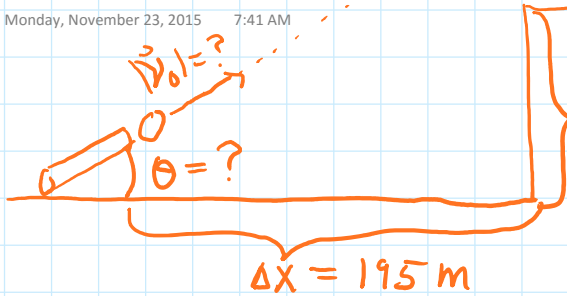


$$a_y = -9.8 \text{ m/s}^2$$

### Problem 1

Monday, November 23, 2015 7:41 AM



$$t = 7.6 \text{ s}$$

$$\Delta y = 155 \text{ m}$$

$$v_x = ?$$

$$v_y = ?$$

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

$$\Delta x = v_x t$$

$$v_x = \frac{\Delta x}{t}$$

$$v_{y_0} t = \Delta y - \frac{1}{2} a_y t^2$$

$$v_x = \frac{195 \text{ m}}{7.6 \text{ s}}$$

$$v_{y_0} = \frac{\Delta y}{t} - \frac{1}{2} a_y t$$

$$v_x = 25.7 \text{ m/s}$$

$$v_{y_0} = \frac{155 \text{ m}}{7.6 \text{ s}} + \frac{1}{2} (9.8 \text{ m/s}^2)(7.6 \text{ s})$$

$$v_{y_0} = 57.6 \text{ m/s}$$

$$|v_0| = \sqrt{v_x^2 + v_{y_0}^2}$$

$$|v_0| = \sqrt{(25.7 \text{ m/s})^2 + (57.6 \text{ m/s})^2}$$

$$|v_0| = 63.1 \text{ m/s}$$

$$\theta = \tan^{-1} \left( \frac{v_{y_0}}{v_x} \right)$$

$$\theta = \tan^{-1} \left( \frac{57.6 \text{ m/s}}{25.7 \text{ m/s}} \right)$$

$$\theta = 66^\circ //$$