

**See WebAssign for your AP Physics C 1<sup>st</sup> Semester Studyguide.**

1.  $R$  is the distance from the Sun to Earth.  $T$  is 1 year for Earth.

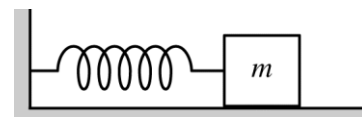
a. By what factor would the force by the sun on the earth change if there were a planet in which the distance from the sun was tripled and the mass doubled compared to Earth?

b. What would the period of the planet in part (a) be?

c. A piece of space-junk is placed in orbit around our sun so at apogee (closest) it is the same distance from the sun as Earth is. At perigee it is 3 times the as far from the sun.

- Find the angular velocity at apogee.
- Find the angular velocity at perigee.

2. A block of mass  $m$  on a horizontal surface is attached to one end of a horizontal spring. The other end of the spring is fixed, as shown in the figure to the right. The block oscillates with negligible friction and an amplitude of 4.0 cm.



If  $m=0.30$  kg and  $k=5.0$  N/m, then find the speed of the mass when it is at equilibrium and compare this to the speed at a distance of 2.0 cm from equilibrium.

At what position is the Kinetic Energy double the value of the Potential Energy?