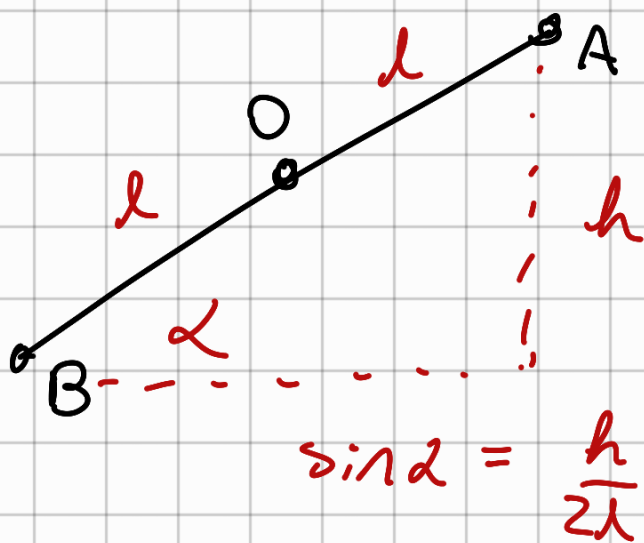
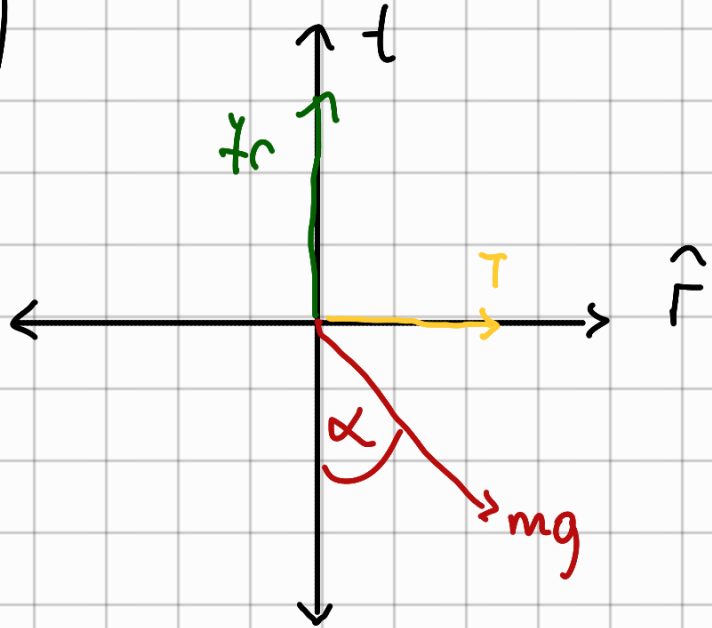


a)



Eje radial

$$\sum f_r = T + mg \sin \alpha = \frac{mv^2}{l}$$

$v_{\min}$ con $T = 0$

$$\Rightarrow v_{\min A} = \sqrt{gl \sin \alpha}$$

(+1)

Luego $\Delta E = 0$ (no roce)

$$E_A = E_B$$

$$\frac{1}{2} m v_A^2 + mgh = \frac{1}{2} m v_B^2$$

(+1)

$$v_A^2 + 2gh = v_B^2$$

para T tensor, $v_A = v_{\min}$
 $2l \sin \alpha = h$ (+1)

$$v_B^2 = 4gl \sin \alpha + gl \sin \alpha$$

$$v_B^2 = 5gl \sin \alpha$$

(+1)

b) Se tiene ($\mu \neq 0$)

$$\Delta E = W_f = -f_r \cdot d$$

Con $f_r = mg \cos \alpha \cdot \mu$ $\wedge$ $d = \pi l$

luego $\Delta E = -f_r \cdot d$

$$\frac{1}{2} m v_B^2 = \frac{1}{2} m v_A^2 + 2 m g l \sin \alpha + m g l \cos \alpha \cdot \mu \cdot \pi$$

↳ (+) ya se tiene v_A

$$\Rightarrow v_B = [g l (5 \sin \alpha + 2 \pi \cdot \mu \cdot \cos \alpha)]^{1/2}$$

↳ (+)