

$$x = v_0 \cos(\theta)t$$

$$y = y_0 + v_0 \sin(\theta)t - \frac{1}{2}gt^2$$

$$\Rightarrow t = \frac{x}{v_0 \cos(\theta)}$$

$$\Rightarrow y = y_0 + v_0 \sin(\theta) \left( \frac{x}{v_0 \cos(\theta)} \right) - \frac{1}{2}g \left( \frac{x}{v_0 \cos(\theta)} \right)^2$$

$$\Rightarrow y = y_0 + \tan(\theta)x - \frac{1}{2}g \frac{x^2}{v_0^2 \cos^2(\theta)}$$

$$0 = 200 + 90 \tan(10^\circ) - \frac{1}{2}(9.8) \frac{90^2}{v_0^2 \cos^2(10^\circ)}$$

$$\Rightarrow v_0 = 13.8 \text{ m s}^{-1}$$