**Homework 6**

Answers below, Code attached.

a. **State Vectors (In Kilometers) of Grace-1 at time 343.90711393**

r\_GRACE1 =

1.0e+03 \*

-5.0504

-4.5946

0.0152

v\_GRACE1 =

0.1075

-0.0778

7.6452

**State Vectors (In Kilometers) of Grace-1 at time 343.90745732**

r\_GRACE1\_2 =

1.0e+03 \*

-5.0508

-4.5898

-0.2109

v\_GRACE1\_2 =

-0.0796

-0.2480

7.6416

**State Vectors (In Kilometers) of Grace-2 at time 343.90745732**

r\_GRACE2 =

1.0e+03 \*

-5.0502

-4.5943

0.0151

v\_GRACE2 =

0.1081

-0.0774

7.6456

b. **The distance between the two satellites in Kilometers was:**

DistanceApart\_InKilometers =

226.0831

c. **The Radial, Transvers, and Normal frame with respect to Grace-1 is**

Rrtn =

-3.0876

-0.0043

-0.0000

Rr = -3.0876

Rt = -0.0043

Rn = -0.0000

I’m not entirely sure about the answer to c, because I thought the answer would have been a positive number for the transverse value since we are taking this with respect to the first satellite. I triple checked my code for in the RTN function to make sure it was exactly like the form that was handed out in class. I did, however, reverse r1 and r2 and got an answer that was positive in the transverse direction (The exact same magnitude but just positive) and a slightly different number (around -4Km) for the radial magnitude.