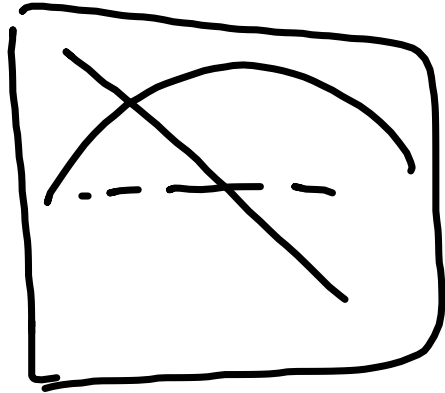


Correction to last page
challenge ... not γ Velocity ...

γ Position versus ... Please correct.



top $V_y = 0$

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

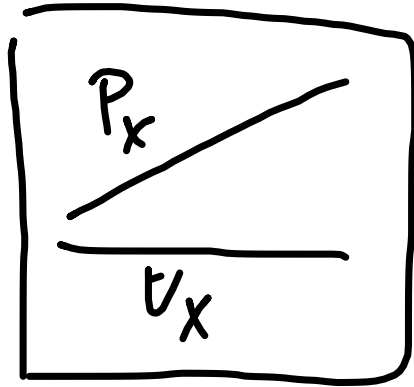
$$d_{y_f} = \cancel{d_{y_i}} + V_{y_i}t + \frac{1}{2}gt^2$$

come down "t" = $\frac{1}{2} t_{\text{total}}$

$$d_{y_f} = \frac{1}{2}gt_{\frac{1}{2}}^2$$

max height = $\frac{1}{2} \cdot 9.8 \frac{\text{m}}{\text{s}^2} (0.15 \text{ s})^2$

- 0.11 m drop max



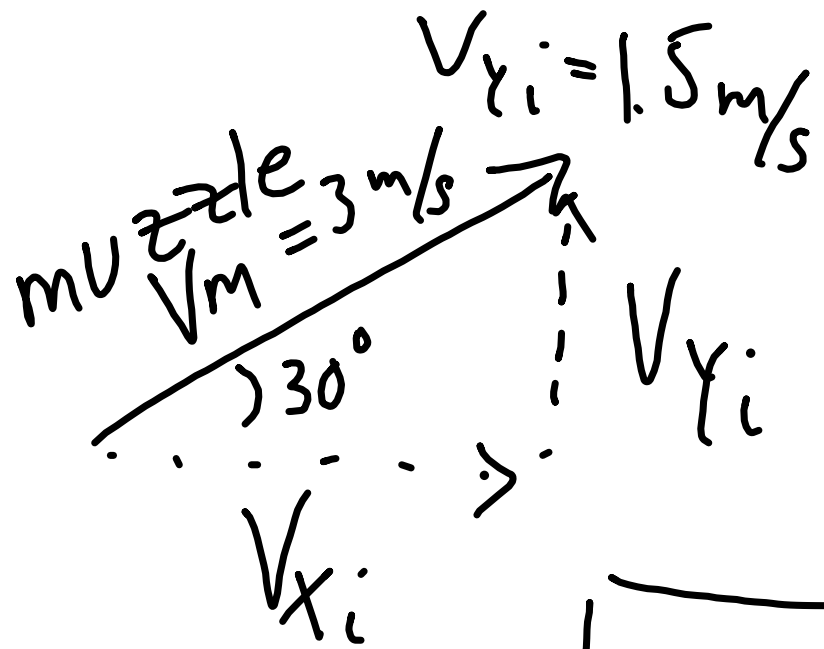
$$V_x = K \quad \text{total time}$$

$$d_{x_f} = \cancel{d_{x_i}} + v_{x_i} t + \cancel{\frac{1}{2} a t^2}$$

$$= (2.6 \text{ m/s})$$

$$\text{Range} = 2.6 \text{ m/s} (0.3 \text{ s})$$

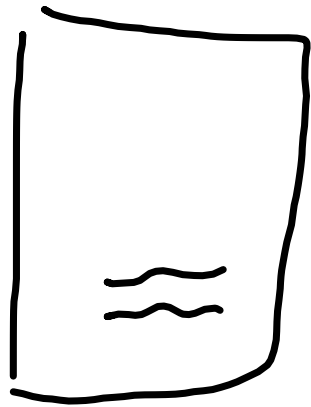
$$R = 0.78 \text{ m}$$



$(\sin \theta) V_m$

2.6 m/s

V_{xi}



$(\cos \theta) V_m$

check mode
degrees

up $\frac{1}{2}$
way

$$V_{yf} = 0$$

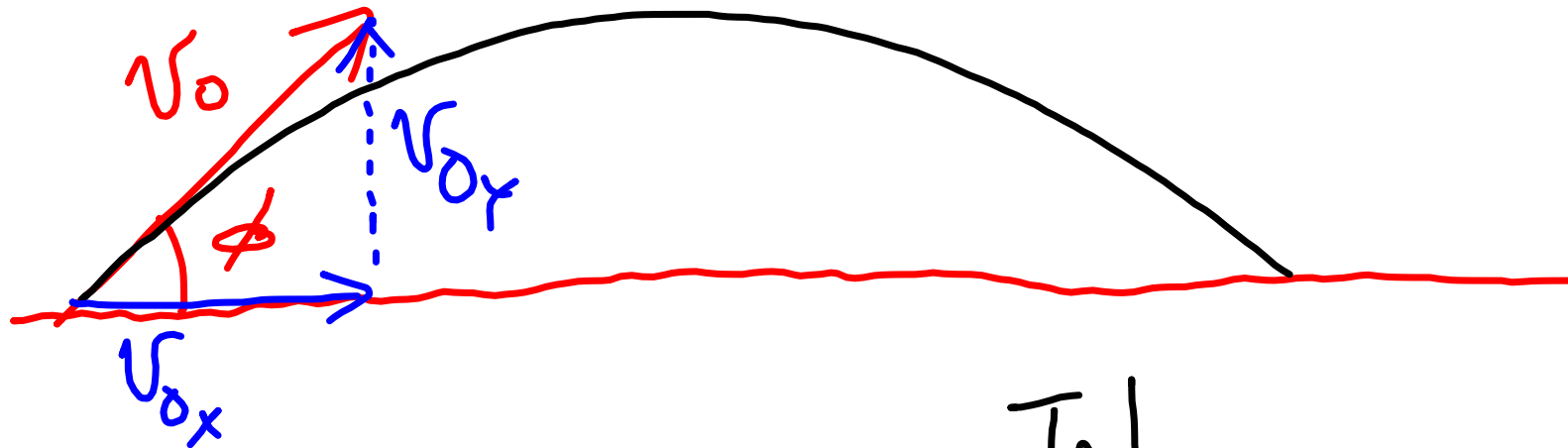
$$a = -9.8 \text{ m/s}^2$$

$$V_{yi} = 1.5 \text{ m/s}$$

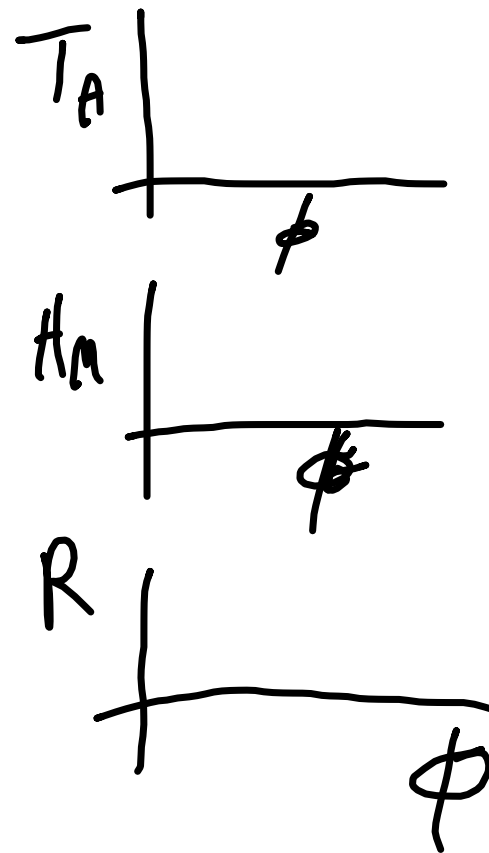
$$t_{\frac{1}{2}} = 0.15 \text{ s}$$

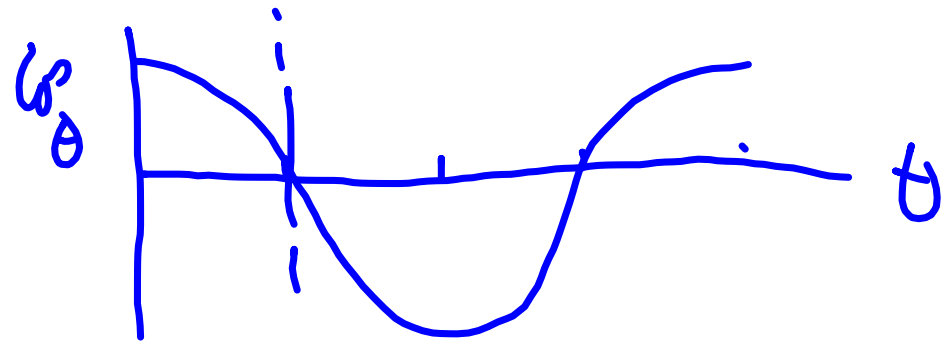
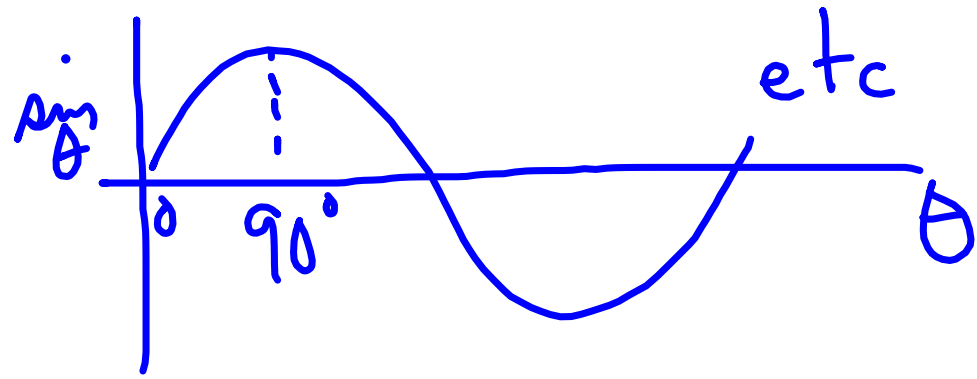
$$t_{\text{total}} = 0.30 \text{ s}$$

$$\frac{0 - 1.5 \text{ m/s}}{t} = -9.8 \frac{\text{m}}{\text{s}^2}$$



v_{0y} T_{AIR}
 v_{0y} $MAX\ HEIGHT$
 Both $RANGE$





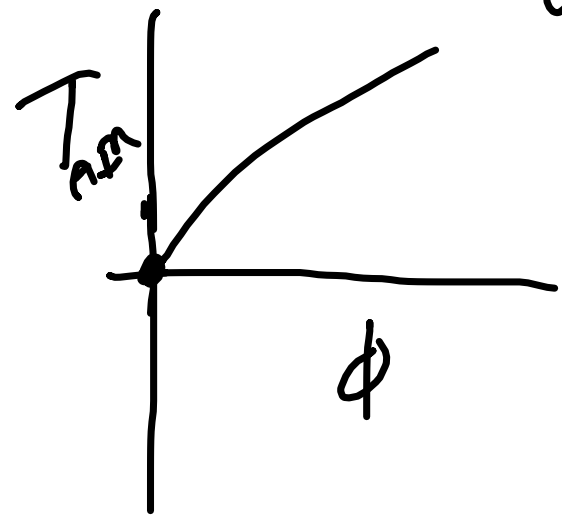
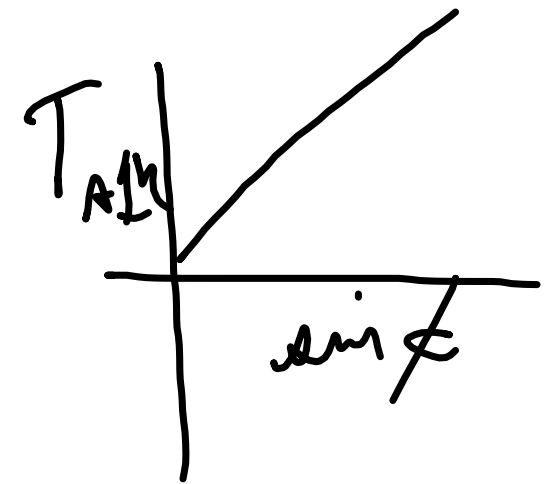
$$T_{AIR} = \frac{2V_{0y} \sin t}{g} \quad \frac{V_{0y} \sin t}{g} \quad \text{m/s} \quad \text{Given } V_{0x} = V_0 \cos \theta$$

slope = 2

$V_{0y} = V_0 \sin \theta$

m/s²

g

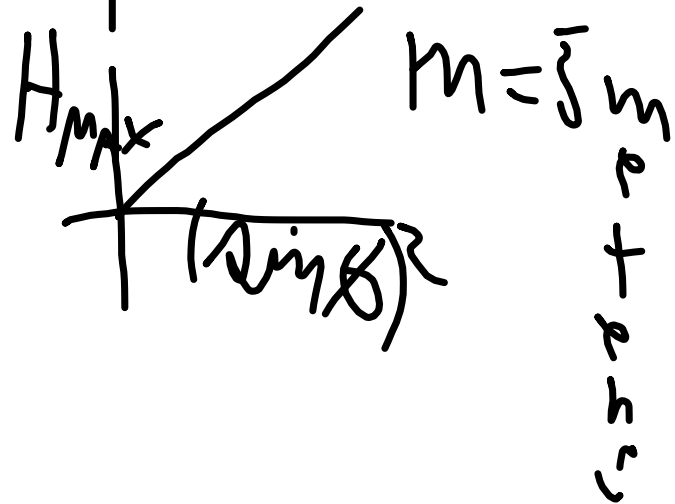


H_{MAX}

$$\left(\frac{m}{s}\right)^2 \approx \frac{1}{2} m/s^2$$

$$\left(\sqrt{\sin \phi}\right)^2$$

$$H_{MAX} g = \frac{1}{2} g \sin^2 \phi$$



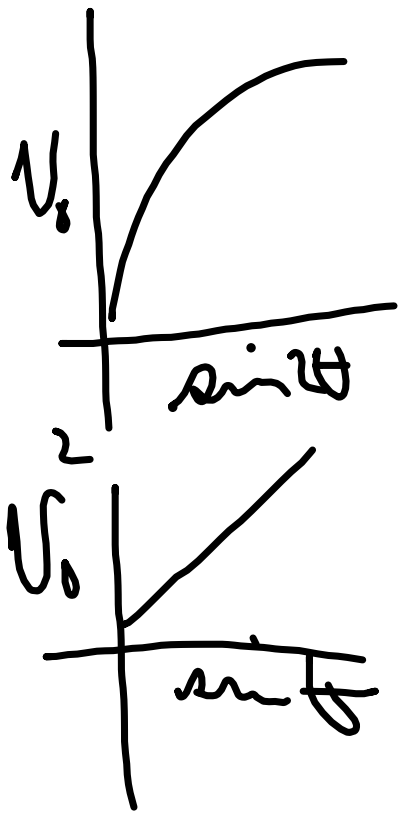
$$\text{Range} = v_x t_{\text{AIR}}$$

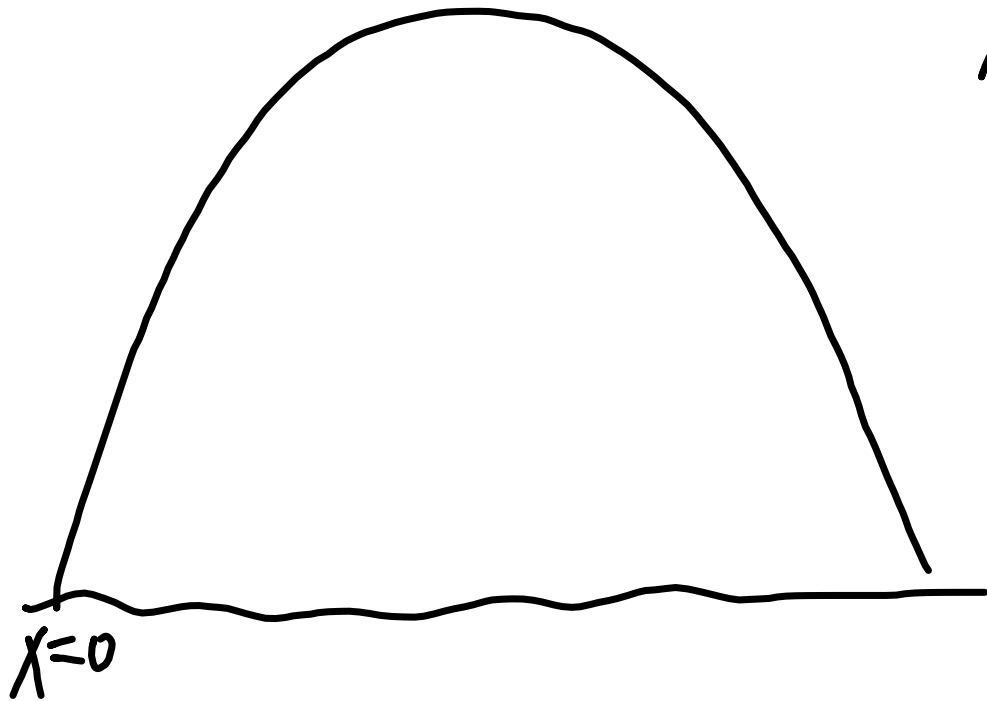
$$= v_0 \cos \theta * \frac{v_0 \sin \theta}{g} * 2$$

$$= \frac{v_0^2}{g} \cos \theta * \sin \theta$$

$$2 \sin \theta \cos \theta = \sin 2\theta$$

$$= \frac{v_0^2}{g} \sin(2\theta)$$





$$y = f(t) \quad y = y_0 + v_{0y}t + \frac{1}{2}gt^2$$

$$x = f(t) \quad x = x_0 + v_{0x}t$$

$$\frac{x}{v_{0x}} = t$$