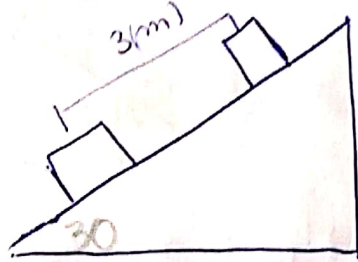


I

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

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



$$h = 3 \sin 30^\circ = 1.5$$

$$h = 1.5$$

$$W_{fmc} = \Delta E_M$$

$$W_{fmc} = (K_f - K_i) + (U_{gf} - U_{gi})$$

$$W_{fmc} = (0 - \frac{1}{2} \cdot 5 \cdot 64) + (5 \cdot 10 \cdot 1.5 - 0)$$

$$W_{fmc} = -160 + 75$$

$$W_{fmc} = -85 \rightarrow W_{\text{roa}} = -85 \text{ (J)}$$

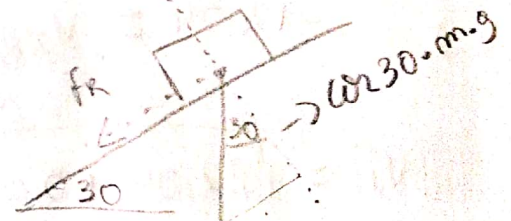
$$f_R \cdot d \cdot \cos(18^\circ) = -85$$

$$-N \cdot N \cdot d = -85$$

$$N = \frac{-85}{-3 \cdot 5 \cdot 10 \cdot \cos(30^\circ)}$$

$$N = 0.65$$

$$N = 0.65$$



II.

$$\vec{P}_A = \vec{P}_D$$

20 (m/s)

37°

$m_1 = m_2$

Eje x:

$$\vec{P}_{Ax} = \vec{P}_{Dx}$$

$$2m \cdot V_{Dx} = m_1 \cdot V_{1x} + m_2 \cdot V_{2x}$$

$$2m \cdot 8 \text{ (m/s)} = m \cdot 20 \cdot (\cos(37)) + m \cdot V_{2x} \quad / : m$$

$$16 \text{ (m/s)} = 15,97 + V_{2x}$$

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

$$\vec{P}_{Ay} = \vec{P}_{Dy}$$

Eje y:

$$0 = m \cdot V_{1y} + m_2 \cdot V_{2y}$$

$$0 = 20 \cdot \sin(37) + V_{2y}$$

$$-12,04 = V_{2y}$$

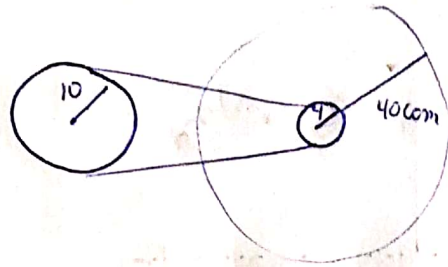
$$\|V\| = \sqrt{12,04^2 + 0,03^2}$$

$$\|V\| = 12,04 \text{ (m/s)}$$



$$\alpha = \tan^{-1} \left(\frac{12,01}{0,03} \right)$$

$\alpha = 89,85^\circ$ Bajo la trayectoria original.



$$a) \quad v = \frac{d}{t} = \frac{314}{30} = 10,46 \left(\frac{\text{m}}{\text{s}} \right)$$

$$\text{Perimetro} = 2\pi \cdot 0,4 \\ = 2,5 (\text{m}).$$

$$\left. \begin{array}{l} 1 \text{ Vuelta} = 2,5 (\text{m}) \\ x \text{ Vueltas} = 314 (\text{m}) \end{array} \right\} \text{ Recorrido } 126 \text{ Vueltas.}$$

$$b) \quad \frac{126 \text{ Rev}}{30 \text{ (s)}} \cdot \frac{2\pi}{\text{Rev}} = 26,37 \left(\frac{\text{Rad}}{\text{s}} \right)$$

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

$$\omega_1 = \frac{26,37 \cdot 0,04}{0,1}$$

$$\omega_1 = 10,55 \left(\frac{\text{Rad}}{\text{s}} \right)$$