HOMEWORK 1 - Satellite Orbits - due April 10

1) What are roll, pitch, and yaw?

2) Derive an approximate formula for the speed of a satellite in a circular orbit at an altitude of 800 km from the surface of the Earth. How long does it take for the satellite to complete one orbit?

3) Prove equations (10.2) to (10.5) in Rees. (Hint: In addition to conserving energy don't forget to conserve angular momentum.)

4) How many elements does it take to describe the position and velocity of a satellite at a particular time? What are two ways of defining this "state vector" for satellite orbits?

5) What is a sidereal day? How long is it?