

☐ LUN ☐ MAR ☐ MIE ☐ JUE ☐ VIE ☐ SAB ☐ DOM

FECHA:

Prueba Física

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PROBLEMA 1:

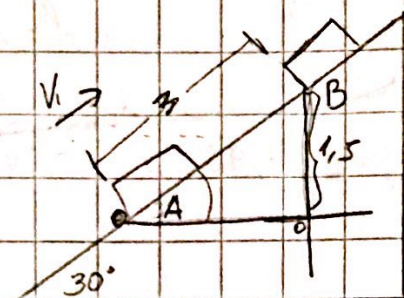
$$M = 5 \text{ kg}$$

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

$$L = 3 \text{ m}$$

$$V_f = 0$$

$$\alpha = 30^\circ$$



$$\sin 30 = \frac{CO}{3}$$

$$3 \cdot \sin 30 = CO$$

$$1,5 = CO$$

A - B :

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

$$E_B - E_A = f_r \cdot d \cdot \cos \theta$$

$$U_{gB} - K_A = M \cdot N \cdot d \cdot \cos \theta$$

$$mgh_B - \frac{1}{2} \cdot m \cdot v^2 = M \cdot N \cdot d \cdot \cos \theta$$

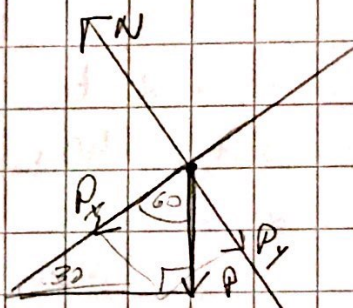
$$5 \cdot 10 \cdot 1,5 - \frac{1}{2} \cdot 5 \cdot 8^2 = M \cdot 5 \cdot 10 \cdot \sin 60 \cdot 3 \cdot \cos 180$$

$$75 - 160 = M \cdot -130$$

$$\frac{-85}{-130} = M$$

$$0,65 = M$$

$$0,65 = M$$



$$N = P_y$$

$$N = mg \cdot \sin 60$$

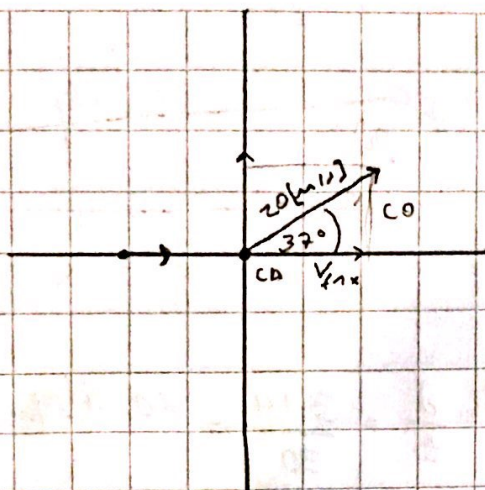
$$N = 43,3$$

$$W_N = 0$$

PROBLEMA 2:

$$m_1 = m_2$$

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



$$V_{1x} = 20 \cdot \cos 37^\circ$$

$$V_{1y} = 20 \cdot \sin 37^\circ$$

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

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

$$m_1 \cdot 8 = m_1 (V_{1x} + V_{2x})$$

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

$$8 - (20 \cdot \cos 37^\circ) = V_{2x}$$

$$\boxed{-7,97 \text{ [m/s]} = V_{2x}}$$

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

$$m_1 \cdot \vec{V}_{1y} = m_1 \cdot V_{1y} + m_2 \cdot V_{2y}$$

$$-m_2 \cdot V_{2y} = m_1 \cdot V_{1y}$$

$$-(20 \cdot \sin 37^\circ) = V_{2y}$$

$$\boxed{-12 \text{ [m/s]} = V_{2y}}$$

$$\vec{V}_f = (-7,97 \hat{x} - 12 \hat{y}) \text{ [m/s]}$$

$$|V_f| = \sqrt{(-7,97)^2 + (-12)^2}$$

$$|V_f| = 14,4 \text{ [m/s]}$$

$$\tan \theta = \frac{-12}{-7,97}$$

$$\theta = 56,4^\circ$$

PROBLEMA 3:

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

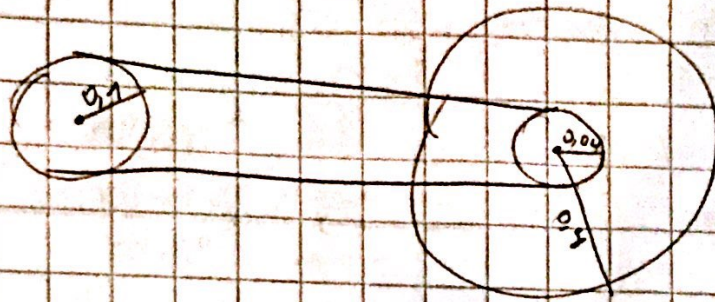
$$t = 30 \text{ s}$$

$$r_1 = 10 = 0,1 \text{ m}$$

$$r_2 = 4 = 0,04$$

$$r_3 = 40 = 0,4$$

$$v = \frac{d}{t} = \frac{314}{30} = 10,46 \text{ [m/s]}$$



$$b) v = w \cdot r$$

$$\frac{v}{r} = w$$

$$\frac{10,46}{0,4} = w$$

$$26,15 \frac{\text{rad}}{\text{s}} = w$$

$$c) v_1 = v_2$$

$$w_1 \cdot r_1 = w_2 \cdot r_2$$

$$w_1 = \frac{0,04 \cdot 26,15}{0,1}$$

$$w_1 = 10,46 \frac{\text{rad}}{\text{s}}$$