Ejercicio 1

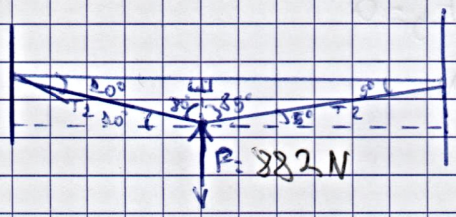
A) $P = 50 \cdot 10^{-3} \cdot 9'8 = 0'49\ N$

$0'49 = k \cdot 10^{-2}$ $\qquad$ $2 = 49 \cdot \Delta l$

$k = 49\ N/m$ $\qquad$ $\frac{2}{49} = \Delta l$; $\Delta l = 0'041\ m$

- Se estirará $0'041\ m$ $(4'1\ cm)$
- La $k = 49\ N/m$

B)



$\Sigma F_y = 0$

$\Sigma F_x = 0$

$\Sigma F_x = T_{2x} - T_{1x}$; $T_2 \cos 5 - T_1 \cos 10 = 0$

$\Sigma F_y = T_{2y} + T_{1y} - P$; $T_1 \operatorname{sen} 10 + T_2 \operatorname{sen} 5 - 882 = 0$

$T_2 \cos 5 - T_1 \cos 10 = T_1 \operatorname{sen} 10 + T_2 \operatorname{sen} 5 - 882$

$882 = 1'158\, T_1 - 0'409\, T_2$; $0'409\, T_2 = 1'158\, T_1 - 882$

$T_2 = \frac{1'158\, T_1 - 882}{-0'409}$; $T_2 = -1'274\, T_1 + 970$; $T_2 = 424\ N$

$(-1'274\, T_1 + 970) \cos 5 - T_1 \cos 10 = 0$

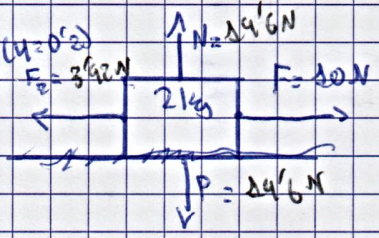
$-1'269\, T_1 + 966 - 0'985\, T_1 = 0$

$966 = 2'254\, T_1$; $T_1 = 428'57\ N$

- $T_1 = 428'57\ N$
- $T_2 = 424\ N$

Ejercicio 2

a) ($\mu = 0'2$)

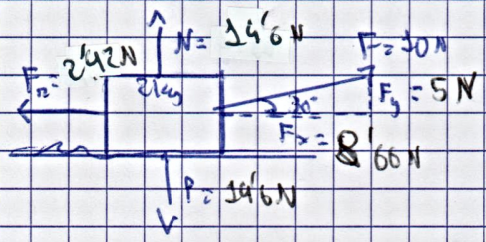


$\Sigma F_x = 10 - 3'92 = 6'08$

$6'08 = 2 \cdot a$

$a = 3'04 \ m/s^2$

b)



$F_y = 10 \ \text{sen}\, 30° = 5 \ N$

$F_x = 10 \cos 30° = 8'66 \ N$

$\Sigma F_y = 0$

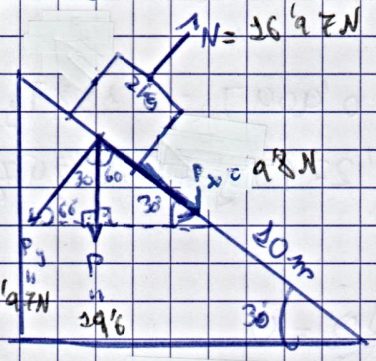
$\Sigma F_y = 14'6 + 5 - N \Rightarrow N = 14'6 \ N$

$\Sigma F_x = 8'66 - 2'42 = 5'74 \ N$

$5'74 = 2 \cdot a$

$a = 2'87 \ m/s^2$

Ejercicio 3



$P_x = 14'6 \ \text{sen}\, 30° = 9'8 \ N$

$P_y = 14'6 \ \text{sen}\, 60° = 16'97 \ N$

$\Sigma F_y = 0$

$\Sigma F_y = 16'97 - N$

$N = 16'97 \ N$

$\Sigma F_x = 9'8 \ N$

$9'8 \ N = 2 \cdot a$

$a = 4'9 \ m/s^2$

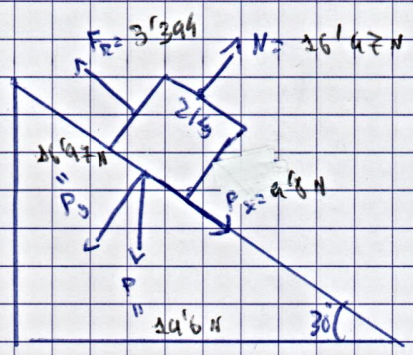
$10 = \frac{1}{2} 4'9 \cdot t^2$

$t^2 = \frac{10}{2'4}$; $t = 2'04 \ s$

a) $a = 4'9 \ m/s^2$

b) $t = 2'04 \ s$

c)



$\Sigma F_x = 9'8 - 3'394$

$\Sigma F_x = 6'406$

$6'406 = 2 \cdot a$

$a = 3'203\ m/s^2$

$a = 3'203\ m/s^2$

$t = 2'499\ s$

$10 = \frac{1}{2}\, 3'203\, t^2$

$t^2 = \frac{10}{1'6015}$; $t = 2'499\ s$

d) Deberíamos hacer una fuerza inferior o igual a $3'394\ (F_R)$

$(F \geq 3'394\,N)$