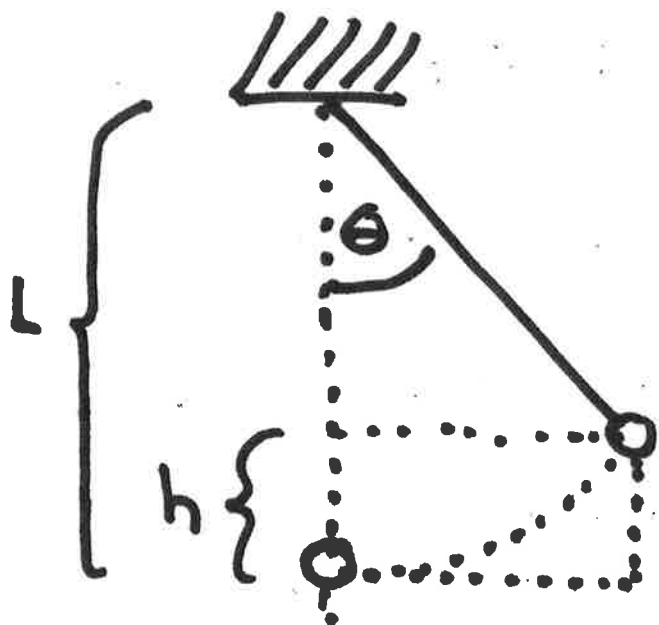


Ex 10.2 (pendulum speed)



$$\theta = 5^\circ$$

$$L = 6 \text{ ft}$$

$$\text{Pot. energy} = (mg)(h)$$

$$h = L - L \cos \theta$$

$$\text{Kin. energy at bottom} = \frac{1}{2} m v^2$$

This must equal pot. energy at top = mgh

$$\frac{1}{2} m v^2 = m g L (1 - \cos \theta)$$

$$v = \sqrt{2 g L (1 - \cos \theta)}$$

$$= \sqrt{2 \cdot \frac{32 \text{ ft}}{\text{sec}} \cdot 6 \text{ ft} (1 - \cos 5^\circ)}$$

$$= 1.21 \text{ ft/sec.}$$