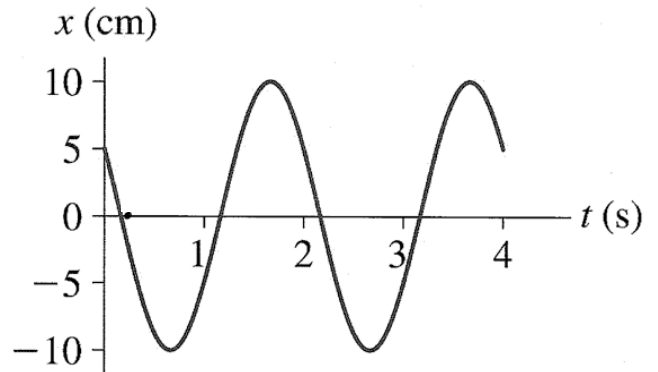


Worksheet 11 Oscillations and energy in SHM**Name:**

Relevant textbook sections covered: 14.3, 14.4, 14.5

1) The graph shows the displacement of a mass undergoing simple harmonic motion at the end of a spring. Use the information in the graph to write an equation for the motion of the mass. Hint: One good choice might be a spot where ONE coordinate is zero. General equation:

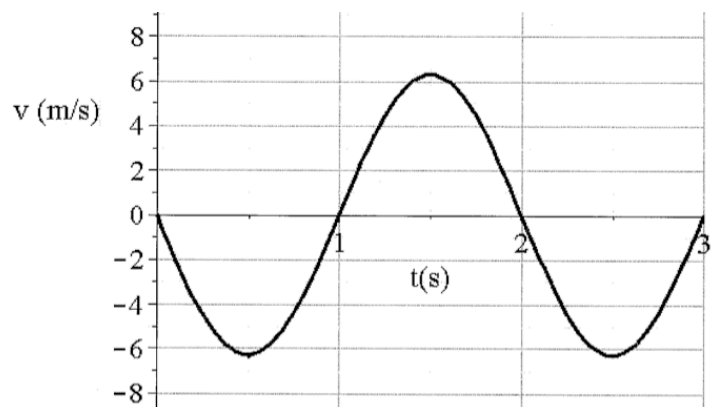
$$x(t) = A \cos(\omega t + \phi_0)$$



2) The graph shows the **velocity** of a mass undergoing simple harmonic motion at the end of a spring. Use the information in the graph to write solve for the amplitude of the mass's **displacement**.

GOOD PRACTICE: Write the velocity equation describing this graph. General equation

$$v(t) = -A\omega \sin(\omega t + \phi_0)$$



2) A mass of 2.0 kg rests on a smooth horizontal surface and is attached to a spring. A force of 10 N causes the spring to stretch by 0.05 m.

1. What is the spring constant?
2. What would be the time period of this mass-spring system?
3. What is the maximum velocity of the mass?