

Oscilatorio

sentido opuesto

$$-k \cdot \Delta x = m \cdot \ddot{x}$$

$$\Rightarrow -\frac{k}{m} \cdot \Delta x = \ddot{x}$$

$$-\omega^2 \cdot \Delta x = \ddot{x}$$



$$\omega^2 = \frac{k}{m}$$

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

$$f = \frac{1}{T}$$

Unidades:

Cte elástica:

$$[k] = \frac{N}{m}$$

Período

$$[T] = s$$

Frec. Angular

$$[\omega] = \frac{1}{s}$$

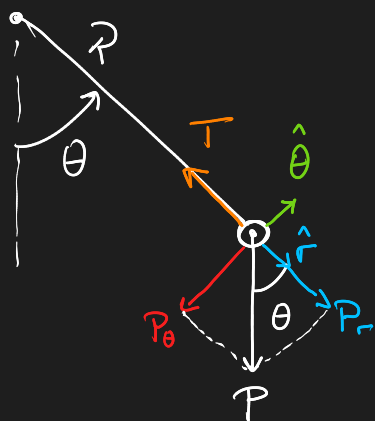
Frec. ?

$$[f] = \frac{1}{s} = Hz$$

Péndulo

SOH CAH

$$\cos \theta = \frac{P_r}{P}$$



$$\hat{r}: -T + \cos \theta \cdot P = m \cdot a_{\text{centr}} = -m \cdot R \cdot \omega^2$$

Cambia si va o vuelve según θ

$$\begin{aligned} \hat{\theta}: -\sin \theta \cdot P &= m \cdot a_{\theta} \\ &= -m \cdot R \cdot \ddot{\theta} \\ &= -m \cdot R \cdot \frac{d\dot{\theta}}{dt} \end{aligned}$$

$$= -m \cdot R \cdot \frac{d\dot{\theta}}{d\theta} \cdot \frac{d\theta}{dt}$$

Velocidad Angular

$$\omega = \frac{V_L}{R} \quad [\omega] = \frac{1}{s}$$

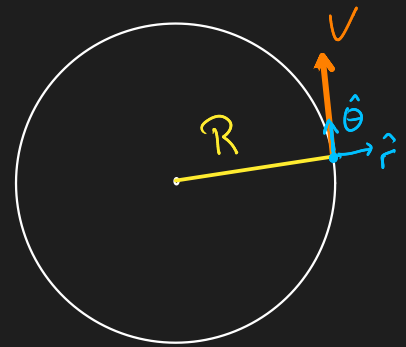
Velocidad Lineal

$$V_L = R \cdot \omega \quad \text{con } \omega : \text{Vel. angular}$$

$$[V_L] = \frac{m}{s}$$

Aceleración Radial / Centrípeto

$$a_{cen} = -R \cdot \omega^2 \cdot \hat{r}$$



$$[a_{cen}] = \frac{m}{s^2}$$

Aceleración Tangencial

$$a_{tan} = R \cdot \ddot{\theta} \quad \text{con } \ddot{\theta} : \text{Aceleración Angular}$$

Aceleración :

$$\bar{a} = -R \cdot \omega^2 \cdot \hat{r} + R \cdot \ddot{\theta} \cdot \hat{\theta}$$

Energía

Trabajo

$$[W] = N \cdot m = J$$

Energía Potencial Elástica

$$E_p = \frac{1}{2} k \cdot (\Delta x)^2$$

• Aclarar que si la soga es inextensible

$$\Rightarrow T_1 = T_2$$

$$\Rightarrow a_1 = a_2$$



Momento Lineal

Sea el sistema $S = \{1, 2\}$

$$\underbrace{m_1 \cdot v_1^o + m_2 \cdot v_2^o}_{\vec{P}_S^o} = \underbrace{m_1 \cdot v_1^f + m_2 \cdot v_2^f}_{\vec{P}_S^f}$$