Planetary Geology 4460
Homework #1
Assigned Friday Sept. 1, 2017
Due Friday Sept. 8, 2017

Wood Chapter 1: #1, #3 (10 points each) and the following RH-1, which is worth 10 points.

For #1 show the equations you use and intermediate steps. Try to work this using ratios of periods and distances as that will save needing to know or use numerical values for several terms such as the Earth's mass.

For #3, write approximately one paragraph. For that question, in comparing the two cases, assume the same total amount of radioactive material is present. In case A it is mixed uniformly throughout the planet. In case B it is concentrated in a thin shell near the surface. Think about how the temperature both near the surface and also deep in the interior would be different in those two cases. As a hint, remember that where ever the heat is generated, it all has to escape from the surface once the system has reached equilibrium.

#RH-1 (10 points) The three innermost Galilean satellites are in a "resonance" where the innermost, Io, orbits Jupiter almost exactly twice as fast as Europa, and Europa orbits Jupiter almost exactly twice as fast as Ganymede. Give the size (semi-major axis) of Europa's and Ganymede's and Ganymede's orbits in terms of the size of Io's orbit (a_{Io}).