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Curso: 7<sup>do</sup> Eco  
Nombre: Rodrigo Herrera  
Curso: 2<sup>do</sup> Eco

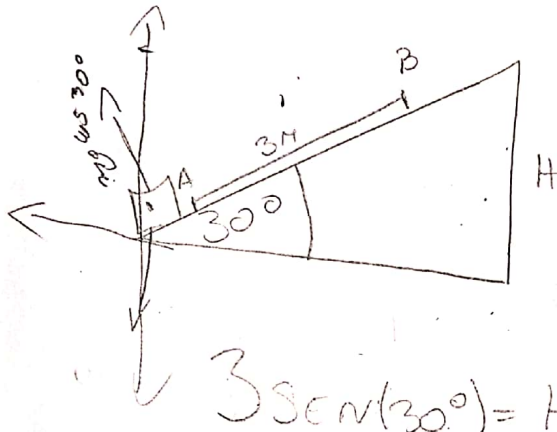
## Problema 1

$$m_B = 5 \text{ [kg]}$$

$$v_i = 8 \text{ [m/s]}$$

$$d = 3 \text{ [m]}$$

$$\theta = 30^\circ$$



$$3 \sin(30^\circ) = H$$
$$1,5 = H$$

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

$$E_B - E_A = W_{fR}$$

$$U_{gB} - K_A = W_{fR}$$

$$(mg h_B) - \left(\frac{1}{2} m_A \cdot v_A^2\right) = f_R \cdot d \cdot \cos 30^\circ$$

$$(5 \cdot 10 \cdot 1,5) - \left(\frac{1}{2} \cdot 5 \cdot 8^2\right) = \mu \cdot mg \cos 30^\circ \cdot d \cdot \cos 30^\circ$$

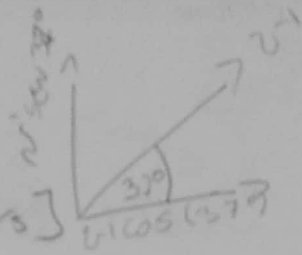
$$75 - 160 = (\mu \cdot 50 \cos 30^\circ) \cdot 3 \cdot \cos 30^\circ$$

$$-85 = \mu \cdot -129,9$$

$$\mu = 0,65$$

AA

## Pregunta 2



$$F_1 = 20 \text{ [m/s]}$$

$$v_0 = 8 \text{ [m/s]} \rightarrow F_2 = ?$$

$$m = 2M$$

$$\begin{aligned} M + M &= 2M \\ M &= \text{Gravedo} \end{aligned}$$

EJE X:

$$P_i = P_f$$

$$(m_0 \cdot v_{0x}) = (m_1 \cdot v_1') + (m_2 \cdot v_2')$$

$$2M \cdot 8 = M \cdot 20 \cos(37) + (M \cdot v_2' \cos \theta) \quad / \cdot M$$

$$16 = 20 \cos 37 + v_2' \cos \theta$$

$$0,03 = v_2' \cos \theta$$

$$\frac{0,03}{\cos \theta} = v_2'$$

EJE Y:

$$P_i = P_f$$

$$0 = (M \cdot 20 \sin 37) + (M \cdot v_2' \sin \theta)$$

$$-12,04M = M v_2' \sin \theta \quad / : M$$

$$\frac{-12,04}{\sin \theta} = v_2'$$

$$v_2' = \sqrt{(17,2)^2 + (12,04)^2}$$

$$v_2 = 20 \text{ [m/s]}$$

$$\frac{0,03}{\cos \theta} = \frac{-12,04}{\sin \theta}$$

$$\tan \theta = -401,3 \quad / \cdot t_9^{-1}$$

$$\theta = -89,9^\circ$$

Reemplazo:

$$\text{EN X}$$

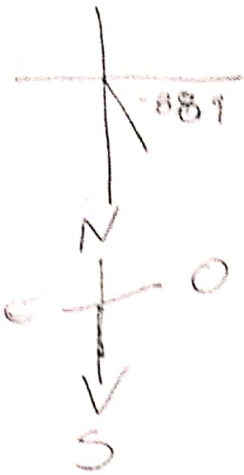
$$v_{x2}' = \frac{0,03}{\cos(-89,9)} = 17,2$$

EN Y:

$$v_{y2}' = \frac{-12,04}{\sin(-89,9)} = 12,043$$

REDING HERRERA

$$V^1 = 20 \text{ [m/s]}$$



$$360 + - 89,9 = 270,1^\circ$$

R: EL SEGUNDO FRAGMENTO  
 AVANZA A  $20 \text{ [m/s]}$  EN  
 DIRECCIÓN SUR

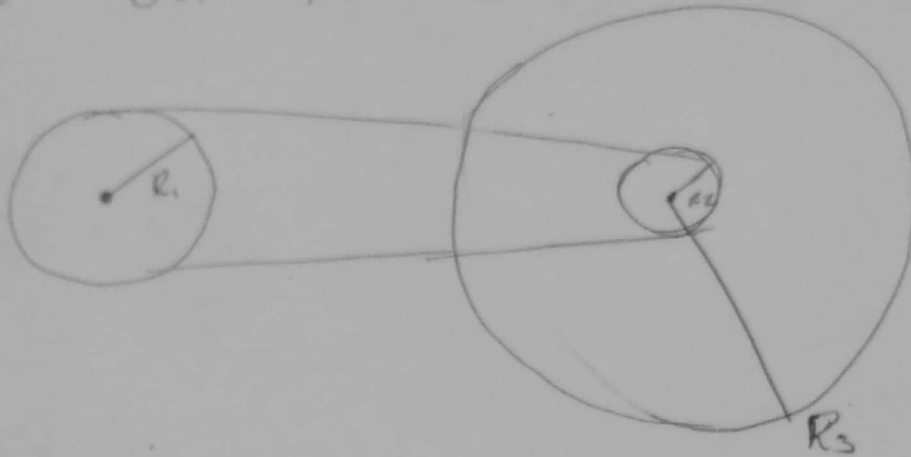
Rodrigo Herrera  
2000 ECO  
Pregunta 3

314 [m] en 30 [s]

$$R_1 = 10 \text{ cm} = 0,1 \text{ m}$$

$$R_2 = 4 \text{ cm} = 0,04 \text{ m}$$

$$R_3 = 40 \text{ cm} = 0,4 \text{ m}$$



$$\begin{aligned} \text{a) Perimetro} &= 2\pi \cdot R \\ &= 2\pi \cdot 0,4 = 2,5 \text{ [m]} \end{aligned}$$

$$X \text{ VUELTAS} = \frac{\text{Distancia total}}{\text{Perimetro}} \quad \left. \vphantom{\frac{\text{Distancia total}}{\text{Perimetro}}} \right\} X \text{ VUELTAS} = \frac{314 \text{ [m]}}{2,5}$$

$$X \text{ VUELTAS} = 125$$

R: DA 125 VUELTAS completas.

$$\text{B) } W_R = \rho$$

↓

$$\sqrt{V = \frac{d}{x}}$$

$$V = \frac{314}{30} = 10,47 \text{ [m/s]}$$

$$V = \omega \cdot R$$

$$\frac{10,47}{0,4} = \omega$$

$$\omega = 26,175$$

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

$$c) \bar{\omega} = \frac{\Delta\theta}{\Delta t}$$

$$V_1 = V_2$$

$$\omega_1 \cdot R_1 = \omega_2 \cdot R_2$$

$$\omega = \frac{10,48 - 0}{30 - 0}$$

$$\omega_1 \cdot 0,1 = 26,2 \cdot 0,04$$

$$\omega_1 = 10,48 \text{ [rad/s]}$$

$$\alpha = 0,35 \text{ [rad/s}^2\text{]}$$

$$\theta = \theta_i + \cancel{\omega_i t} + \frac{1}{2} \alpha \cdot t^2$$

$$\Delta\theta = \frac{1}{2} \cdot 0,35 \cdot 30^2$$

$$\Delta\theta = 157,5$$

$$\bar{\omega} = \frac{157,5}{30}$$

$$\bar{\omega} = 5,25 \text{ [rad/s]}$$