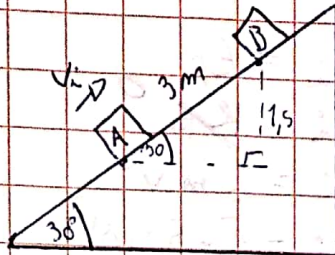


Problema 1:

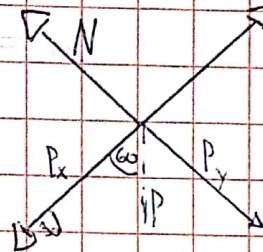
$$\begin{aligned} m &= 5 \text{ kg} \\ v_i &= 8 \text{ m/s} \\ v_f &= 0 \\ d &= 3 \text{ m} \\ \alpha &= 30^\circ \end{aligned}$$



$$\begin{aligned} \text{sen } 30^\circ &= \frac{\text{Cat. op.}}{3} \\ 1.5 &= 3 \cdot \text{sen } 30^\circ \end{aligned}$$

$$\Delta E = W_{FR}$$

$$\begin{aligned} E_B - E_A &= F_n \cdot d \cdot \cos 180^\circ \\ U_g - K_A &= M \cdot N \cdot d \cdot \cos 180^\circ \\ mg \cdot h - \frac{1}{2} m \cdot v^2 &= M \cdot 5 \cdot 10 \cdot \text{sen } 60^\circ \cdot 3 \cdot \cos 180^\circ \end{aligned}$$



$$\begin{aligned} N &= P_y \\ N &= mg \cdot \text{sen } 60^\circ \end{aligned}$$

$$5 \cdot 10 \cdot 1.5 - \frac{1}{2} \cdot 5 \cdot 8^2 = M - 130$$

$$\begin{aligned} -85 &= M \\ -130 & \end{aligned}$$

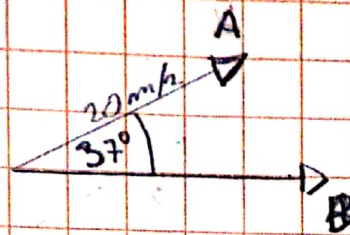
$$0.65 = M$$

Problema 2 =

Dados

$$V_i = 8 \text{ m/s}$$

$$m_1 = m_2$$



X =

$$\vec{P}_i = \vec{P}_f$$

$$\vec{P}_{1A} + \vec{P}_{1B} = \vec{P}_{2A} + \vec{P}_{2B}$$

$$2m \cdot 8 \text{ m/s} = m (\cos 37^\circ \cdot 20 + V_{xB})$$

$$0,03 \frac{m}{s} = V_{xB}$$

Y =

$$\vec{P}_i = \vec{P}_f$$

$$0 = \vec{P}_{1A} + \vec{P}_{1B}$$

$$0 = mV_A + mV_B$$

$$0 = m(V_A + V_B)$$

$$0 = 20 \cdot \sin 37^\circ + V_B$$

$$-12 \frac{m}{s} = V_B$$

$$|\vec{V}| = \sqrt{(-12)^2 + (0,03)^2}$$

$$|\vec{V}| = \sqrt{144,0009}$$

$$|\vec{V}| = 12 \text{ [m/s]} //$$

$$\sigma = \arctg \cdot \frac{12}{0,03}$$

$$\sigma = \arctg 400$$

$$\sigma = 89,86^\circ //$$

Problema 3 =

$$d = 314 \text{ m}$$

$$t = 30 \text{ s}$$

$$R_1 = 0,1 \text{ m}$$

$$R_2 = 0,04 \text{ m}$$

$$R_3 = 0,4 \text{ m}$$

$$a) R_3 = 0,4 \text{ m}$$

$$1 \text{ rev} = 2\pi \text{ rad}$$

$$1 \text{ rev} = 2\pi \cdot 0,4 \text{ [m]}$$

$$1 \text{ rev} = 2,51 \text{ [m]}$$

$$n^\circ \text{ vueltas} = \frac{\text{dist.}}{\text{rev}}$$

$$= \frac{314 \text{ [m]}}{2,51 \text{ [m]}}$$

$$= 125$$

R = Da 125 vueltas

$$b) \bar{\omega} = \frac{\Delta \theta}{\Delta t}$$

$$\bar{\omega} = 2\pi \cdot \frac{125}{30}$$

$$\bar{\omega} = 26 \text{ rad/s}$$

c)

$$V_1 = V_2$$

$$r_1 \cdot \omega_1 = r_2 \cdot \omega_2$$

$$\omega_1 = \frac{0,04 \cdot 26}{0,1}$$

$$\omega_1 = 10,4 \text{ rad/s}$$