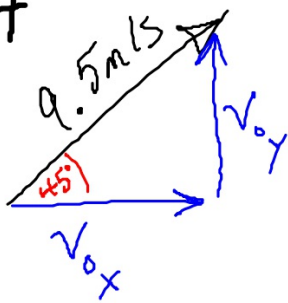


24



$$\begin{array}{c} x \\ \hline v_o = 6.72 \text{ m/s} \\ a = 0 \\ \Delta x = ? \end{array}$$

$$\begin{array}{c} y \\ \hline v_o = 6.72 \text{ m/s} \\ a = -9.8 \text{ m/s}^2 \\ \Delta y = 0 \end{array}$$

$$t = ? \quad \Delta y = v_o t + \frac{1}{2} a t^2$$

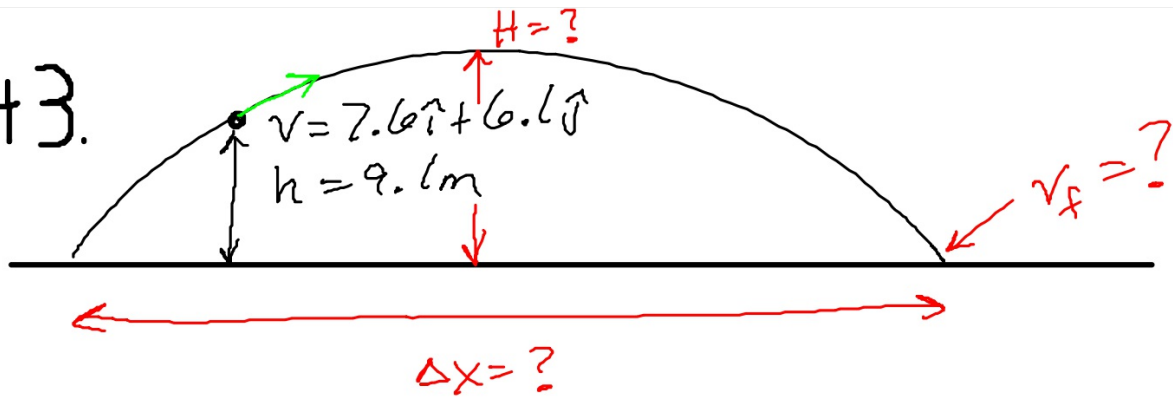
$$0 = 6.72 t - 4.9 t^2$$

$$t = 1.37 \text{ sec}$$

$$\Delta x = 6.72(1.37) + 0 = 9.21 \text{ m}$$

26 cm farther than Powell went

43.



x
 $v_o = 7.6 \text{ m/s}$
 $a = 0$

y
 $v_o = 6.1 \text{ m/s}$
 $a = -9.8 \text{ m/s}^2$
 $y_o = 9.1$
 $y = ?$
 $v_z = 0$

$$v_f^2 = v_o^2 + 2a(\Delta y)$$

$$0 = (6.1)^2 + 2(-9.8)(y - 9.1)$$

$$y = (11.0 \text{ m} = H)$$

b) Zenith to ground:

$$\begin{array}{c} \underline{x} \\ v_o = 7.6 \text{ m/s} \end{array}$$

$$a = 0$$

$$\Delta x = ?$$

$$\begin{array}{c} \underline{y} \\ v_o = 0 \end{array}$$

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

$$\Delta y = -11 \text{ m}$$

$$\Delta y = v_o t + \frac{1}{2} a t^2$$

$$-11 = 0 - 4.9 t^2$$

$$t = 1.498 \text{ s}$$

$$\Delta x = (7.6)(1.498) + 0$$

$$= 11.39 \text{ m}$$

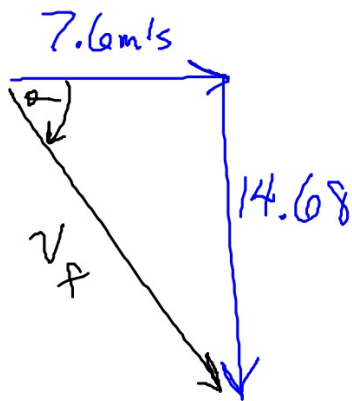
$$x \text{ } z \text{ (for } t \text{ to } t_1) \text{ } \underline{\underline{22.8 \text{ m} = \Delta x}}$$

c) $v_f = ?$ $v_{fx} = 7.6 \text{ m/s}$

$$v_{fy} = v_{oy} + at$$

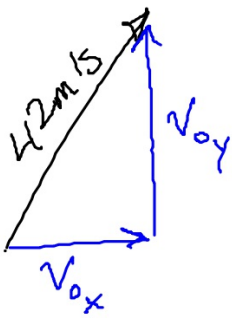
$$= 0 + (-9.8)(1.498)$$

$$= -14.68 \text{ m/s}$$



$$v_f = 16.5 \text{ m/s} - 62.6^\circ$$

28.



$$\begin{array}{c} X \\ v_0 = 21 \text{ m/s} \\ a = 0 \end{array}$$

$$\begin{array}{c} y \\ v_0 = 36.4 \text{ m/s} \\ a = -9.8 \text{ m/s}^2 \end{array}$$

$$\Delta y = ?$$

$$t = 5.5 \text{ s}$$

$$\Delta y = v_0 t + \frac{1}{2} a t^2$$

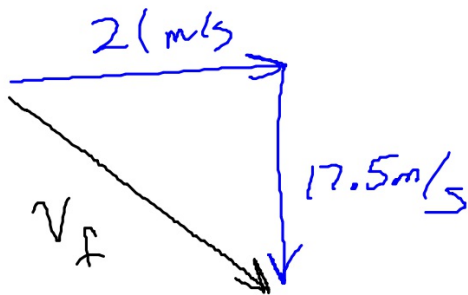
$$\Delta y = 36.4(5.5) - 4.9(5.5)^2$$

$$\Delta y = 51.975 = 52 \text{ m}$$

b) $v_f = ?$ $v_{fx} = 21 \text{ m/s}$

$v_{fy} = ?$

$$\begin{aligned} v_f &= v_o + at \\ &= 36.4 + (-9.8)(5.5) \\ &= -17.5 \text{ m/s} \end{aligned}$$



$v_f = 27.3 \text{ m/s}$

c) $\Delta y = ?$ (to zenith)

$$v_{y_z} = 0$$

$$v_{0_y} = 36.4 \text{ m/s}$$

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

$$v_f^2 = v_o^2 + 2a(\Delta y)$$

$$0 = (36.4)^2 + 2(-9.8)(\Delta y)$$

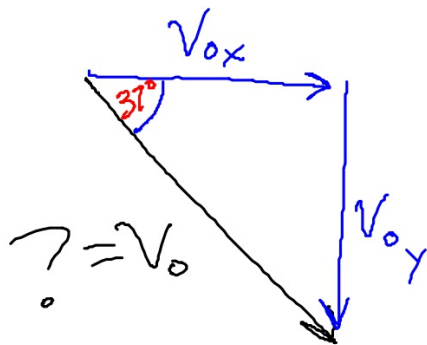
$$\Delta y = 67.6 \text{ m}$$

please NOTE

$$t_{\text{up}} \neq t_{\text{down}}$$

$$v_o \neq v_{\text{impact}}$$

33.



$$\begin{array}{c} \underline{X} \\ a = 0 \\ t = 5s \\ \Delta x = ? \end{array}$$

$$\begin{array}{c} \underline{y} \\ a = -9.8m/s^2 \\ \Delta y = -730m \\ t = 5s \end{array}$$

$$\sin 37^\circ = \frac{v_{0y}}{v_0}$$

$$\sin 37^\circ = \frac{121.5}{v_0}$$

$$v_0 = 201.9m/s$$

$$v_{0y} = ?$$

$$\begin{array}{l} \Delta y = v_0 t + \frac{1}{2} a t^2 \\ -730 = v_0(5) - 4.9(5)^2 \\ v_{0y} = -121.5m/s \end{array}$$

$$b) \Delta x = ? \quad \tan 37^\circ = \frac{v_{0y}}{v_{0x}} = \frac{121.5}{v_{0x}}$$

$$v_{0x} = 161.2 \text{ m/s}$$

$$a_x = 0$$

$$t = 5 \text{ s}$$

$$\Delta x = v_0 t + \frac{1}{2} a t^2 = (161.2)(5) + 0$$

$$\underline{\Delta x = 806 \text{ m}}$$

c+d) $v_f = ?$ (in component form)

$$v_{fx} = 161 \text{ m/s}$$

$$v_{fy} = ?$$

$$v_f = v_o + a t$$

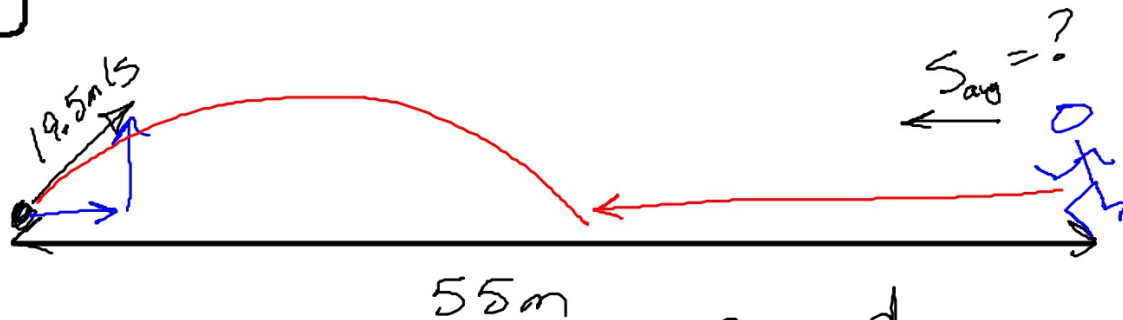
$$= -121.5 + (-9.8)(5)$$

$$v_{fy} = -170.5 \text{ m/s}$$

$$v_f = (161 \hat{i} - 171 \hat{j}) \text{ m/s}$$

9

30



<u>x</u>	<u>y</u>
$v_o = 13.8 \text{ m/s}$	$v_o = 13.8 \text{ m/s}$
$a = 0$	$a = -9.8 \text{ m/s}^2$
$\Delta x = ?$	$\Delta y = 0$

$$t = ? \quad \Delta y = v_o t + \frac{1}{2} a t^2$$

$$0 = 13.8 t - 4.9 t^2$$

$$t = 2.81 \text{ sec}$$

$$S_{\text{avg}} = \frac{d}{\Delta t}$$

$$= \frac{55 - 38.8}{2.81}$$

$$= \boxed{5.75 \text{ m/s}}$$

$$\Delta x = (13.8)(2.81) + 0$$

$$= 38.8 \text{ m}$$