

A. Brante
2 Eco

1. $m = 5 \text{ kg}$
 $v_i = 8 \text{ m/s}$
 $v_f = 0$
 $\mu = ?$

$f_r = N \cdot \mu$

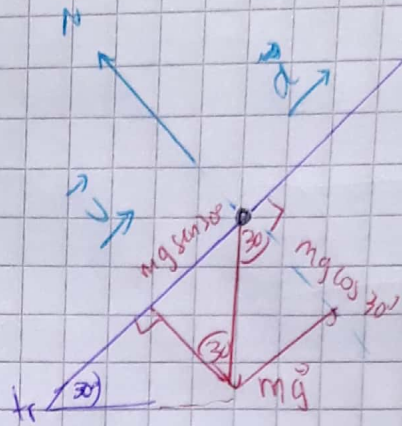
$W_{\text{neto}} = \Delta K$

$f_r \cdot d \cdot \cos 180^\circ + 0 - 75 \text{ J} = K_f - K_i$
 $mg \cos 30^\circ \cdot \mu \cdot 3 \cdot -1 - 75 = -\frac{1}{2}mv^2$

$-75\sqrt{3} \cdot \mu - 75 = -160$

$\mu = \frac{-85}{-75\sqrt{3}}$

$\mu = 0,65$



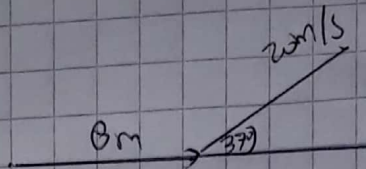
$\Sigma F_y = 0$
 $N = mg \cos 30^\circ$

$W_N = N \cdot d \cdot \cos 90^\circ$
 $W_N = 0 \text{ J}$

$W_{mg} = mg \cdot d \cdot \cos 120^\circ$
 -75 J

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2)



$V_B = ?$

$$\begin{aligned} \vec{P}_{ix} &= \vec{P}_{fx} \\ m \cdot 8 &= m \cdot 20 \cdot \cos 37^\circ + m \cdot V_{Bx} \cdot \cos \theta \\ 8 - 20 \cos 37^\circ &= V_{Bx} \cos \theta \\ -7,97 &= V_{Bx} \cos \theta \end{aligned}$$

$$\begin{aligned} -7,97 &= V_{Bx} \cos 56,5^\circ \\ -14,44 \text{ m/s} &= V_{Bx} \end{aligned}$$

$$V_B = 7,97$$

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

$$\begin{aligned} 0 &= m \cdot 20 \sin 37^\circ + m \cdot V_{By} \sin \theta \\ -20 \sin 37^\circ &= V_{By} \sin \theta \\ -12,04 &= V_{By} \sin \theta \\ 14,56 \frac{\text{m}}{\text{s}} &= V_{By} \end{aligned}$$

$$V_f = \sqrt{14,44^2 + 14,56^2} = 20,58 \frac{\text{m}}{\text{s}}$$

$$V_f = \sqrt{14,44^2 + 14,56^2} = 20,5$$

R: A 20,5 m/s con dirección $56,5^\circ$ a SW

$R = 20,5 \text{ m/s}$ dirección $56,5^\circ$ $\oplus$

$$V = \frac{-20 \text{ m/s} \sin 37^\circ}{\sin \alpha}$$

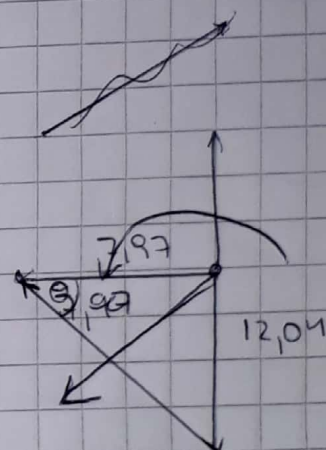
$$16 = \frac{20 \text{ m/s} \cos 37^\circ + (-20 \sin 37^\circ \cdot \cos \alpha)}{\sin \alpha}$$

$$16 \frac{20 \sin 37^\circ}{\sin \alpha} = 20 \cdot \cos 37^\circ - 16$$

$$\begin{aligned} V &= \frac{20 \sin 37^\circ}{\sin 89,86^\circ} = 12,03 \\ \alpha &= 89,86^\circ \end{aligned}$$

$$V = 12,03 \text{ m/s}$$

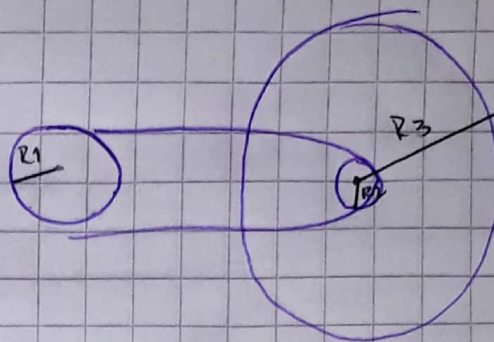
dirección = $89,86^\circ$



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3) $d = 314 \text{ m}$
 $t = 30 \text{ (s)}$

$R_1 = 10 \text{ cm} = 0,1 \text{ m}$
 $R_2 = 4 \text{ cm} = 0,04 \text{ m}$
 $R_3 = 40 \text{ cm} = 0,4 \text{ m}$



a) N° vueltas rueda (unidad)

$$V = \frac{d}{t}$$

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

$$V = \omega \cdot R$$

$$10,47 = \omega \cdot 0,4$$

$$26,17 \frac{\text{rad}}{\text{s}} = \omega_3$$

~~$\omega = \omega_i + \alpha \cdot t$~~
 ~~$26,17 = \omega_i + \alpha \cdot 30$~~
 ~~$0,87 \text{ rad/s}^2 = \alpha$~~

~~$$\Delta \theta = \omega_i \cdot t + \frac{1}{2} \cdot \alpha \cdot t^2$$~~

~~$$\Delta \theta = \frac{1}{2} \cdot 0,87 \cdot 30^2$$~~

~~$$\Delta \theta = 391,5 \text{ rad}$$~~

~~$$391,5 \text{ rad} \cdot \frac{1 \text{ vuelta}}{2\pi \text{ rad}} = 62,31$$~~

~~$$R = 62 \text{ vueltas.}$$~~

* $\Delta \theta = \omega \cdot t$

$$\Delta \theta = 26,17 \cdot 30$$

$$\Delta \theta = 785 \text{ rad}$$

$$785 \text{ rad} \cdot \frac{1 \text{ vuelta}}{2\pi \text{ rad}} = 425 \text{ vueltas}$$

b) ω mediana rueda

$$\omega = \frac{\Delta \theta}{\Delta t} = \frac{785}{30} = 26,17 \frac{\text{rad}}{\text{s}}$$

c) $\bar{\omega}$ pedal
 R_1

$$3 - 2$$

$$R_3 = R_2$$

$$\omega_3 = \omega_2$$

$$26,17 \frac{\text{rad}}{\text{s}} = \omega_2$$

$$2 - 1$$

$$v_2 = v_1$$

$$26,17 \cdot 0,04 = \omega_1 \cdot 0,1$$

$$10,47 \frac{\text{rad}}{\text{s}} = \omega_1$$

$$\omega = \frac{\Delta \theta}{\Delta t} = \frac{314,04}{30} = 10,47 \frac{\text{rad}}{\text{s}}$$

$$\Delta \theta = 10,47 \cdot 30$$

$$\Delta \theta = 314,04 \text{ rad}$$