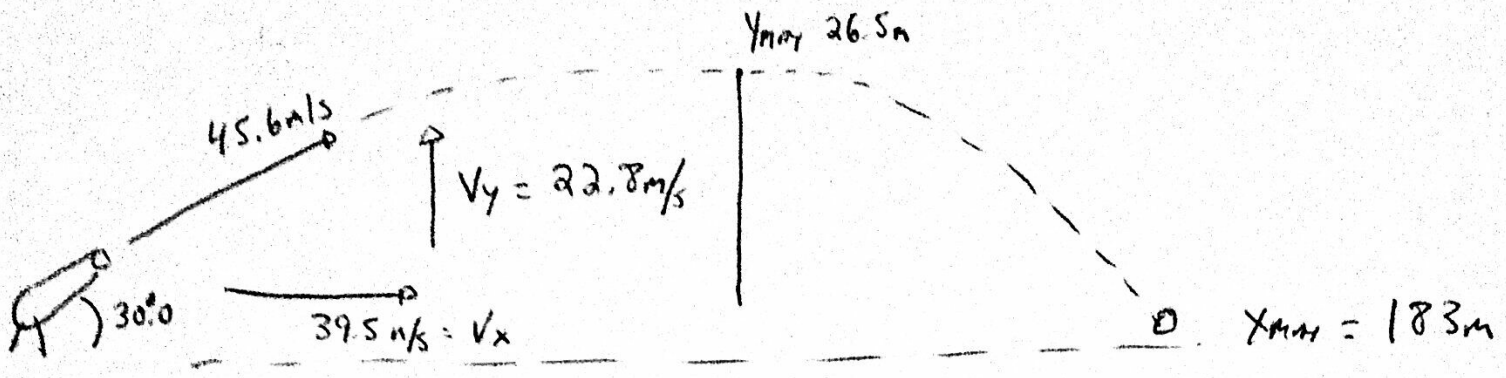
2.1 PARABOLA EQUATION Problem 1



$V_x = V\cos\theta$ $\quad$ $V_y = V\sin\theta$

$V_x = 45.6\,m/s \cos 30.0^\circ$ $\quad$ $V_y = 45.6\,m/s \sin 30.0^\circ$

$\boxed{V_x = 39.5\,m/s}$ $\quad$ $\boxed{V_y = 22.8\,m/s}$

$$T_v = \frac{V_y}{g} = \frac{22.8\,m/s}{9.81\,m/s^2} = \boxed{2.32\,sec}$$

$$Y_{max} = V_y t_v - \frac{1}{2} g T_v^2$$

$$Y_{max} = 22.8\,m/s\,(2.32\,sec) - 0.5(9.81\,m/s^2)(2.32\,s)^2$$

$$\boxed{Y_{max} = 26.5\,m}$$

$$X_{max} = V_x 2 T_v$$

$$X_{max} = 39.5\,m/s * 2 * 2.32\,s$$

$$\boxed{X_{max} = 183\,m}$$