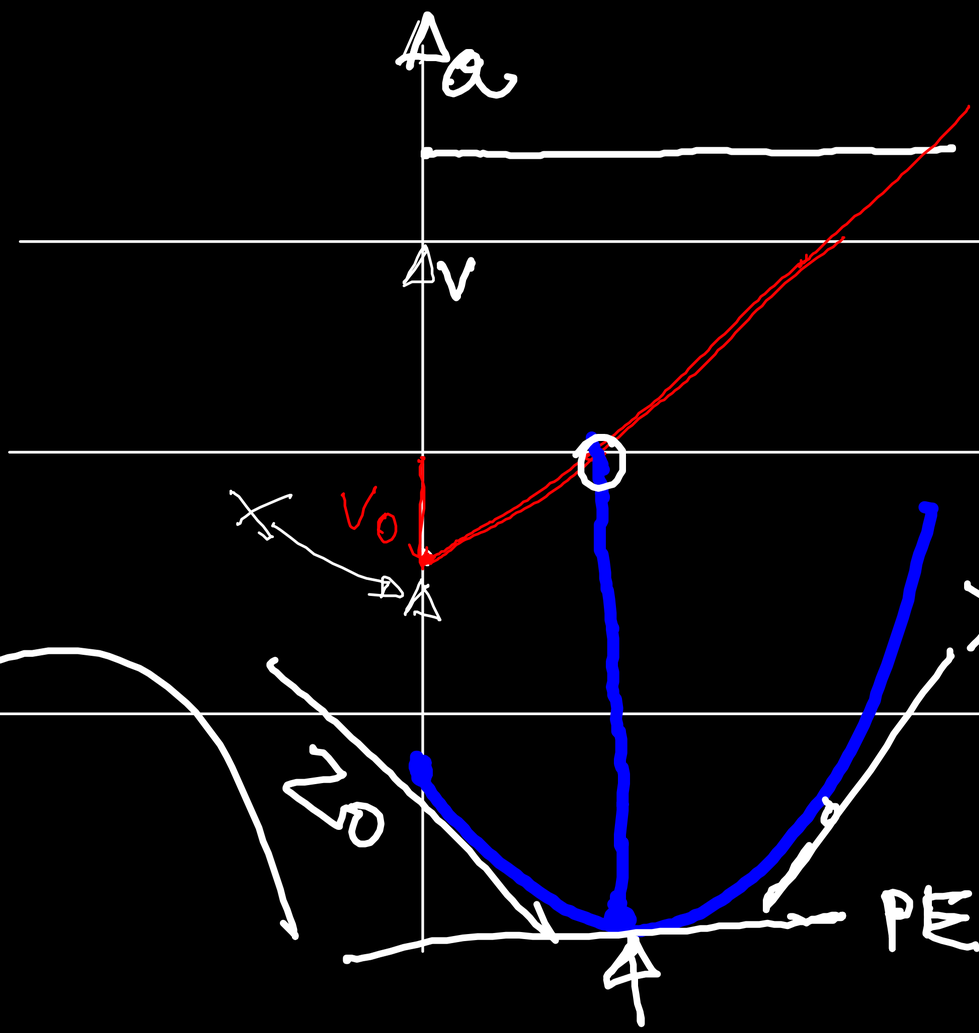
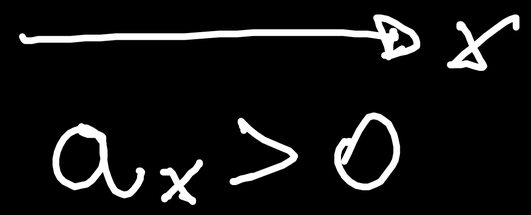
$$V_x^2(t) - V_{0x}^2 = 2a_x(x - x_0)$$





$a_x = \text{cost} \geq 0$

$V(t) = V_0 + at$

$X(t) = X_0 + V_0 t + \frac{1}{2} a t^2$

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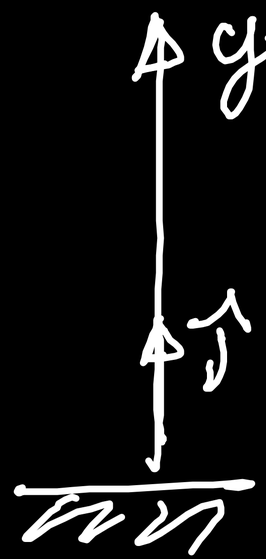


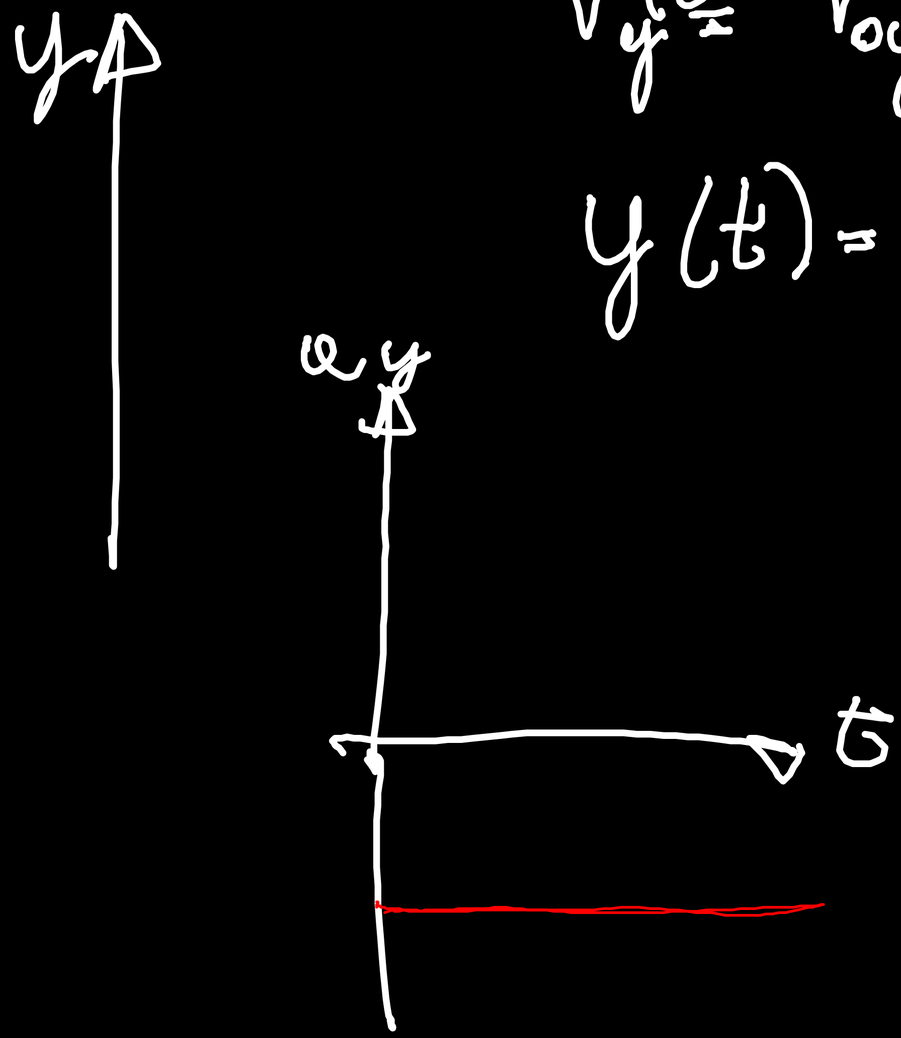
$$\vec{a} = -g\hat{j}$$

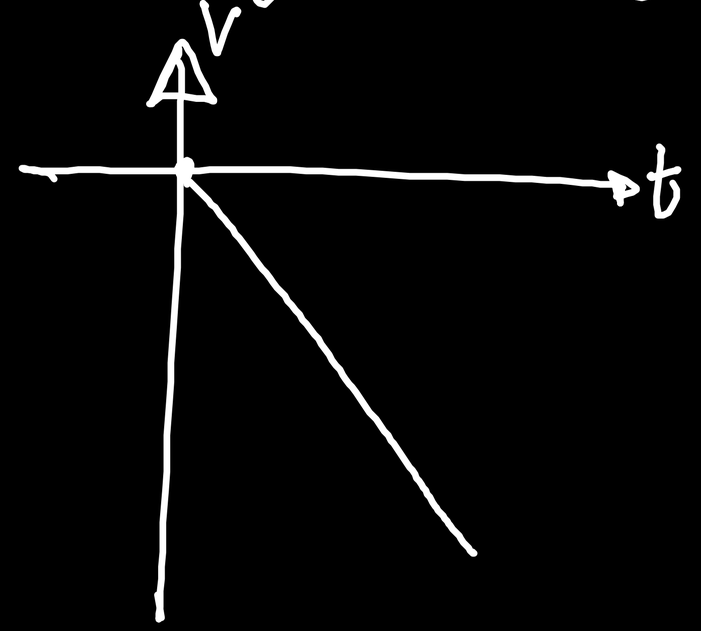
$$g = 9.81 \ m/s^2$$

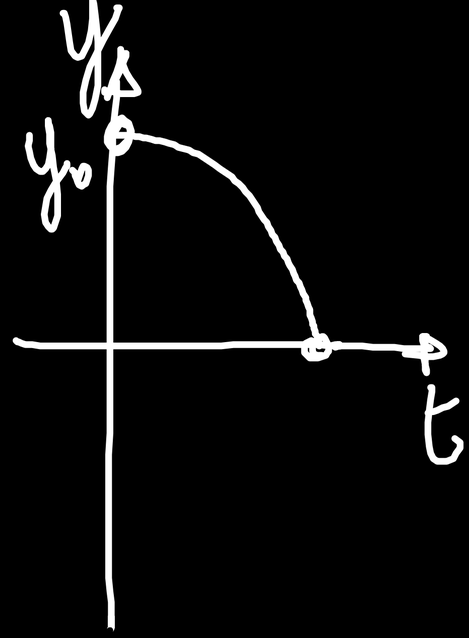
$$a_y = -g$$

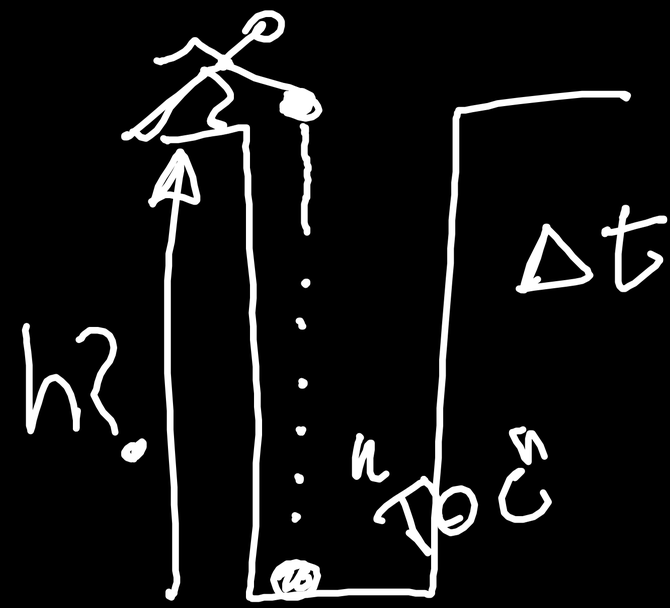
$$V_y(t) = V_{oy} + a_y t = V_{oy} - g t$$

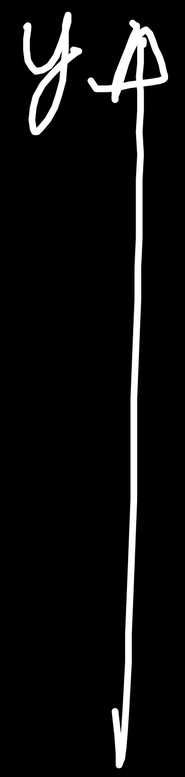
$$y(t) = y_0 + V_{oy} t - \frac{1}{2} g t^2$$











$$y(t) = h - \frac{1}{2} g t^2$$

$$0 = h - \frac{1}{2} g \Delta t^2$$

$$h = \frac{1}{2} g \Delta t^2$$

$h \approx 10\ m$ $\quad \Delta t \simeq 1.41\ s$ $\quad g = 9.81\ m/s^2$

MOTO UNIF. ACCELERATO (1D)

$\vec{a}$ = costante $\quad \vec{a} = (a_x, 0, 0)$

$$\begin{cases} a_x = \text{costante} \\ V(t) = V_0 + at \Longrightarrow t = \dfrac{V(t) - V_0}{a} \end{cases}$$

$$\begin{cases} \\ x(t) = x_0 + V_0 t + \frac{1}{2} a t^2 \Rightarrow x(t) = x_0 + V_0 \dfrac{(V(t) - V_0)}{a} \end{cases}$$

$$+ \frac{1}{2} a \frac{(V(t) - V_0)^2}{a^2}$$