

Philippe Chambrás Mandel
2° Ew

Evaluación nº4 Física

Problema 1

Datos

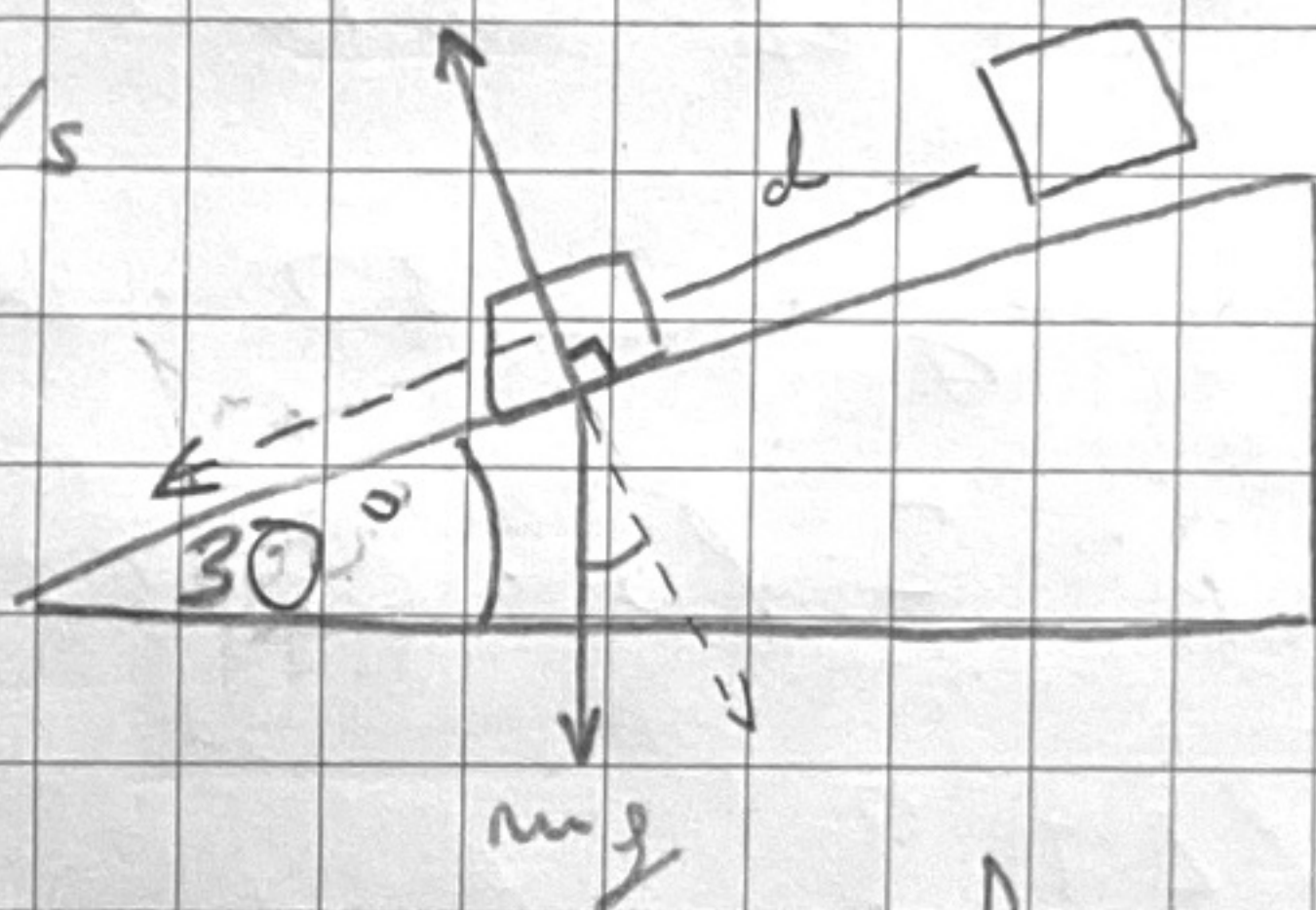
$$m = 5 \text{ Kg}$$

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

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

$$v_f = 0 \text{ m/s}$$

$$f_r = \mu_c \cdot N$$



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

(El roce es una fuerza no conservativa)

$$\Delta E = E_f - E_i$$

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

$$W_{fr} = -f_r \cdot d$$

$$W_{fr} = -(\mu_c \cdot N \cdot d)$$

$$= -(\mu_c \cdot mg \cos 37^\circ \cdot 3)$$

$$= -(\mu_c \cdot 5 \cdot 10 \cdot 0,8 \cdot 3)$$

$$= -\mu_c \cdot 120$$

$$\boxed{= -120 \mu_c}$$

Philippe Chambrás

$$K = \frac{1}{2} m v^2$$

$$K_f = 0$$

$$K_i = \frac{1}{2} \cdot 5 \cdot 8^2$$

$$= 160$$

$$U_g = m g h$$

$$= 5 \cdot 10 \cdot \sin 30^\circ \cdot 3$$

$$= 75 \text{ J}$$

$$U_g - K_i = \vec{F}_k \cdot d \cdot \cos 180^\circ$$

$$75 - 160 = \mu_k \cdot m g \cdot \cos 30^\circ \cdot d \cdot (-1)$$

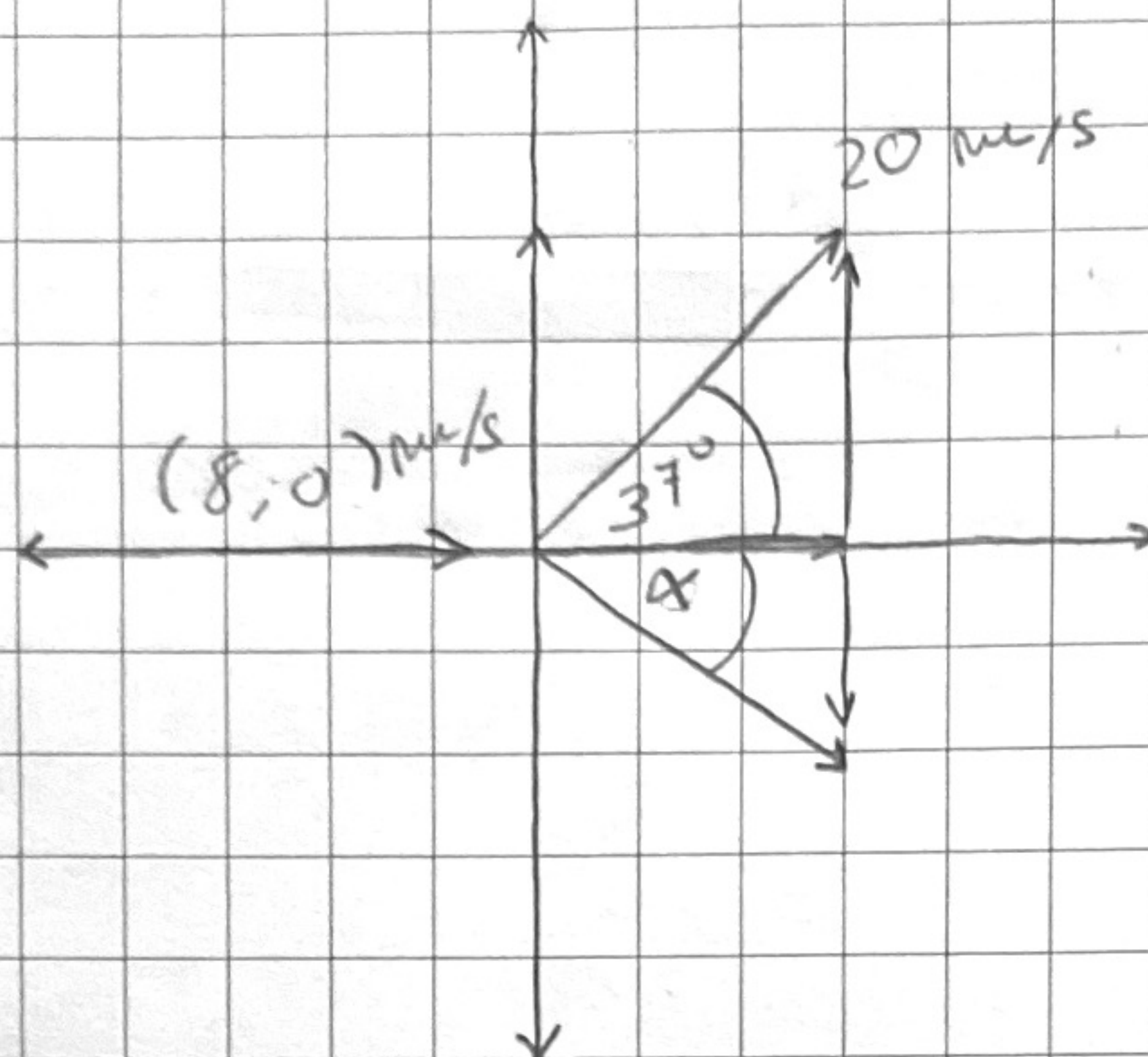
$$-85 = \mu_k \cdot 5 \cdot 10 \cdot \cos 30^\circ \cdot 3 \cdot (-1)$$

$$-85 = -129,9 \mu_k$$

$$\boxed{0,65 = \mu_k}$$

Phil Chambers

Problem no 2



$$\vec{P}_i = \vec{P}_f$$

ex

$$m \cdot v_{ix} = m_1 \cdot v_{f1x} + m_2 \cdot v_{f2x}$$

$$m \cdot 8 = m_1 \cdot 20 \cos 37 + m_2 \cdot v_{f2x} \cdot \cos \alpha$$

$$8 \text{ m/s} = 15.9 \text{ m/s} + m_2 \cdot v_2 \cos \alpha$$

$$-7.9 = v_2 \cos \alpha$$

ex 20

$$m \cdot v_{iy} = m \cdot v_{f1y} + m \cdot v_{f2y}$$

$$0 = m \cdot 20 \sin 37 + m \cdot v_{f2y} \sin \alpha$$

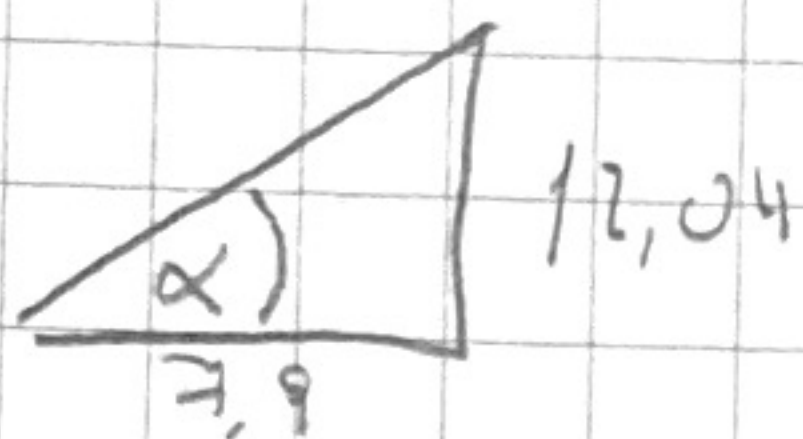
$$= 12.04 + v_{f2y} \sin \alpha$$

$$-12.04 = v_{f2y} \sin \alpha$$

$$v_{fx} = 7.9$$

$$v_{fy} = 12.04$$

Ph. Pham



$$\tan \alpha = \frac{12,04}{7,9}$$

$$\tan \alpha = 1,5$$

$$\alpha = 56,31^\circ$$

$$\vec{v}_x$$

$$-7,9 = \vec{v}_x \cdot \cos 56,31^\circ$$

$$-7,9 = v_x \cdot 0,55$$

$$|-14,4 = v_x|$$

$$\vec{v}_y$$

$$-12,04 = \vec{v}_y \cdot \sin \alpha$$

$$-12,04 = \vec{v}_y \cdot \sin 56,31^\circ$$

$$-12,04 = \vec{v}_y \cdot 0,8$$

$$|-15,05 = \vec{v}_y|$$

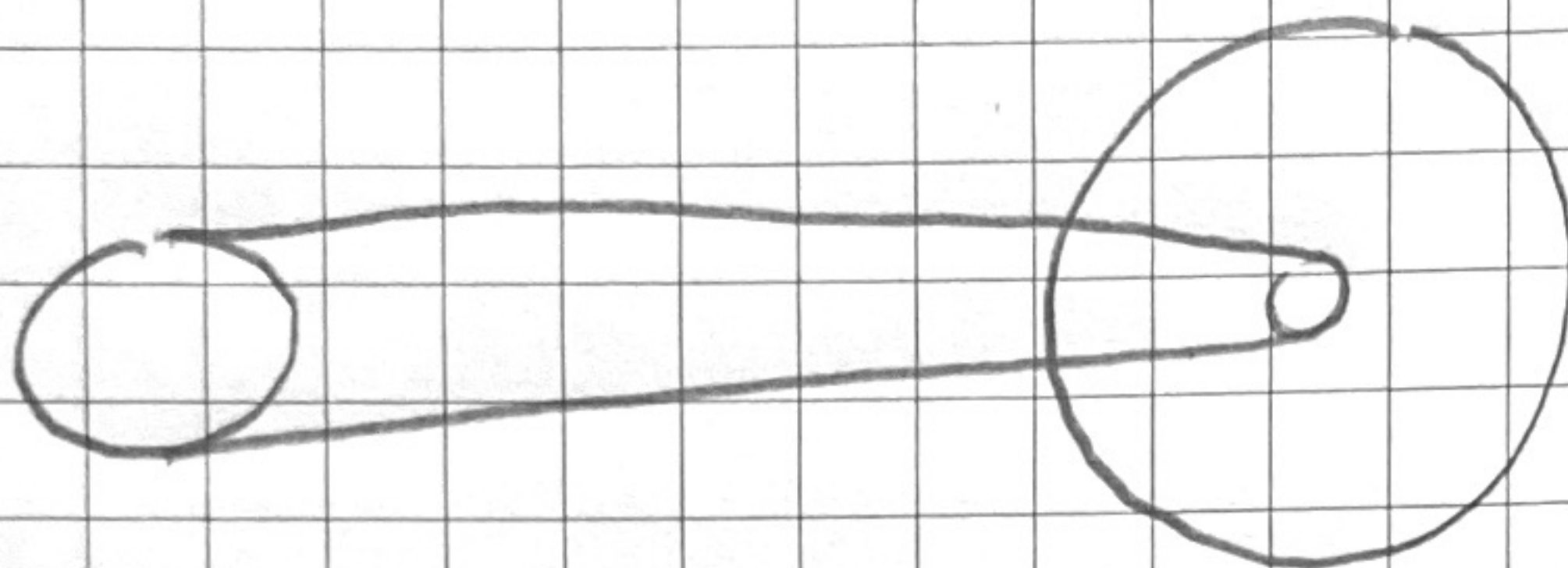
$$|\vec{v}_z| = \sqrt{(-15,05)^2 + (-14,4)^2}$$

$$v_z = \sqrt{222,41}$$

$$|\vec{v}_z| = 14,9 \text{ m/s}$$

P. Pham

Problem 3



$$V_C = \frac{3/4}{30} = 10,46$$

$$2) V_C = W \cdot h$$

$$\begin{aligned} 10,46 &= W \cdot 0,4 \\ 26,15 &= W \\ \text{mod } 5 \end{aligned}$$

$$W = \frac{\sigma}{\tau}$$

$$26,15 \cdot 30 = \sigma$$

$$\frac{785 \text{ mod}}{\pi \cdot 2} = \sigma$$

$$125 = \sigma$$

$$B) \left| \bar{u} = \frac{10}{10} \right|$$

$$\bar{u} = \frac{789,5 - 0}{30} = \left| 26,3 \text{ wdg} \right|$$