

11. PLUS. Resolver el siguiente sistema de ecuaciones

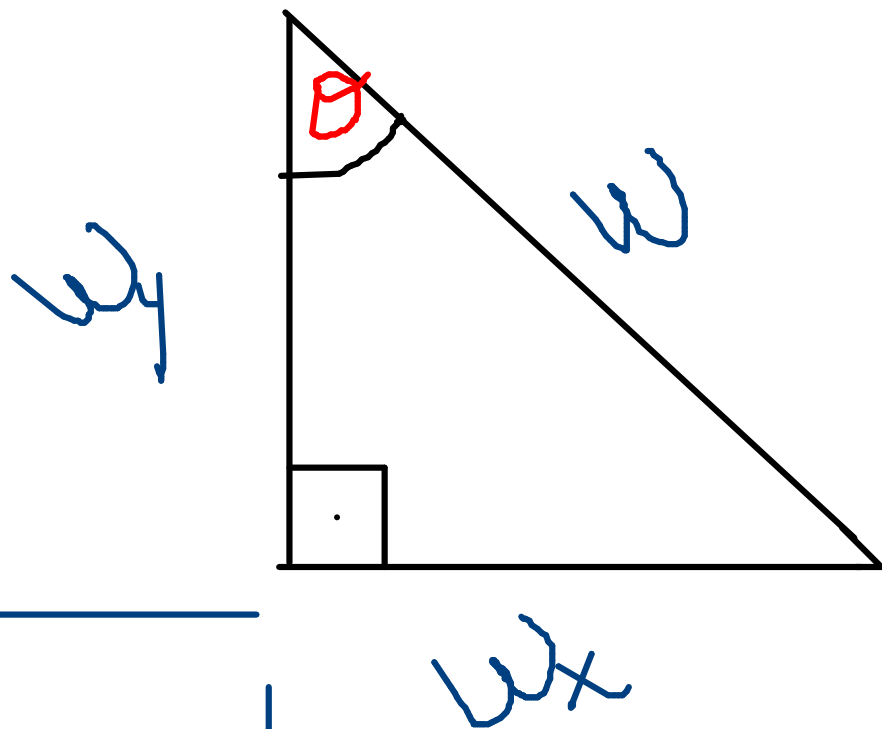
$$-F_r + \omega_x = ma \quad \textcircled{1}$$

$$N - \omega_y = 0 \quad \textcircled{2}$$

$$F_r = N\mu \quad \omega_x = w \operatorname{sen} \theta \quad \omega_y = w \cos \theta$$

$$\mu = 0,2; \omega = mg; m = 10\text{kg}; a = .012\text{m/s}^2$$

y g es la gravedad tomar como 10 m/s²



$$\sin \theta = \frac{w_x}{w}$$

$$w \cdot \sin \theta = w_x$$

$$\cos \theta = \frac{w_y}{w}$$

$$w \cdot \cos \theta = w_y$$

Solución:

De $\textcircled{2}$:

$$N = W_y = W \cos \theta$$

De $\textcircled{1}$ y usando el hecho q

$$F_r = N \mu$$

Por tanto:

$$- W \cos \theta + W \sin \theta = m \cdot a$$

$$W (-\cos \theta + \sin \theta) = m \cdot a$$

$$\cancel{m} \cdot g (-\cos \theta + \sin \theta) = \cancel{m} \cdot a$$

$$g (-\cos \theta + \sin \theta) = a$$

$$- 10 \frac{\text{m}}{\text{s}^2} \cdot \cos \theta (0.2) + \sin \theta = 0.02 \frac{\text{m}}{\text{s}^2}$$

$$= -2 \frac{m}{\sqrt{z}} \cdot \cos \theta + \sin \theta = 0.01 \frac{Zm}{\sqrt{z}}$$