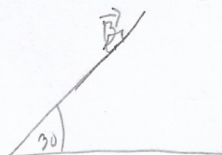
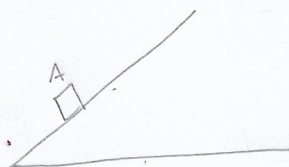


1. Datos: masa: 5 [kg]  
 $V_i: 8 \text{ m/s}$   
 $d: 3 \text{ m}$   
 $V_f: 0 \text{ cm/s}$   
 $\phi: 30^\circ$   
 $\mu: ?$



$$E_f - E_i = W_{fnc}$$

$$V_g \cdot \frac{1}{2} m \cdot v^2 - 0 = \vec{F} \cdot d \cdot \cos(180^\circ)$$

$$V_g: m \cdot g \cdot h$$

$$V_g: 5 \cdot 10 \cdot \cos 30$$

$$V_g: 75$$

$$V_g \cdot (-100) = (\mu \cdot m \cdot g \cdot d \cos 30)$$

$$75 - 160 = (\mu \cdot 50 \cdot \cos 30) \cdot 3 \cdot -1$$

$$-85 = -(\mu \cdot 129)$$

$$0.65 = \mu$$

2. Datos:  $V_x = 8 \text{ m/s}$   
 $V_{f1} = 20 \text{ cm/s}$   $37^\circ$   
 $V_{f2} = x$

$$2m \cdot 8 \text{ m/s} = m \cdot 20 \text{ m/s} \cdot \cos 37 + m \cdot v \cos \theta \quad \text{de } x$$

$$0 = m \cdot 20 \text{ m/s} \cdot \sin 37 + m \cdot v \sin \theta \quad \text{de } y$$

$$v = \frac{-20 \cdot \sin 37}{\sin \theta}$$

$$V \cos \theta = \frac{16 - 20 \cdot \cos 37}{\cos \theta}$$

$$V \cos \theta = -7,48 \text{ m/s}$$

$$V = \frac{-7,48 \text{ m/s}}{\cos \theta}$$

$$-20 \cdot \sin 37 = v \sin \theta$$

$$\frac{-12,036}{\sin \theta} = v$$

$$\tan^{-1} = \frac{-12,036}{-7,48}$$

$$\theta = 57,06$$

$$V_{bx} = \frac{-7,48 \text{ m/s}}{\cos \theta}$$

$$V = \frac{12,036}{\sin 57,06}$$

$$V_{bx} = \frac{-7,48 \text{ m/s}}{\cos 57,06} = 14,34 \text{ m/s}$$

$$V = 14,1624$$

$$V_f = \sqrt{(14,34)^2 + (14,24)^2}$$

$$V_f = 20,21 \text{ m/s}$$

*[Handwritten signature]*

3. Datos: Distancia: 314 cm]

$$t: 30 \text{ [s]}$$

$$R_1: 10 \text{ cm} = 0,10 \text{ [m]} \text{ plato}$$

$$R_2: 4 \text{ cm} = 0,04 \text{ [m]} \text{ piñon}$$

$$R_3: 40 \text{ cm} = 0,40 \text{ [m]} \text{ rueda}$$

$$a) \quad V_{\text{tangencial}} = \frac{314 \text{ [cm]}}{30 \text{ [s]}}$$

$$V_{tg} = 10,47 \text{ m/s}$$

$$V_{veloc} = \frac{\text{Distancia}}{\text{Período}}$$

$$V_{veloc} = \frac{314 \text{ m}}{2\pi \cdot 0,4} = 125 \text{ vellos}$$

$$\vec{\omega} = \frac{V}{R}$$

$$\vec{\omega} = \frac{10,47 \text{ [m/s]}}{0,40 \text{ [m]}}$$

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

$$b) \quad \omega_i = t=0$$

$$\vec{\omega} = \frac{\Delta\omega}{\Delta t} = \frac{2\pi \cdot t}{t} = 2\pi \cdot \left(\frac{125}{30}\right)$$

$$\vec{\omega} = \frac{25}{3}\pi = \vec{\omega} = 26,2 \text{ [rad/s]}$$

$$c) \quad \omega_{rueda} = \omega_{piñon}$$

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

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

$$\frac{0,04 \cdot 26,2}{0,1} = 10,48$$

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

$$V = \omega \cdot R = V_{tg} \text{ plato}$$

$$\frac{10,48 \cdot \pi}{30} = V_{tg} \text{ plato}$$

$$\omega_{plato} = \frac{V}{R}$$

$$\omega_{plato} = \frac{10,48 \cdot \pi}{0,1}$$

$$\omega_{plato} = 329,1 \text{ [rad/s]}$$

