PHYS 2311 Ch. 7 HW

Corbin Hibler (c-hibler@onu.edu)

October 18, 2024

MisConcQ 1.

1. d
3. e
5. d
7. c
9. b
11. b
13. d

Problem 1.

$$W = \vec{F}_g \cdot \Delta\vec{x}$$
$$F_g = mg$$
$$W = mg\Delta x = (280)(9.8)(3.80) = \boxed{10\,400\,\text{J}}$$

Problem 2.

$$W = \vec{F} \cdot \Delta\vec{x}$$
$$\Delta x = \frac{W}{F_g} = \frac{W}{mg} = \frac{70.0}{(1.85)(9.8)} = \boxed{3.86\,\text{m}}$$

Problem 5.

$$m = 46.0\,\text{kg}, \quad \Delta x = 10.3\,\text{m}, \quad \mu_k = 0.40$$
$$W = \vec{F} \cdot \Delta\vec{x}$$
$$\vec{F} = F_{app} - f_k = 0$$
$$f_k = F_N\mu_k = mg\mu_k = (46.0)(9.8)(0.40) = 180.32\,\text{N}$$
$$\implies F_{app} = 180.32\,\text{N}$$
$$W = (180.32)(10.3) = \boxed{1860\,\text{J}}$$

Problem 8.

$$m = 950\,\text{kg}, \quad \Delta x = 510\,\text{m}, \quad \theta = 9.0^\circ$$