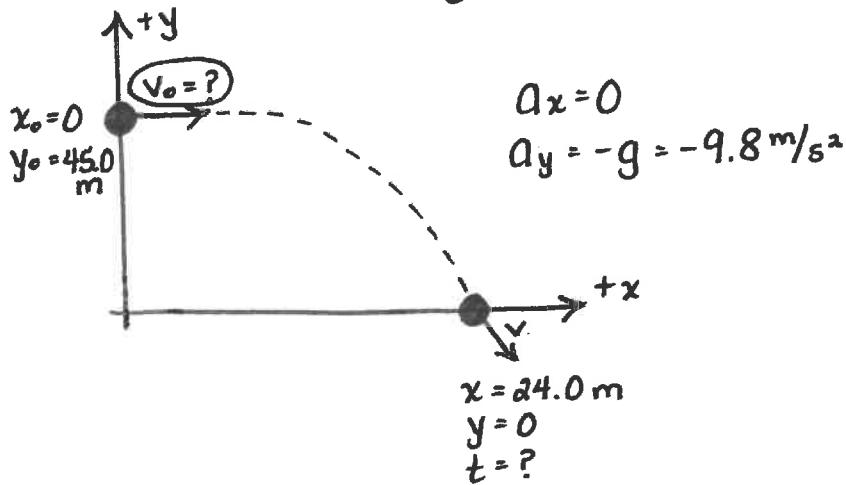


3-21

Given/Want/Figure:



$$v_{0x} = v_0$$

$$v_{0y} = 0$$

Calculations:

Eqn for Uniform Acceleration

$$x = x_0 + v_{0x}t + \frac{1}{2}a_x t^2$$

$$x = v_{0x}t$$

$$x = v_0 t$$

$$24.0 = v_0 (3.0304)$$

$$v_0 = 7.9195 \text{ m/s}$$

$$v_0 = 7.92 \text{ m/s}$$

$$y = y_0 + v_{0y}t + \frac{1}{2}a_y t^2$$

$$0 = y_0 + \frac{1}{2}a_y t^2$$

$$0 = 45.0 + \frac{1}{2}(-9.8)t^2$$

$$4.9t^2 = 45.0$$

$$t = 3.0304 \text{ s}$$

Conclusion: The ball's initial speed was 7.92 m/s.