

$$H = 110 \text{ inch} = 2.794 \text{ m}$$

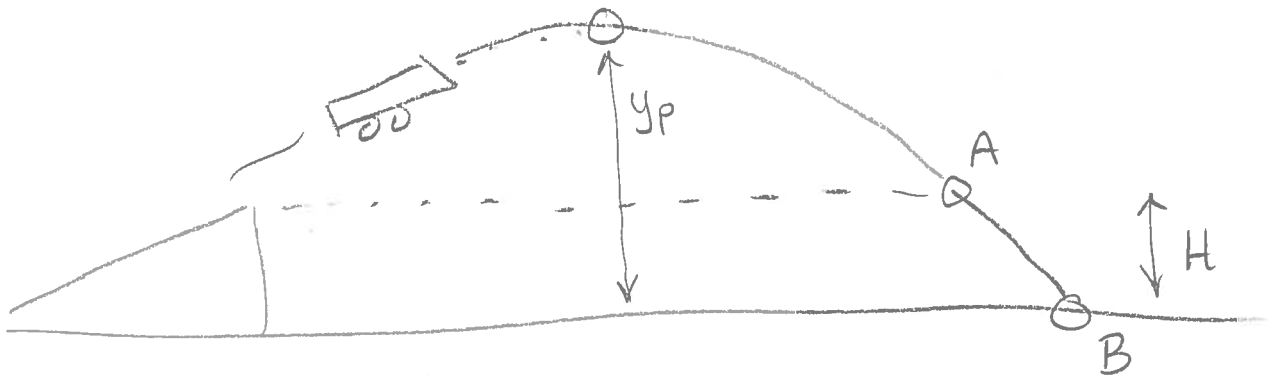
$$L = 40 \text{ feet} = 12.192 \text{ m}$$

$$\theta = \tan^{-1}\left(\frac{H}{L}\right) = \underline{12.9^\circ}$$

$$V = 55 \text{ mph} = 24.58 \text{ m/s}$$

$$V_x = V \cos\theta = 23.961 \text{ m/s}$$

$$V_y = V \sin\theta = 5.488 \text{ m/s}$$



$$\text{time to peak } t_p = \frac{V_y}{g} = 0.56 \text{ s}$$

$$\text{time to point A} = 2t_p = 1.12 \text{ s}$$

$$\text{Horiz dist to A} = V_x (2t_p) = \underline{26.84 \text{ m}}$$

$$\text{Height at peak } y_p = H + V_y t_p - \frac{1}{2} g t_p^2 = 4.33 \text{ m}$$

$$\text{time to fall from peak to ground } t_f = \sqrt{\frac{2y_p}{g}} = 0.94 \text{ s}$$

$$\text{Total time in air} = t_p + t_f = 0.56 + 0.94 = 1.50 \text{ s}$$

$$\text{Horiz dist to point B} = V_x (1.50 \text{ s}) = \underline{35.9 \text{ m}}$$