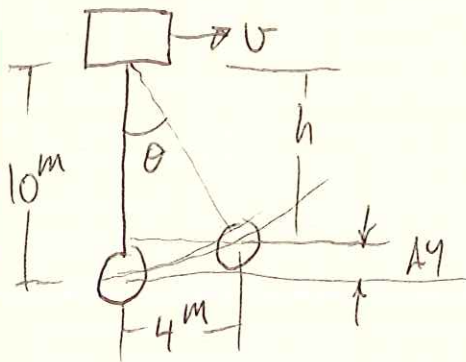


PROB. 13.7

$$\Delta x = 4^m, v_2 = 0 \quad \text{FIND } v_1$$



$$T_1 + U_2 = T_2$$

$$U_2 = -W \Delta y$$

$$\theta = \sin^{-1}\left(\frac{4}{10}\right) = 23.57^\circ$$

$$\Delta y = 10 - h$$

$$h = 10 \cos 23.57^\circ = 9.165^m$$

$$\Delta y = 10 - h = 0.8348^m$$

$$T_2 = \frac{1}{2} m v_2^2 = 0, \quad T_1 = \frac{1}{2} m v_1^2 = \frac{1}{2} \left(\frac{W}{g}\right) v_1^2$$

$$\frac{1}{2} \left(\frac{W}{g}\right) v_1^2 + (-W \cdot \Delta y) = 0$$

$$v_1 = \sqrt{2g \Delta y} = \sqrt{2 \left(9.81 \frac{m}{s^2}\right) (0.8348^m)} = \boxed{4.047 \frac{m}{s}}$$