]: 2.6951
C) dv [km/s]: 2.7835
H/C: We would expect the lowest delta v to be a combined manuver at a greater
 altitude, this way there is less velocity to change so to speak and a small
 dv will create a larger inc change.
```

6.47



dependancies

```
------------Dependancies------------
My code uses the following functions:
    {'C:\AERO351\A351HW3\HW3.m'                     }
    {'C:\joshFunctionsMatlab\joshAnomalyCalculator.m'}
    {'C:\joshFunctionsMatlab\joshAxisRotation.m'     }
    {'C:\joshFunctionsMatlab\joshCOE.m'              }
    {'C:\joshFunctionsMatlab\joshHomann.m'           }
    {'C:\joshFunctionsMatlab\joshIsOnes.m'           }
    {'C:\joshFunctionsMatlab\joshLawCos.m'           }
    {'C:\joshFunctionsMatlab\joshStumpffCoeffs.m'    }
    {'C:\joshFunctionsMatlab\joshStumpffZ.m'         }
    {'C:\joshFunctionsMatlab\joshVazVr.m'            }
    {'C:\joshFunctionsMatlab\joshfLambert.m'         }
```

functions

```
------------P6.44------------
My calculations have the following results:
Max altitude [km]: 10433.3136
Max altitude time since t0 [min]: 194.9897
```

H/C: the time to get to apogee seems to be within range for 2ish orbits in LEO which is what the included graph seems to predict.

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