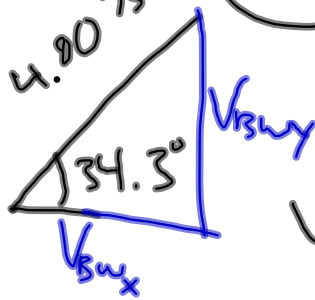


$$V_{BW} \quad \vec{V}_{PB} + \vec{V}_{BW} = \vec{V}_{PW}$$

$$2.7k + 0j \quad \downarrow \quad 4.80 \cos 34.3^\circ_x + 4.80 \sin 34.3^\circ_y$$

$$V_{PW} = 7.22 \text{ m/s}$$



$$\vec{V} = V_{yc} + V_{cc}$$

$$V_{ycL}$$

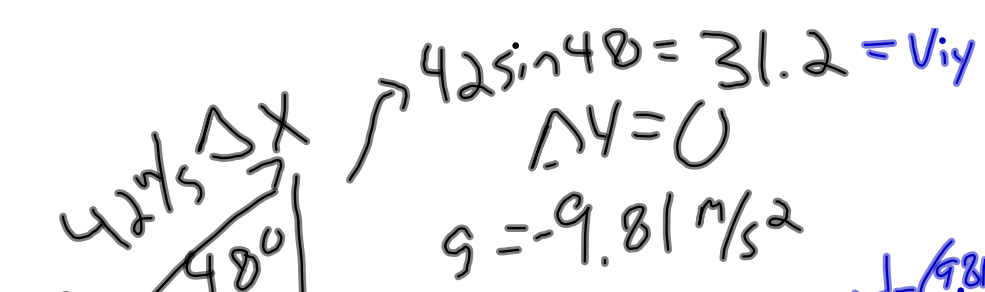
$$\vec{V} \rightarrow 2.71 \text{ m/s}$$

$$6.7_x + 2.7_y$$

$$\theta = \tan^{-1} \frac{2.7}{6.7}$$

$$= 21.9^\circ$$

E



$$42 \sin 48 = 31.2 = V_{iy}$$

$$\Delta Y = 0$$

$$g = -9.81 \text{ m/s}^2$$

$$V_{ix} = 42 \cos 48 = 28.1 \text{ m/s}$$

$$\Delta X = V_x t = (28.1)(6.4) = 179 \text{ m}$$

$$\Delta Y = 0 = 31.2t - 4.9t^2$$

$$t(31.2 - 4.9t) = 0$$

$$2.7 \Delta X = 0$$

$$\Delta Y = 0$$

$$g = ?$$

$$31.2 - 4.9t = 0$$

$$t = \frac{31.2}{4.9} = 6.4 \text{ s}$$

	K	U
V_{ix}		t
V_{iy}		ΔX
ΔY		

$$\Delta Y = 0 \quad \Delta X = (2.7)(179) \quad \Delta Y = V_{ix}(t)$$

to solve for t

$$V_{ix} = 28.1$$

$$V_{iy} = 31.2$$

then $t = \frac{1}{2} t$
 + solve for ΔY

$$\Delta Y = V_{iy}t + \frac{1}{2}(g)(t^2)$$

a) $V_i = ?$

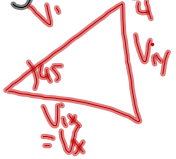

$$\frac{44}{1} = 4.9t$$

$k \mid U \quad \Delta y = 0 \quad \Delta y = 0$
 $\theta \mid V_i$
 $\Delta x \mid V_{ix} = V_x$
 $\Delta y \mid V_{iy} = V_y$
 $a_y = -g$
 t

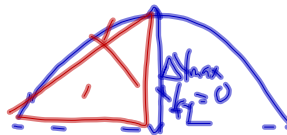
$44.0m = \Delta x$
 $\Delta x = V_x t \rightarrow V_x = \frac{44}{t}$
 $44 = V_x t$
 $\Delta y = V_{iy} t + \frac{1}{2}(-g)t^2$
 $0 = V_y t - 4.9t^2$
 $\tan 45 = \frac{V_{iy}}{V_{ix}}$
 $V_{iy} = V_{ix} = V_x$
 $V_{iy} = 4.9t = 0$
 $V_y = 4.9t$

$44 = \frac{4.9t^2}{4} \cdot 44$
 $\sqrt{8.97} = t^2$
 $t = 2.99 = 3s$

$1 = \frac{4.9t}{44} = \frac{4.9t}{t \cdot 44}$
 $V_{iy} = (4.9)(3) = 14.7$
 $V_{ix} = \frac{44}{3} = 14.7$
 $V_i = \sqrt{2} \cdot 14.7$
 $14.7^2 + 14.7^2 = V_i^2$
 $\therefore V_i = \sqrt{14.7^2 + 14.7^2} = 20.79 \frac{m}{s}$

b) Δy_{max}
 $t = 1.5$



$$\Delta y = V_{iy} t + \frac{1}{2}(-g)t^2$$

$$= (14.7)(1.5) - 4.9(1.5)^2$$

$$= 22.05 - 11.02$$

$$= 11.03m$$

$$V_{fy}^2 = V_{iy}^2 + 2(-g)(\Delta y)$$

$$0 = 14.7^2 - 19.6(\Delta y)$$

$$0 = 216.1 - 19.6 \Delta y$$

$$\frac{19.6 \Delta y}{19.6} = \frac{216.1}{19.6}$$

$$\Delta y = 11.03m$$

c)

$$V_{iy} = 20.8 \text{ m/s}$$

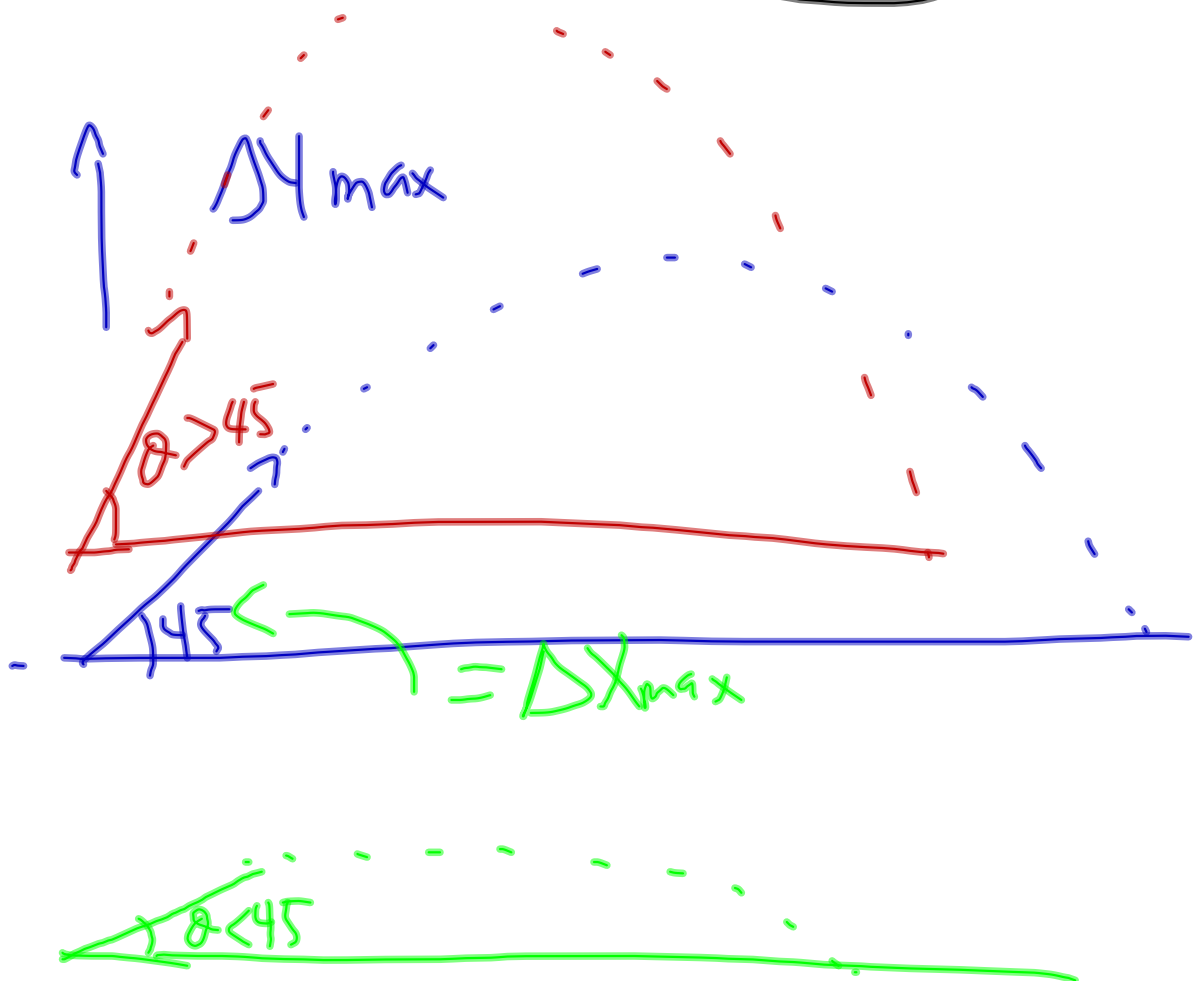
$$V_f^2 = V_i^2 + 2a\Delta y$$

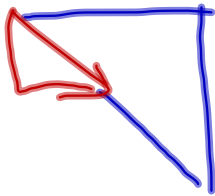
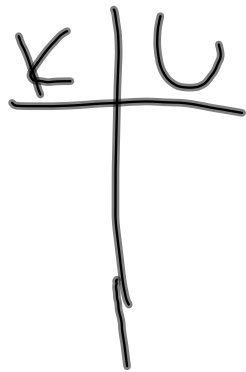
$$V_{fy} = 0 \quad 0 = 20.8^2 + 2(-9.81)(\Delta y)$$

$$a = -g \quad + 19.62\Delta y = 432.64 - 19.62\Delta y$$

$$\frac{19.62\Delta y}{19.62} = \frac{432.64}{19.62}$$

$$\Delta y = 22.02 \text{ m}$$





$$\Delta X = v_x t$$

$$v_{fy} = v_{iy} + (-g)t$$

$$\Delta Y = v_{iy} t + \frac{1}{2}(-g)t^2$$

$$v_f^2 = v_i^2 + 2(-g)\Delta Y$$

