Physics 160 Written Homework - Chapter 12-13

1 Gravitation

A satellite $3000km$ above the surface of the earth is to maintain a circular orbit. Find the necessary tangential speed v, and, in your own words, explain why the mass of the satellite is irrelevant.

2 Simple Harmonic Motion

A glider on a horizontal frictionless track is attached to an ideal massless spring that is fixed to a wall. At a point in the glider's simple harmonic motion $0.75m$ from the equilibrium position of the system, the glider is moving to the right at $3m/s$, is accelerating to the left at $1m/s^2$, and has $18J$ of kinetic energy. Find the glider's maximum velocity.