

Ch 3 # 38) 68/69

38) a) $\Delta y = v_{iy} \Delta t + \frac{1}{2} a \Delta t^2$

$$t_1 = 6.93 \text{ sec}$$

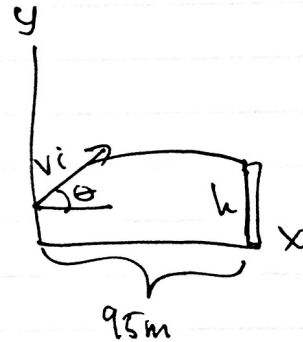
$$\Delta x = v_x \Delta t = \boxed{480 \text{ m}}$$

b) $x_2 = v_{x2} \Delta t_2$

$$t_2 = 6.12 \text{ sec}$$

$$\Delta y = v_{iy} \Delta t + \frac{1}{2} a \Delta t^2$$
$$v_{iy} = \boxed{-8.41 \text{ m/s}}$$

c) $v_{\text{tot}} = \sqrt{v_x^2 + v_y^2} = 97.5 \text{ m/s}$



68) $x = v_{ix} \Delta t$

$$95 \text{ m} = v_i \cos 40 \Delta t$$

$$v_i \Delta t = 124 \text{ m}$$

$$\Delta y = v_{iy} \Delta t + \frac{1}{2} a \Delta t^2$$

$$11 \text{ m} = v_i \sin 40 \cdot \Delta t + \frac{1}{2} (-9.81 \text{ m/s}^2) (\Delta t)^2$$

$$11 \text{ m} = (124 \text{ m}) (\sin 40) + \frac{1}{2} (-9.81 \text{ m/s}^2) (\Delta t)^2$$

$$t = 3.74 \text{ seconds}$$

$$124 \text{ m} = v_i (3.74)$$

$$v_i = \boxed{33 \text{ m/s}}$$

69)

find time

$$\Delta y = v_{iy} \Delta t + \frac{1}{2} a_y \Delta t^2$$

$$t = 2.7 \text{ sec}$$

$$5 \text{ m} = 0 + v_x (2.7 \text{ sec}), v_x = v_i = \boxed{1.9 \text{ m/s}}$$