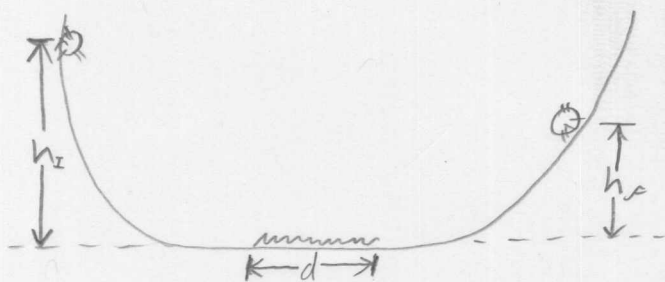


Ch 7-56



$$h_I = 11 \text{ cm}$$

$$d = 1.5 \text{ cm}$$

$$\mu_k = 0.61$$

Calculate energy lost to friction after 1 pass

$$W_F = \int_0^d \vec{F}_f \cdot d\vec{s} = - \int_0^d \mu_k mg ds = \frac{-\mu_k mgd}{\uparrow \text{in 1 trip}}$$

Bug crosses sticky patch over and over until all of its initial potential energy is used up.

$$U_I = mgh_I$$

$$U_F = 0$$

$$K_I = 0$$

$$K_F = 0$$

$$mgh_I - \underbrace{(n)}_{\substack{\uparrow \\ n \text{ trips}}} \mu_k mgd = 0$$

$$mgh_I = n \mu_k mgd \Rightarrow \boxed{n = \frac{h_I}{\mu_k d}}$$