

$$T = .250 \text{ sec}$$

$$PE + KE = 2.0 \text{ J}$$

$$m = .200 \text{ kg}$$

$$a) \quad T = 2\pi \cdot \sqrt{\frac{m}{k}}$$

$$(.250 \text{ sec}) = 2\pi \cdot \sqrt{\frac{.2 \text{ kg}}{k}}$$

$$k = 126 \text{ N/m}$$

$$b) \quad \text{At } x_{\text{max}}, \quad KE = 0 \quad \text{so } PE = 2 \text{ J}$$

$$PE = \frac{1}{2} \cdot k \cdot x^2$$

$$(2 \text{ J}) = \frac{1}{2} (126 \text{ N/m}) \cdot x^2$$

$$x_{\text{max}} = .178 \text{ m}$$