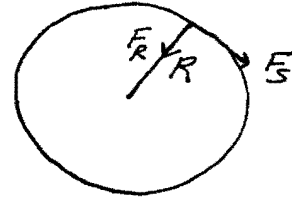


1.120) Dis GA 9.1

$$T = a s^2 = \frac{1}{2} m v^2$$

$$F = \sqrt{F_S^2 + F_R^2}$$

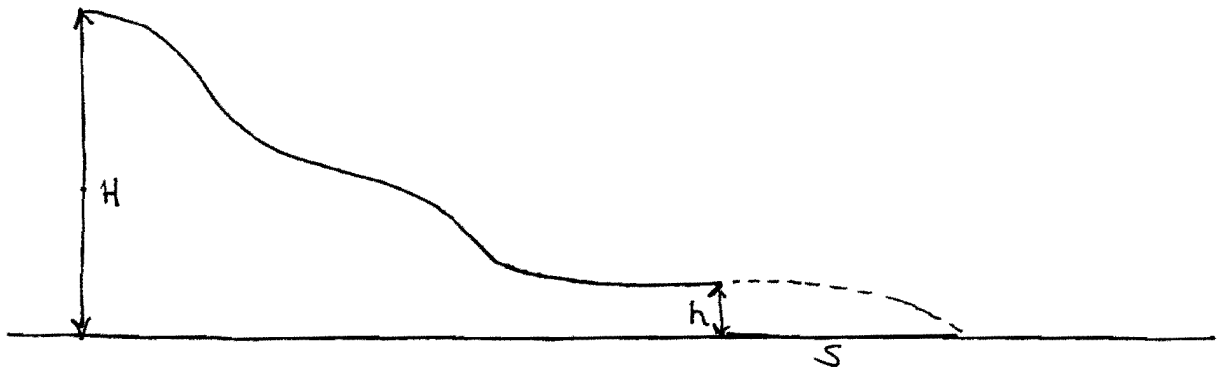


$$F_R = m v^2 / R \quad F_S = \frac{dT}{ds} = 2as$$

$$2as^2 = m v^2 \quad F_R = \frac{2as^2}{R}$$

$$F = 2as \sqrt{1 + (s/R)^2}$$

1121) Dis GA 9.2



$$mgh = mgh + \frac{1}{2}mv^2$$

$$vt = S \quad h = \frac{1}{2}gt^2 = \frac{1}{2}g \frac{S^2}{v^2} \Rightarrow v^2 = \frac{1}{2}g \frac{S^2}{h}$$

$$H = h + \frac{1}{4} \frac{S^2}{h} \Rightarrow S = 4\sqrt{Hh - h^2}$$

$$\frac{\partial S}{\partial h} = 0 \quad \text{gives} \quad \boxed{h_{\max} = H/2 \quad S_{\max} = H}$$

$$\frac{\partial S}{\partial h} = 4 \frac{1}{\sqrt{Hh - h^2}} (H - 2h) = 0 \Rightarrow h_{\max} = H/2$$