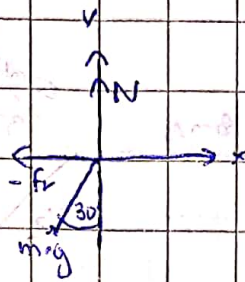


1)



$$m = 5 \text{ Kg}$$

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

$$V_f = 0 \text{ m/s}$$

$$V_f^2 = V_0^2 - 2ax$$

$$2ax = V_0^2$$

$$\Rightarrow a = \frac{V_0^2}{2x} = \frac{(8 \text{ m/s})^2}{2 \cdot 3 \text{ m}} = \frac{64 \text{ m}^2/\text{s}^2}{6 \text{ m}} = 10,67 \text{ m/s}^2$$

$$* a = -10,67 \text{ m/s}^2 \rightarrow \text{Pierde vel.}$$

$$\text{eq. } Y \rightarrow \sum F_y = 0 \Rightarrow N - m \cdot g \cdot \cos 30^\circ = 0$$

$$N = m \cdot g \cdot \cos 30^\circ = (5)(10) \cdot \cos 30^\circ$$

$$N = 43,30 \text{ [N]}$$

$$\text{eq. } X \rightarrow \sum F_x = m \cdot a \Rightarrow -F_r - m \cdot g \cdot \sin 30^\circ = (5)(-10,67)$$

$$-F_r - 5 \cdot 10 \cdot \sin 30^\circ = -53,35$$

$$F_r = 28,35$$

$$F_r = \mu N \Rightarrow F_r = \mu (43,30) \quad (43,30)$$

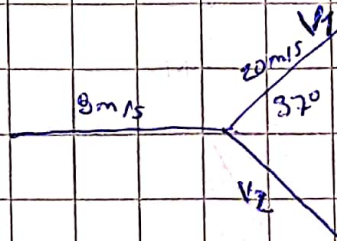
$$43,30 \mu = 28,35$$

$$\mu = \frac{28,35}{43,30}$$

$$\boxed{\mu = 0,65}$$

2)

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



$$m \cdot g \cdot \vec{V}_{og} = \frac{m \cdot g}{2} \vec{V}_1 + \frac{m \cdot g}{2} \vec{V}_2$$

$$\vec{V}_{og} = \frac{1}{2} (\vec{V}_1 + \vec{V}_2)$$

$$2\vec{V}_{og} = (\vec{V}_1 + \vec{V}_2)$$

$$\text{Ese } x \Rightarrow 2V_{gx} = V_{1x} + V_{2x}$$

$$2 \cdot 8 = 20 \cos 37^\circ + V_{2x}$$

$$16 = 15,97 + V_{2x}$$

$$0,03 \text{ m/s} = V_{2x}$$

$$\text{Ese } y \Rightarrow 2V_{gy} = V_{1y} + V_{2y}$$

$$0 = 20 \sin 37^\circ$$

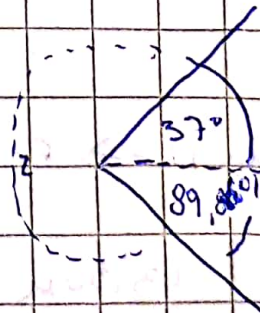
$$V_{2y} = -12,04 \text{ m/s}$$

$$\vec{V}_2 = (0,03\hat{i} - 12,04\hat{j}) \text{ m/s}$$

$$|\vec{V}_2| = 12,04 \text{ m/s}$$

$$\alpha = \tan^{-1} \left(\frac{-12,04}{0,03} \right)$$

$$\alpha = -89,86^\circ = 270,14^\circ$$



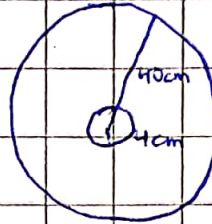
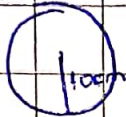
A. VERGARA G. 312 20C

Graf

3) $x = 314 \text{ m}$

$t = 30 \text{ s}$

$V_t = \frac{314 \text{ m}}{30 \text{ s}} = 10,47 \text{ m/s}$



a) $V_t = \omega \cdot R \rightarrow 10,47 = \omega \cdot 0,4 \text{ m} \rightarrow 26,18 \text{ Rad/s} = \omega$

$\omega = \frac{\theta}{t} \rightarrow 26,18 \text{ Rad/s} \cdot 30 = \theta \rightarrow \frac{785,4 \text{ Rad} = \theta}{\pi \cdot 2}$

$125,0 \cdot 2\pi \text{ Rad} = \theta$

$125 \text{ vueltas} = \theta$

b) $\bar{\omega} = \frac{\Delta \theta}{\Delta t} \rightarrow \bar{\omega} = \frac{785,4 \text{ rad} - 0}{(30 - 0) \text{ s}} = \bar{\omega} = 26,18 \text{ Rad/s}$

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

$\omega_1 = \frac{26,18 \text{ rad/s} \cdot 0,04 \text{ m}}{0,1}$

$\boxed{\omega_1 = 10,47 \text{ Rad/s}}$