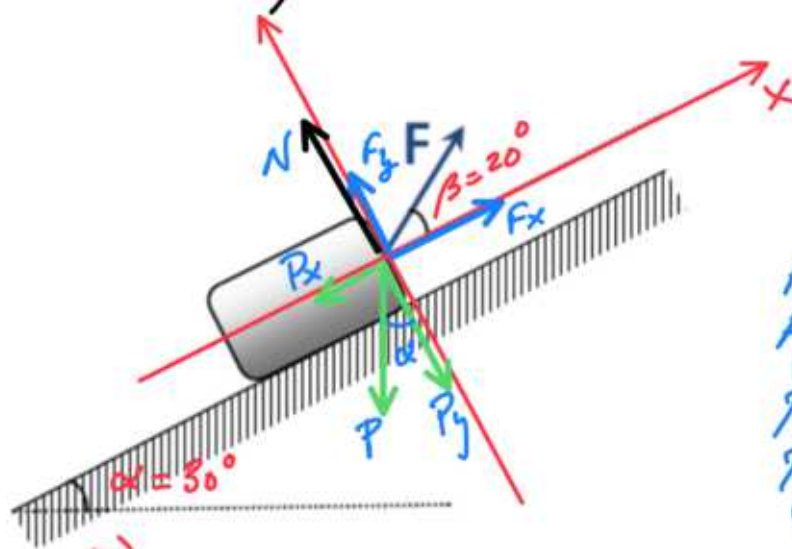


a) ¿aceleración por dinámica?

$$\begin{aligned} m &= 14 \text{ kg} \\ F &= 300 \text{ N} \\ \alpha &= 30^\circ \\ \beta &= 20^\circ \\ \mu &= 0,2 \end{aligned}$$



$$\begin{aligned} F_x &= F \cdot \cos 20 \\ F_y &= F \cdot \sin 20 \\ P_x &= P \cdot \sin 30 \\ P_y &= P \cdot \cos 30 \end{aligned}$$

$$\vec{\Sigma F} = m \cdot \vec{a} \quad \text{2º Ley de Newton}$$

$$\boxed{\Sigma F_x = m \cdot a_x}$$

$$F_x - P_x - F_R = m \cdot a$$

$$F \cos 20 - \mu \cdot N = m \cdot a$$

$$300 \cos 20 - 14 \cdot 9,8 \cdot \sin 30 - \mu \cdot N = m \cdot a$$

Dado: $\boxed{\Sigma F_y = 0}$

$$N + F_y - P_y = 0$$

$$N = P_y - F_y = mg \cos 30 - F \sin 30 =$$

$$= 118,82 - 102,61 = \boxed{16,21 \text{ N} = N}$$

$$300 \cos 20 - 137,2 \cdot \sin 30 - 0,2 \cdot 16,21 = 14a$$

$$281,91 - 68,6 - 3,24 = 14a$$

$$\frac{209,16}{14} = \boxed{a = 14,94 \text{ m/s}^2}$$

b) Velocidad final si no m? ¡Energías!

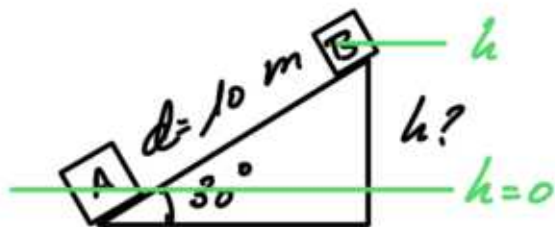
$$W_{nc} = \Delta E$$

$$W_{fr} + W_f + W_N = \Delta E$$

$$F_r \cdot d \cdot \cos 180 + F \cdot d \cdot \cos 20 + N \cdot d \cdot \cos 90 = \Delta E$$

$$\mu \cdot N \cdot d \cdot (-1) + F \cdot d \cdot \cos 20 = (E_c + E_p)_B - (E_c + E_p)_A$$

$$-0,2 \cdot 16,21 \cdot 10 + 300 \cdot 10 \cdot \cos 20 = \frac{1}{2} m v_B^2 + mg \cdot h_B$$



$$\text{sen } 30 = \frac{h}{d}$$

$$h = d \cdot \text{sen } 30 = 10 \cdot \frac{1}{2} = 5 \text{ m}$$

$$-32,42 + 2819,08 = \frac{1}{2} 14 \cdot v_B^2 + 14 \cdot 9,8 \cdot 5$$

$$2786,66 = 7 v_B^2 + 686$$

$$2786,66 - 686 = 7 v_B^2$$

$$\frac{2100,66}{7} = v_B^2 = 300,09$$

$$v_B = 17,32 \text{ m/s}$$