

Unit 5 Chapter 13 Homework 3

$$\begin{aligned} 20) \quad m &= 0.05 \text{ kg} & \frac{1}{2} k x^2 &= \frac{1}{2} k x^2 + \frac{1}{2} m v^2 \\ k &= 10 \text{ N/m} & \frac{1}{2} (10)(.25)^2 &= \frac{1}{2} (10)(.125)^2 + \frac{1}{2} (.05) v^2 \\ v_0 &= 0 & v^2 &= 9.375 \\ \Delta x &= .25 \text{ m} & v &= 3.06 \text{ m/s} \end{aligned}$$

$$\begin{aligned} 25) \quad \Delta x &= .039 & F_s &= -kx & T &= 2\pi \sqrt{\frac{m}{k}} \\ m_1 &= .01 \text{ kg} & +.1 &= -k(-.039) & & \\ m_2 &= .025 \text{ kg} & k &= 2.56 \text{ N/m} & T &= 2\pi \sqrt{\frac{.025}{2.56}} = .62 \text{ s} \\ T &= ? & & & & \end{aligned}$$