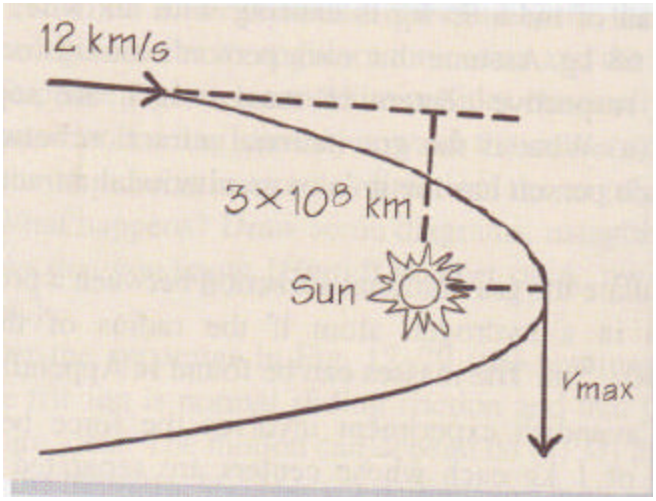
3.) consider an object of mass m, moving in a circular orbit, subject to a central attractive for e whose magnitude is given by F(r) = h/r^3. a. what are the dimensions of h? b. show that the angular momentum for the motion is uniquely determined by h and m. c. what is the resulting relation b/t period and radius analyogous to Kepler's third law for this force?

39.) an object of mass 3x10^15 kg approaches the solar system. When it is very farr away, where the gravitational potential energy can be neglected in comparison with its kinetic energy, the object moves w/ a velocity of 12 km/s in a straight line. By straight line extrapolation, the closest this line would come to the sun is 3x10^8 km. the point of the object's nearest approach to the sun is characterized by the fact that the radius vector from the object to the sun is perpendicular to the tangent to the path at that point. a. sketch the orbit of the object. b. use conservation of energy and angular momentum to calculate the velocity of the object at the point of nearest approach. c. calculate the distance of nearest approach.



48.) a deep hole in earth reaches a depth of 1/2 of the earth's Radius. How much work is done when a 1 kg mass is slowly lifted from the bottom of the hole to the earth's surface?