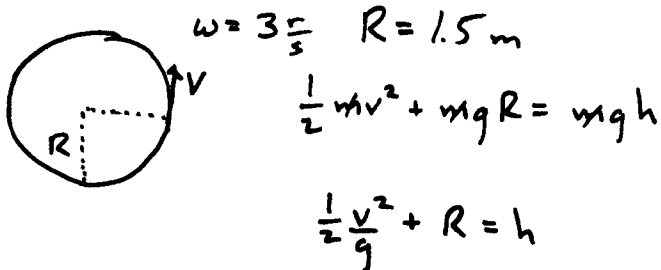


Chapt 6

6.42

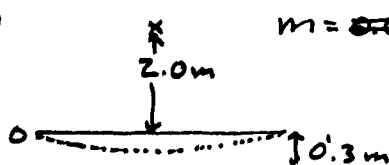


$$\frac{1}{2} \frac{v^2}{g} + R = h$$

$$v = 2\pi\omega R \rightarrow h = \frac{1}{2g} (2\pi\omega R)^2 + R = \frac{1}{2(9.8)} (2\pi(3)(1.5))^2 + 1.5$$

$$\underline{h = 4.2 \text{ m}}$$

6.54



$$m = 55 \text{ kg}$$

$$W_{Nc} = E_f - E_i = mgh_f - mgh_i$$

$$W_{Nc} = mg(h_f - h_i) = F_{Nc} x$$

$$F_{Nc} = \frac{mg(h_f - h_i)}{x} = \frac{55(9.8)(2.0 - (-0.3))}{0.3} = \underline{4132 \text{ N}}$$

6.60

$$m = 91 \text{ kg} \quad x = 1.2 \text{ m} \quad t = 0.51 \text{ s}$$

$$P = \frac{W}{t} = \frac{F_x}{t} = \frac{mgx}{t} = \frac{91(9.8)1.2}{0.51} = \underline{2100 \text{ W}}$$

6.68

$$a.) W_{01} = \frac{1}{2}(6 \text{ N})(1.0 - 0) \text{ m} = \underline{3 \text{ J}}$$

$$b.) W_{12} = \underline{0 \text{ J}}$$

$$c.) W_{24} = W_{23} + W_{34} = \frac{1}{2}(-6 \text{ N})(3 - 2) + (-6)(3 - 4) = \underline{-9 \text{ J}}$$

6.82

$$\frac{1}{2} m v_0^2 + mgh_0 = \frac{1}{2} m v_f^2 + mgh_f$$

$$h_0 = 3 \text{ m} \quad h_f = 4 \text{ m}$$

$$\frac{1}{2} v_0^2 + gh_0 = gh_f \rightarrow v_0 = \sqrt{2g(h_f - h_0)}$$

$$v_0 = \sqrt{2(9.8)(4 - 3)} \Rightarrow \underline{v_0 = 4.43 \text{ m/s}}$$