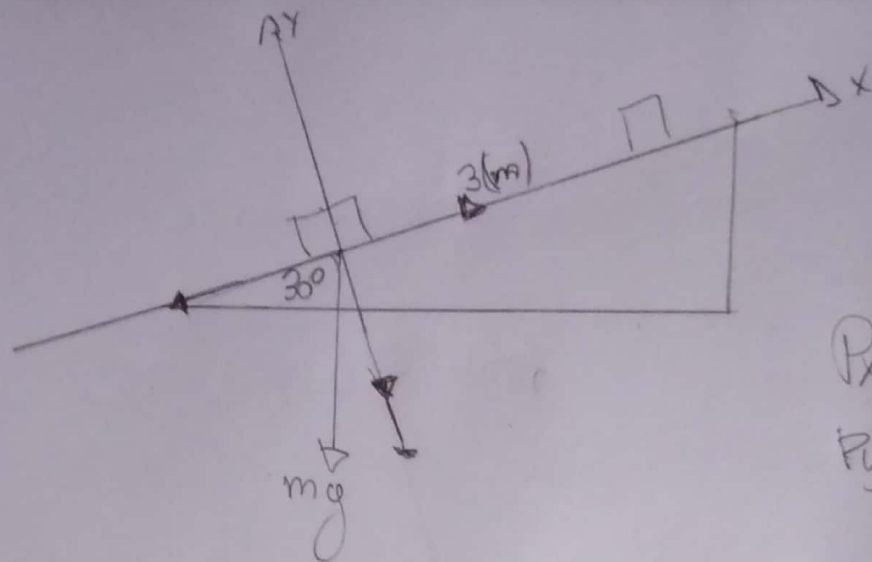


Exercício 10
2º Eixo

1) $m = 5 \text{ kg}$
 $v_i = 8 \text{ m/s}$
 $d = 3 \text{ (m)}$
 $v_f = 0$
 $\alpha = 30^\circ$
 $\mu_R = x$



$$P_x = mg \sin 30^\circ$$

$$P_y = mg \cos 30^\circ$$

$$\sum F_x = -f_r - mg \sin 30^\circ = m a \rightarrow f_r = \mu N$$

$$\sum F_y = N - mg \cos 30^\circ = 0 \rightarrow N = mg \cos 30^\circ$$

$$m a = \mu mg \cos 30^\circ - mg \sin 30^\circ$$

$$W_N = \vec{F}_N \cdot \vec{\Delta x} = m a \cdot \Delta x = -(\mu mg \cos 30^\circ + mg \sin 30^\circ) \cdot \Delta x$$

$$\text{Trabalho y Energia} = W_N = \Delta K = \frac{1}{2} m v_f^2 - \frac{1}{2} m v_i^2$$

$$= \mu \cdot mg \Delta x \cos 30^\circ + mg \Delta x \sin 30^\circ = \frac{1}{2} m v_i^2$$

$$= \mu \cdot g \Delta x \cos 30^\circ + g \Delta x \sin 30^\circ = \frac{1}{2} v_i^2$$

$$\mu \cdot g \Delta x \cos 30^\circ = \frac{1}{2} v_i^2 - g \Delta x \sin 30^\circ$$

$$\mu = \frac{\frac{1}{2} v_i^2 - g \Delta x \sin 30^\circ}{g \Delta x \cos 30^\circ}$$

$$\mu = \frac{\frac{1}{2} \cdot 64 - 10 \cdot 3 \cdot \sin 30^\circ}{10 \cdot 3 \cdot \cos 30^\circ}$$

$$= 0,634$$

$$10 \cdot 3 \cdot \cos 30^\circ$$

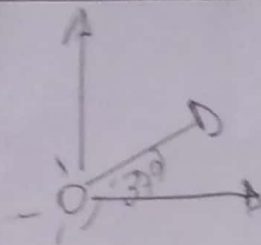
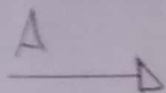
Resposta

Scalp Men
200 E w

2) $V_i = 8 \text{ (m/s)}$

$V_f = 20 \text{ (m/s)}$

$\alpha = 37^\circ$



f_{gx}

$P_{ix} = P_{fx}$

$m \cdot 8 = m \cdot 20 \cdot \cos 37^\circ + m \cdot V_B' \cos \alpha$

$8 - 20 \cos 37^\circ = V_B' \cos \alpha$

$-7,98 \text{ m/s} = V_B' \cos \alpha$

Reemplazo el α

$V_{Bx} = 14,46 \text{ m/s}$

$C_{30} \text{ y}$
 $\vec{P}_{My} = \vec{P}_{fy}$

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

$-20 \sin 37^\circ = V_{By}' \sin \alpha$

$-12,04 \frac{\text{m}}{\text{s}} = V_{By}' \sin \alpha$

$\tan \alpha = \frac{-12,04}{-7,98}$

Reemplazo α

$\alpha = \text{Arctg} \left(\frac{-12,04}{-7,98} \right)$

$\frac{-12,04}{\sin 56,5} = V_{By}'$

$-14,44 \text{ m/s} = V_{By}'$

$\alpha = 56,5^\circ$

$V_f = \sqrt{(-14,46)^2 + (-14,44)^2}$

$V_f = 20,42 \text{ m/s}$

Sembo Mesa
20/5/20

$$A) v = \frac{\phi}{t} = \frac{314 \text{ [m]}}{30 \text{ s}} = 10,47 \text{ m/s}$$

$$3) \phi = 314 \text{ [m]} \\ f = 30 \text{ (s)}$$

$$v = \omega \cdot R \\ 10,47 \text{ m/s} = \omega \\ \frac{0,40 \text{ m}}$$

$$\boxed{\vec{\omega} = 26,175 \text{ rad/s}}$$

$$b) w_i = t = 0 \text{ (s)} \\ w_f = t = 40 \text{ (s)}$$

$$\vec{\omega} = \frac{\Delta \omega}{\Delta t}$$

$$\vec{\omega} = \frac{\Delta \omega}{\Delta t}$$

$$\text{Vueltas} = \frac{314 \text{ m}}{2\pi \cdot 0,4} = 125 \text{ vueltas}$$

$$\omega_{\text{roeta}} = \omega_{\text{pinon}} \\ 26,175 \text{ rad/s} = \omega_{\text{pinon}}$$

$$v_{\text{ty pinon}} = v_{\text{ty plato}}$$

$$v = 26,175 \cdot 0,04 = v_{\text{ty plato}} \\ 1,047 \text{ m/s} = v_{\text{ty plato}}$$

$$\omega_{\text{plato}} = \frac{v}{R}$$

$$\omega_{\text{plato}} = \frac{1,047}{0,1}$$

$$\boxed{\omega_{\text{plato}} = 10,47 \text{ rad/s}}$$

Escaneado