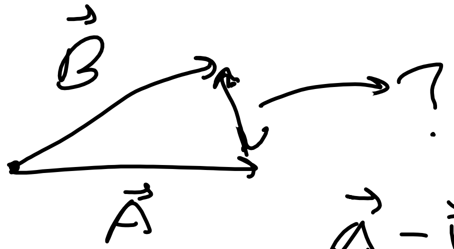
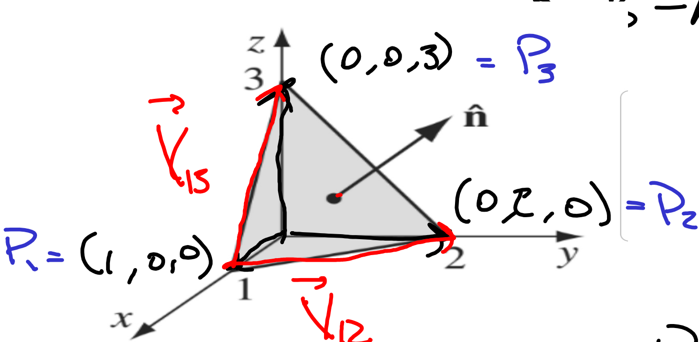



$\vec{A} - \vec{B}$

$\vec{?} - \vec{A}$




$P_2 - P_1 = V_{12} = (-1, 2, 0)$

$P_3 - P_1 = V_{13} = (-1, 0, 3)$

① $V_{12} \times V_{13}$ ⟶

② $V_{13} \times V_{12}$

$$\begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ -1 & 2 & 0 \\ -1 & 0 & 3 \end{vmatrix} = \begin{array}{l} +(6)\hat{i} \\ -(-3)\hat{j} \\ +(-(-1)(2))\hat{k} \end{array}$$

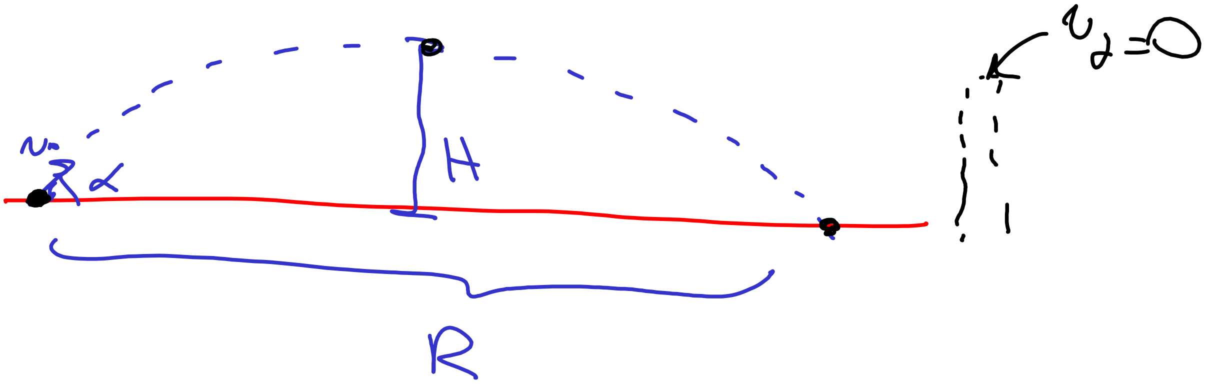
$$\vec{N} = 6\hat{i} + 3\hat{j} + 2\hat{k}$$

$$\vec{C} = |C|\hat{c} \rightarrow \hat{c} = \frac{\vec{C}}{|C|}$$

$$\boxed{\hat{n} = \frac{\vec{N}}{|N|} = \frac{6}{7}\hat{i} + \frac{3}{7}\hat{j} + \frac{2}{7}\hat{k}}$$

$$|N| = \sqrt{6^2 + 3^2 + 2^2} = 7$$

# Mov. Parabólico




$R = ?$

$v_0 , \alpha , g , \boxed{\Delta y = 0}$

$$0 = 0 + v_{y_0} t - \frac{1}{2} g t^2 \rightarrow 0 = t\left(v_{y_0} - \frac{1}{2} g t\right)$$

$$t = 0$$

$$t = \frac{2 v_{y_0}}{g} = \frac{2 v_0 \operatorname{sen}\alpha}{g}$$

$$\operatorname{sen}(2\alpha) = \boxed{2 \cos\alpha \operatorname{sen}\alpha}$$

$$R = v_0 \cos\alpha \, t \Rightarrow R = \frac{2 v_0^2 \operatorname{sen}\alpha \cos\alpha}{g}$$

$$\boxed{R = \frac{v_0^2 \operatorname{sen}(2\alpha)}{g}}$$

$H = ?$

$v_0, \alpha, g, \boxed{v_{fy} = 0}$

$$\cancelto{0}{v_{fy}^2} = v_{0y}^2 - 2gH \rightarrow \boxed{H = \frac{v_0^2 \sin^2\alpha}{2g}}$$

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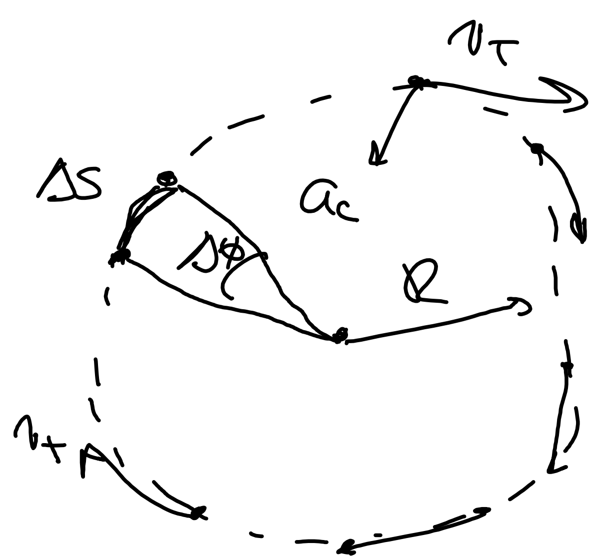
## Mov. Circular




$$a_c = \frac{v^2}{R}$$

solo cambia la dirección de la v.

$$\frac{\Delta s}{\Delta t} = \frac{\Delta \phi}{\Delta t} \cdot R \longrightarrow v_t = \omega R \quad , [\omega] = rad/s$$

Velocidad angular

Independiente del radio

$$\omega = \frac{2\pi}{T}$$

$\to$ periodo

$\to$ Tiempo para completar una revolución. $\longleftrightarrow$ frecuencia $\frac{1}{T}$