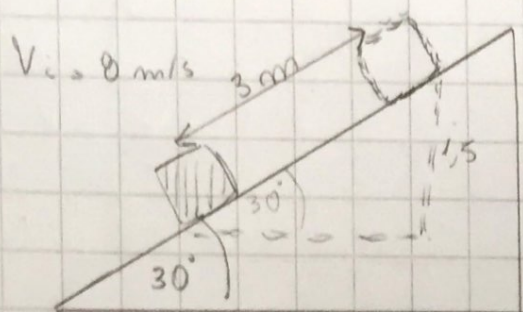
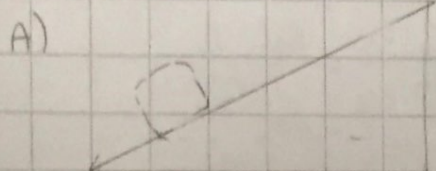


Pregunta n° 1

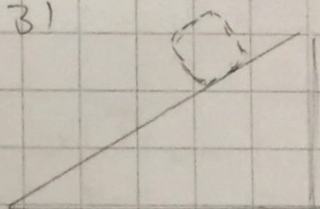


$$\begin{aligned} \sin \theta &= 0.5 \\ h &= 1.5 \\ \sin 30 &= 0.5 \\ 3 &= 1.5 \\ 0.5 &= 1.5 \\ 3 &= 1.5 \end{aligned}$$

$$\begin{aligned} m &= 5 \text{ kg} \\ v_i &= 8 \text{ m/s} \\ v_f &= 0 \\ d &= 3 \text{ m} \\ \mu &= ? \end{aligned}$$

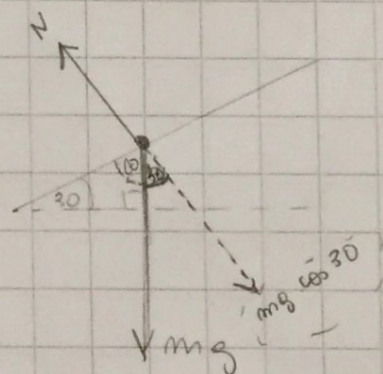


$$\begin{aligned} K &= \checkmark \\ U_g &= \times \end{aligned}$$



$$\begin{aligned} K &= \times \\ U_g &= \checkmark \end{aligned}$$

Entre A y B

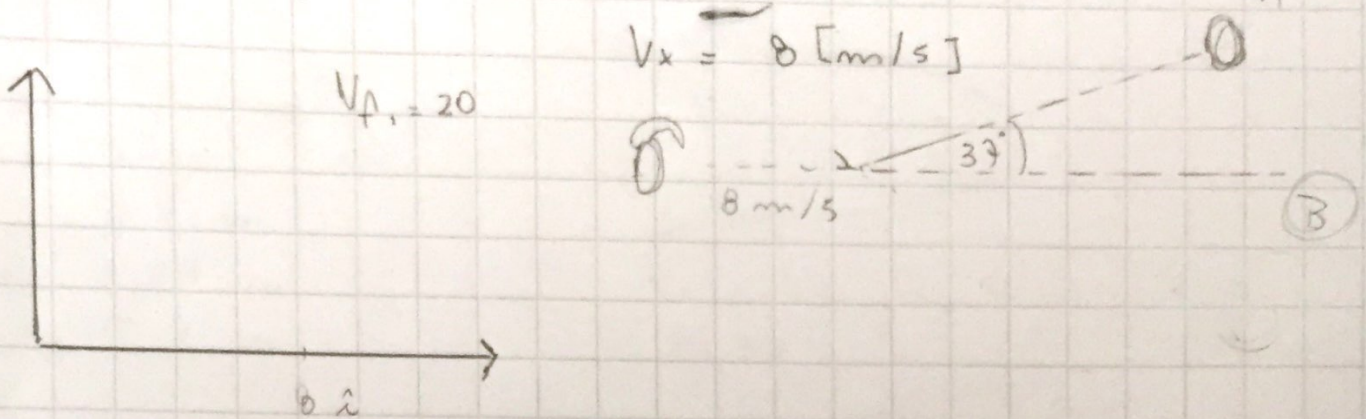


$$\begin{aligned} \Delta E &= W_{f_{ec}} \\ E_B - E_A &= W_{f_{ec}} \\ E_B - E_A &= (\mu \cdot N) \cdot d \cdot \cos 180 \\ E_B - E_A &= (\mu \cdot mg \cos 30) \cdot 3 \cdot -1 \\ E_B - E_A &= (\mu \cdot 43.3) \cdot 3 \cdot -1 \\ mgh - \frac{1}{2}mv^2 &= -129.9 \mu \end{aligned}$$

$$\begin{aligned} 75 - 160 &= -129.9 \mu \\ -85 &= -129.9 \mu \\ 0.65 &= \mu \\ \mu &= 0.65 \end{aligned}$$

$$\begin{aligned} \Delta K &= W_N \\ K_f - K_i &= W_p + W_R \\ 0 - 160 &= -75 - 129.9 \mu \\ -85 &= -129.9 \mu \\ 0.65 &= \mu \end{aligned}$$

Problema 2.



Eje x

$$P_{ix} = P_{fx}$$

$$P_{1ix} + P_{2ix} = P_{1fx} + P_{2fx}$$

$$m_1 \cdot v_1 + m_2 \cdot v_2 = m_1 \cdot v_{1x} + m_2 \cdot v_{2x} \quad / \cdot 1/m$$

$$v_1 + v_2 = v_{1x} + v_{2x}$$

$$16 = \cos 37 \cdot 20 + v_{2x}$$

$$\boxed{16 = 20 \cos 37 + v_{2x}}$$

Eje y

$$P_{iy} = P_{fy}$$

$$P_{1iy} + P_{2iy} = P_{1fy} + P_{2fy}$$

$$0 = m_1 v_{1y} + m_2 v_{2y}$$

$$0 = m (v_{1y} + v_{2y}) \quad / \cdot 1/m$$

$$0 = (v_{1y} + v_{2y})$$

$$0 = 20 \sin 37 + v_{2y}$$

$$-12.03 = v_{2y}$$

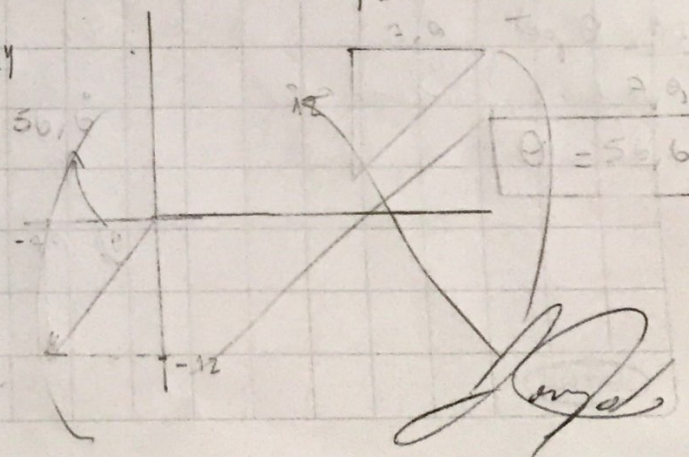
$$v_x = 0.027 \hat{i}$$

$$v_y = -12 \hat{j}$$

$$\boxed{\vec{v} = 0.027 \hat{i} + (-12 \hat{j})}$$

$$|\vec{v}| = \sqrt{(0.027)^2 + (-12)^2}$$

$$\boxed{= 12.1 \text{ [m/s]}}$$



Problema n° 3

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

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

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

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

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

$$\left. \begin{aligned} d &= v \cdot t \\ 314 &= v \cdot 30 \end{aligned} \right\} v = 10,46 \text{ m/s}$$



$$\begin{aligned} V_1 &= V_2 \\ 10,46 \end{aligned}$$

$$\omega = \Delta \theta / t$$

$$\begin{aligned} 1 \text{ rev} &= 2\pi \text{ rad} \\ R_3 &= 0,4 \end{aligned}$$

$$\begin{aligned} a) \text{ Perimetro} &= 2\pi \cdot 0,4 \\ &= 2,51 \text{ [m]} \end{aligned}$$

$$\left. \begin{aligned} N^\circ \text{ vueltas: } \text{Revoluciones / perimetro} \\ R_3 &= 314 \text{ m} / 2,51 \text{ m} \\ &= 125,09 \end{aligned} \right\}$$

$$\boxed{N^\circ \text{ vueltas} = 125,}$$

$$b) \bar{\omega} = \bar{\theta} \rightarrow$$

$$= 2\pi \cdot \left(\frac{125}{30} \right)$$

$$\boxed{= 26,2 \text{ [rad/s]}}$$

$$c) V_1 = V_2 \quad \therefore \omega_1 = \omega_2$$

$$\omega_1 = \frac{26,18 \cdot 0,04}{0,1}$$

$$\boxed{\omega = 10,5 \text{ [rad/s]}}$$

[Signature]