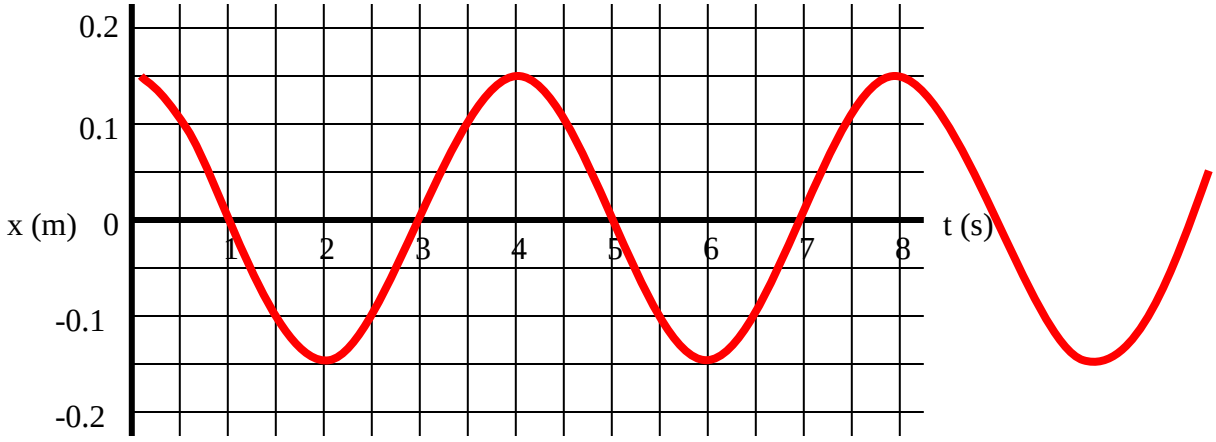
PHYS 2110 Quiz #6 Name _____



A 4.00 kg mass is attached to a spring with a spring constant of 9.87 N/m. It is initially lifted away from its equilibrium position by 0.150 m in the positive direction and released from rest.

A) What is the angular frequency for this oscillator? (4 pts)
First calculate the angular frequency for a mass/spring oscillator.

$$\omega = \sqrt{\frac{k}{m}} = \sqrt{\frac{9.87\ N/m}{4.00\ kg}} = 1.57\ rad/s$$

B) What is the time period for one oscillation for this oscillator? (2 pts)

$$T = \frac{2\pi}{\omega} = \frac{2\pi}{1.57\ rad/s} = 4.00\ s$$

C) Draw out the motion of the oscillator on the graph at the top of the page. (2 pts)

D) What is the speed of the mass as it passes through the equilibrium point (x=0)? (2 pts)
The max speed of the oscillator occurs while it goes through the equilibrium point.

$$v = A\omega = (0.150\ m)(1.57\ rad/s) = 0.236\ m/s$$