Samuel Chamalé, 21881

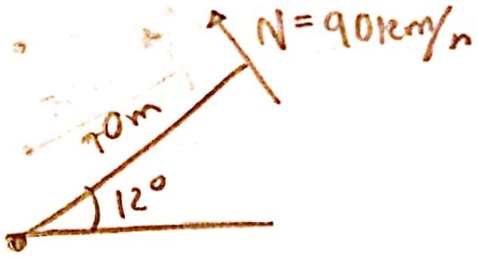
① peso = 1000kg

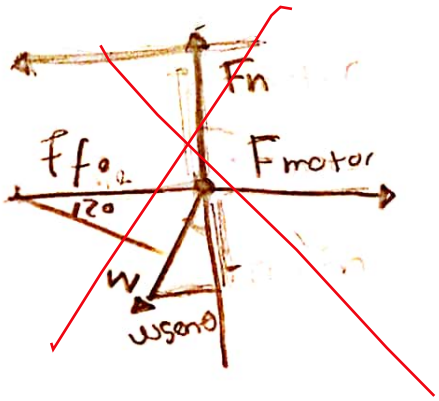
r = 70

θ = 12° respecto horizontal

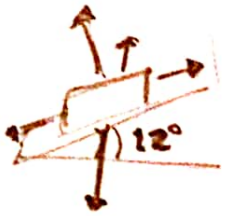
N = 90km/h

② DCL





+2



$W = m \cdot g = -9800\ N$

$W_y = W \cos 12° \rightarrow W_y = 9800 \cos 12° = -9{,}585.8\ N$

$N = 9{,}585.8\ N$

$V = 90\ km/h \div 3.6 = 25\ m/s$

$a_c = \frac{V^2}{r} \rightarrow a_c = \frac{25^2}{70} = 8.9\ m/s^2$

Para que no derrape debe estar en equilibrio $\rightarrow \emptyset = F_{motor} - F_f - W \sin 12$

Normal

$\emptyset = (a_c + m) - \mu(N) - W \sin 12°$

$\emptyset = (8.9 + 1000) - \mu(9{,}585.8) - W \sin 12°$

$\mu = \frac{(8.9 * 1000) - 9800 \sin 12°}{9{,}585.8} = 0.715$

$F_{fe} = \mu_c * N = 0.715(9{,}585.8)$

$F_{fe} = 6853.84\ N$

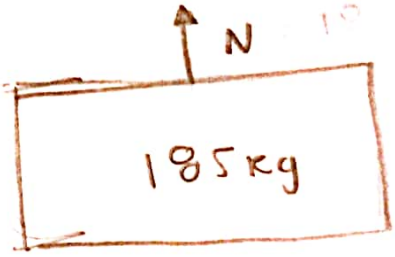
B) $F_{fe} = 6853.8\ N$

6
3333

(2) $P_1 = 75kg$ $\quad N = \emptyset$

$P_2 = 110kg$ $\quad F = 620N$

$\mu_c = 0.15$



$N = m \cdot g = 1814.85\,N$

$f_f = \mu \cdot N = 0.15\,(1814.85) = 272.22\,N$

272.22 620N

$m \cdot a = 620 - 272.22$

$a = \frac{377.78}{1814.85} = 0.20\,m/s$

P_1 | $\Sigma F = -(0.15)(75 * 9.8) + 620$

$\Sigma F_1 = 509.75\,N$

P_2 | $F_{fp2} = -(0.15)(110 * 9.8) = -161.7\,N$

$F_1 + f_{fp2} = 509.75 - 161.7$

348.05

P// a) $0.20\,m/s$

b) $348.05\,N$

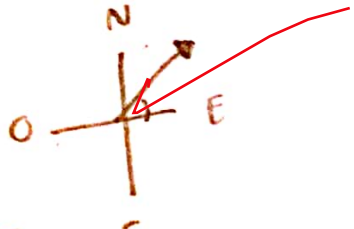
-7 esto es el peso no la masa

-5

-33

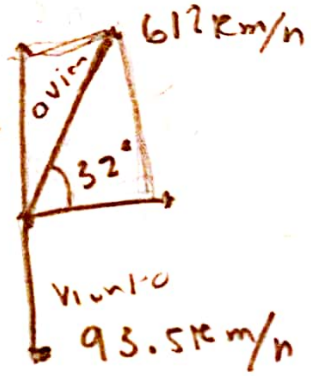
No se toman las fricciones

③ $V_o = 612 \text{ km/h} \div 3.6 = 170 \text{ m/s}$



$\theta = 32°$ con la horizontal

$V_v = 93.5 \text{ km/h} \div 3.6 \approx 26 \text{ m/s}$



$V_{ay} = 612 \operatorname{sen} 32°$

$V_{ay} = 324.31 \text{ km/h}$

R// La rapidez del avión respecto a la torre de control en tierra es de 453 km/h

$\Sigma V_y = 324.31 - 93.5 = 230.8 \text{ km/h}$

$V = \dfrac{V_y}{\operatorname{sen} 32°} = \dfrac{230.8}{\operatorname{sen} 32°} = 435.53 \text{ km/h}$