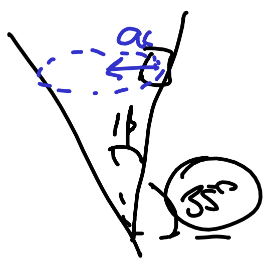
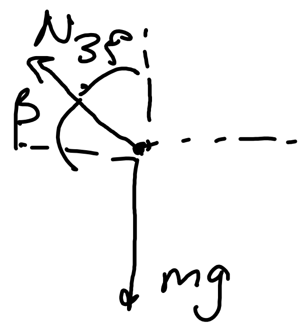
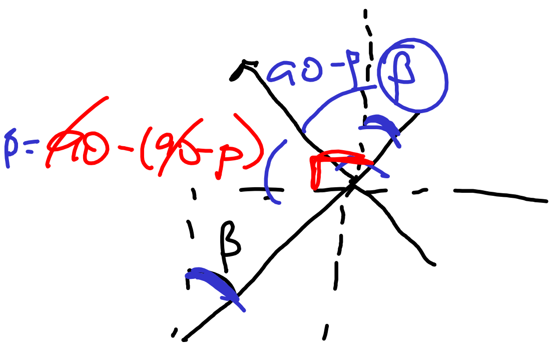
TALLER 7

Tema 3:



DCL:





$$\Sigma F_x = m a_c$$

$$N \cos\beta = m a_c \quad (1)$$

$$\Sigma F_y = 0$$

$$N \operatorname{sen}\beta = mg \quad (2)$$

$$(2)/(1)$$

$$\tan\beta = \frac{\cancel{m}g}{\cancel{m}a_c} \rightarrow \tan\beta = \frac{gR}{v^2}$$

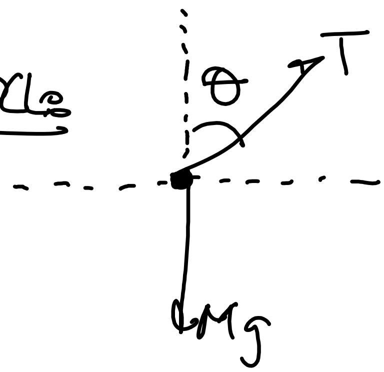
$$\tan\beta = \frac{R}{h} \rightarrow R = h\tan\beta$$

$$\cancel{\tan\beta} = \frac{gh\cancel{\tan\beta}}{v^2} \rightarrow \boxed{v = \sqrt{hg}}$$

Tema 2

$a, M, g.$

DCL:



$$\sum F_y = 0$$

$$T\cos\theta = Mg \quad (1)$$

$$\sum F_x = Ma$$

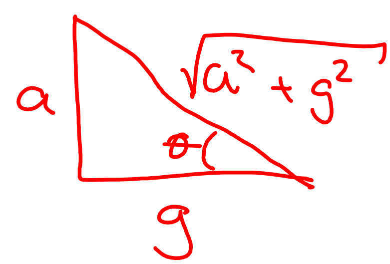
$$T\sin\theta = Ma \quad (2)$$

$$\tan\theta = a/g$$

a) $$\boxed{\theta = \tan^{-1}(a/g)}$$

$$T\cos\theta = Mg \rightarrow T = \frac{Mg}{\cos\theta} = \frac{Mg}{\underbrace{\cos(\tan^{-1}(a/g))}_{\cos(\theta)}}$$

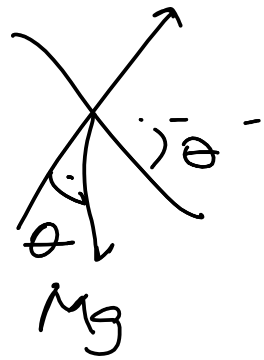
$$\tan\theta = \frac{a}{g} = \frac{c.o.}{c.a.}$$



$$\cos\theta = \frac{g}{\sqrt{a^2+g^2}}$$

$$T = \frac{M\cancel{g}}{\frac{\cancel{g}}{\sqrt{a^2+g^2}}} \Rightarrow \boxed{T = M\sqrt{a^2+g^2}}$$

$$T = Mg\sqrt{1+(a/g)^2}$$



$$\sum F_x = Ma\cos\theta$$

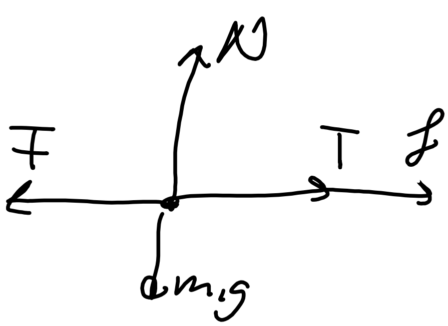
$$Mg\,sen\theta = Ma\cos\theta \rightarrow \tan\theta = \frac{a}{g}$$

$$\sum F_y = Ma\,sen\theta$$

$$\boxed{Ma\,sen\theta = T - Mg\,sen\theta}$$

Tarea 1:

DCL: 1



$$\sum F_y = 0$$

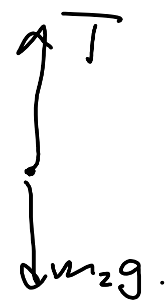
$$N = m_1 g.$$

$$\sum F_x = m_1 a$$

$$m_1 a = F - T - N\mu_k$$

$$m_1(a + \mu_k g) + T = F \quad (2)$$

DCL2:



$$\sum F_y = m_2 a$$

$$T - m_2 g = m_2 a$$

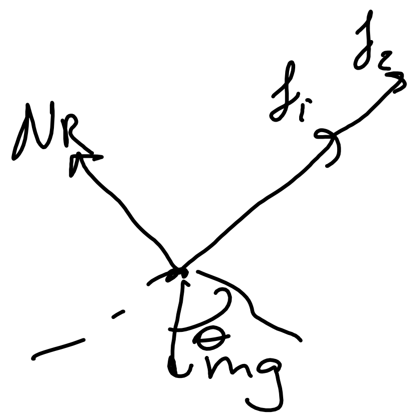
$$T = m_2(a + g) \quad (1)$$

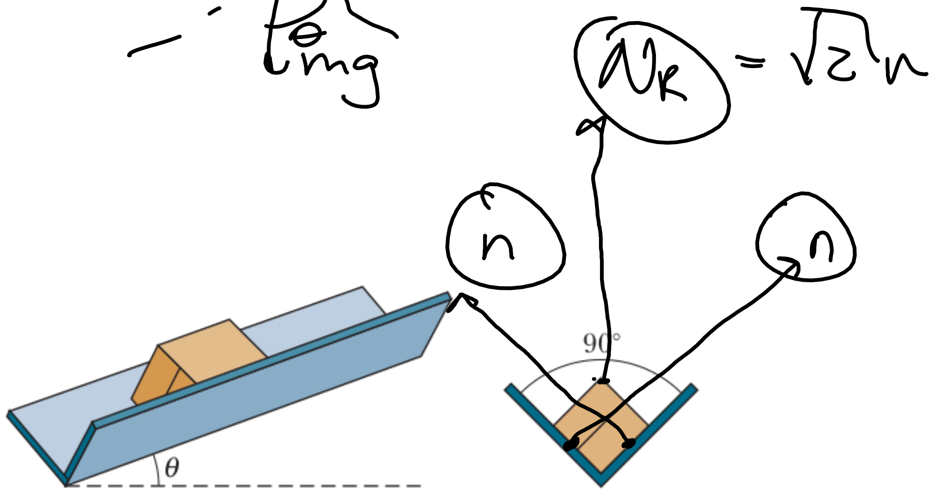
(I) en (2)

$$m_1(a+\mu g)+m_2(a+g)=F$$

$$\boxed{F=226N}$$

HM 5, P4 ;





$$\sum F_y = 0$$

$$\sum F_x = ma$$

$$N_R = mg\cos\theta$$

$$ma = mg\,\text{sen}\,\theta - 2n\mu$$

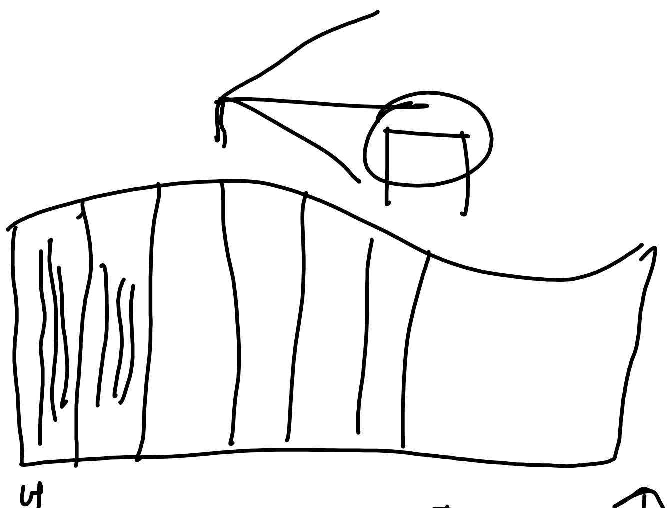
$$N_R = \sqrt{2}n$$

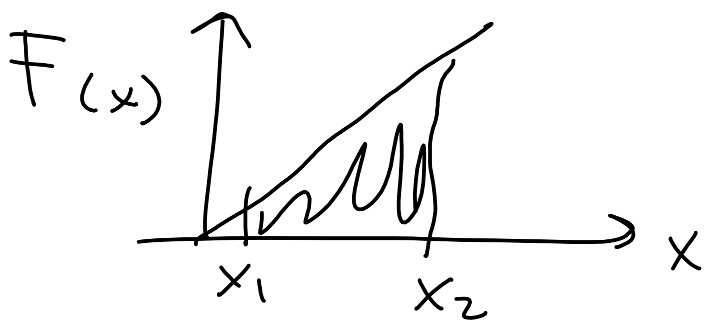
$$\sqrt{2}n = mg\cos\theta$$

$$\cancel{m}a = \cancel{m}g\,\text{sen}\,\theta - 2\left(\frac{1}{\sqrt{2}}\cancel{m}g\cos\theta\right)\mu$$

$$\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\boxed{a = g\left(\text{sen}\,\theta - \sqrt{2}\,\mu\cos\theta\right)}$$



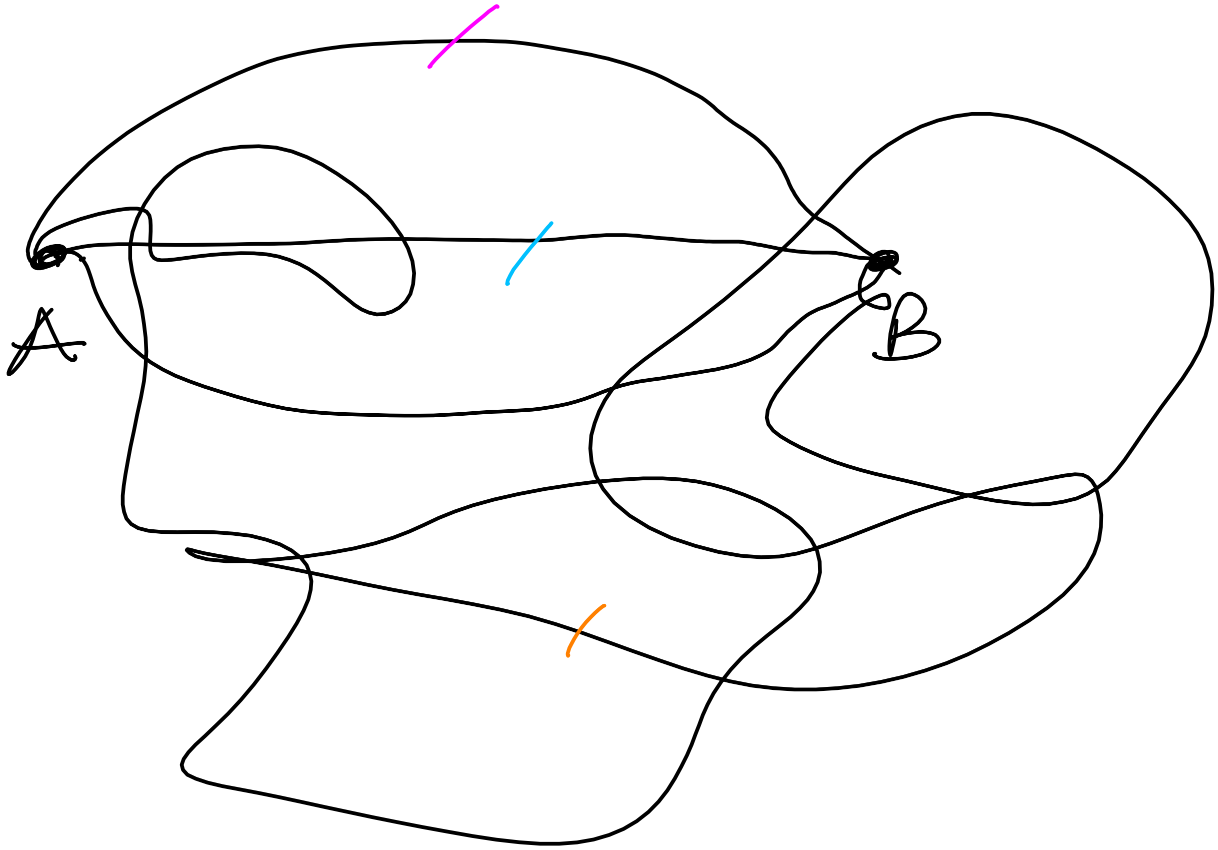


$$W = \int_{x_1}^{x_2} \vec{F}\cdot d\vec{x}$$

$$F(x) = a\,\text{sen}(x)$$

$$W = \vec{F}\cdot\Delta\vec{x}$$

$$\frac{1}{2}kx^2 \rightarrow \boxed{F = -kx}$$



$\Delta E = W_{ENC}$

$E_f - E_0$

PE