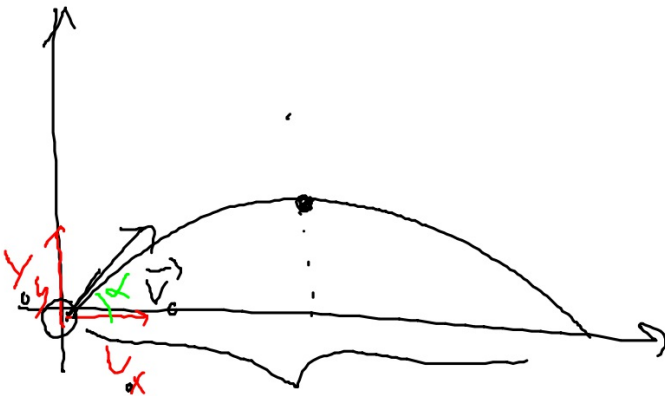


Moto PARABOLICA



$g \cdot t_{max}$

$$\begin{cases} X = v_{0x} t \\ Y = v_{0y} t - \frac{1}{2} g t^2 \\ = 0 \end{cases}$$

$$0 = v_{0y} t - \frac{1}{2} g t^2$$

$$t (v_{0y} - \frac{1}{2} g t) = 0$$

$$t = 0$$

$$t = \frac{v_{0y}}{g}$$

$$t = \frac{2 v_{0y}}{g} = \frac{2 v_0 \sin \alpha}{g}$$

$$x_g = v_{0x} t_f = v_{0x} \cdot \frac{2v_{0y}}{g} = \frac{2v_{0x}v_{0y}}{g} =$$

$$x_g = \frac{2v_0^2 \sin\alpha \cos\alpha}{g}$$

$$v_{0x} = v \cos\alpha$$

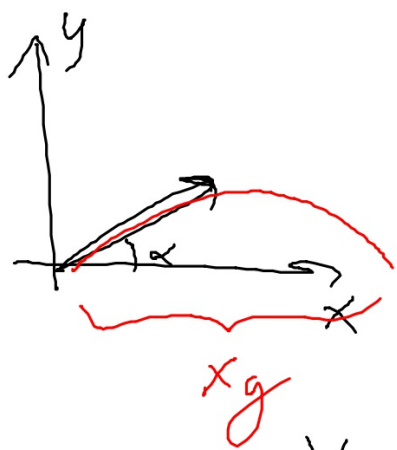
$$v_{0y} = v \sin\alpha$$

Trasformata

$$\begin{cases} x = v_{0x} t \\ y = v_{0y} t - \frac{1}{2} g t^2 \end{cases}$$

$$\begin{cases} t = \frac{x}{v_{0x}} \\ y = \left(\frac{v_{0y}}{v_{0x}} \right) x - \left(\frac{1}{2} \frac{g}{v_{0x}^2} \right) x^2 \end{cases}$$

ex. 22 pag. 47



~~$\alpha = 35,6^\circ$~~

$x_g = 1,30 \text{ m}$

$t_f = 1,25 \text{ s}$

$v_0 = ?$

$$\begin{cases} x = v_{0x} t \\ y = v_{0y} t - \frac{1}{2} g t^2 \end{cases}$$

1° $v_{0x} = \frac{x_g}{t_f} = \frac{1,30 \text{ m}}{1,25 \text{ s}} = 1,04 \frac{\text{m}}{\text{s}}$

2° $v_0 = \frac{v_{0x}}{\cos \alpha} = \frac{1,04 \text{ m/s}}{\cos 35,6^\circ} = 1,27 \frac{\text{m}}{\text{s}}$



$$y = v_{oy} t - \frac{1}{2} g t^2$$

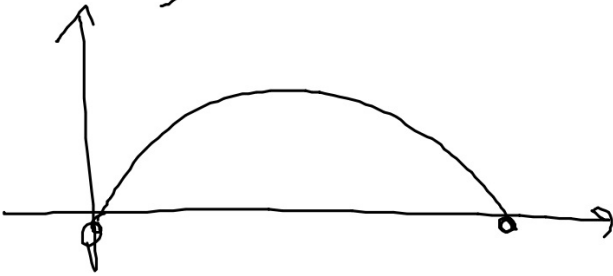
$$0 = v_{oy} (1,25 \text{ s}) - \frac{1}{2} (9,81 \frac{\text{m}}{\text{s}^2}) (1,25 \text{ s})^2$$

$$v_{oy} = 6,13 \frac{\text{m}}{\text{s}}$$

$$v_0 = \sqrt{(1,87 \frac{\text{m}}{\text{s}})^2 + (6,13 \frac{\text{m}}{\text{s}})^2} =$$

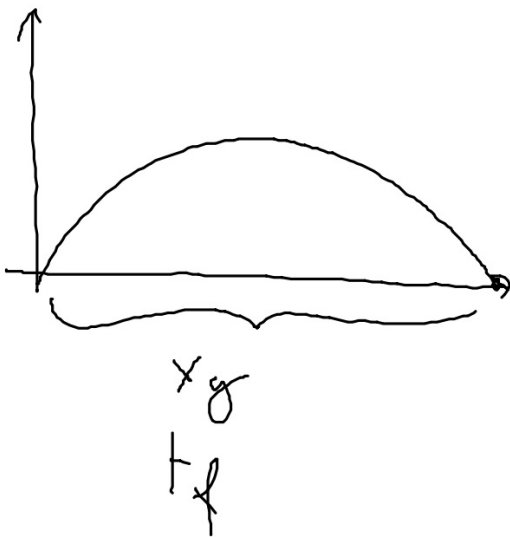
$$x = (1,04 \frac{m}{s}) t$$

$$y = (0,73) t - \frac{1}{2} g t^2 = t (0,73 - \frac{1}{2} g t)$$



$$K = \frac{v_{0y}}{g}$$

ex. 26



$$\begin{cases} x = v_{0x} t \\ y = v_{0y} t - \frac{1}{2} g t^2 \end{cases}$$

$$v_{0x} = \frac{x_g}{t_f}$$

$$v_{0y} = \frac{1}{2} g t_f$$

$$v_0 = \sqrt{v_{0x}^2 + v_{0y}^2}$$
$$\cos \alpha = \frac{v_{0x}}{v_0}$$

~~$v_{0y} = \frac{1}{2} g t_f$~~

$$v_{0y} t - \frac{1}{2} g t^2 = 0$$
$$t (v_{0y} - \frac{1}{2} g t) = 0$$
$$\alpha = \cos^{-1}(\dots)$$

