

86. (a) From Eq. 4-22 (with $\theta_0 = 0$), the time of flight is

$$t = \sqrt{\frac{2h}{g}} = \sqrt{\frac{2(45)}{9.8}} = 3.03 \text{ s} .$$

(b) The horizontal distance traveled is given by Eq. 4-21:

$$\Delta x = v_0 t = (250)(3.03) = 758 \text{ m} .$$

(c) And from Eq. 4-23, we find

$$|v_y| = gt = (9.80)(3.03) = 29.7 \text{ m/s} .$$