OSWG CONS. ENERGÍA

[m]

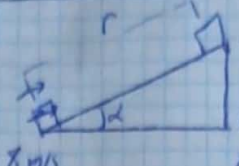
$E_{cF} - E_{cI}^{\nearrow 0} + E_{pF}^{\nearrow 0} - E_{pI} = \emptyset$

$\frac{1}{2} m v_F^2 - m g h_I = 0$

$v_F = \sqrt{2gh} = \sqrt{2 \cdot 9{,}8 \cdot 45}$

$v_F = 29{,}698 \text{ m/s}$

[4]



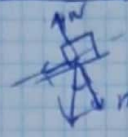
$\alpha = 30° \rightarrow \operatorname{sen} 30° = \frac{h}{r} \rightarrow r = \frac{h}{\operatorname{sen} 30°}$

CONSERVACIÓN DE LA ENERGÍA

$E_{cF}^{\nearrow 0} - E_{cI} + E_{pF} - E_{pI}^{\nearrow 0} = W_{Fr}$

$-\frac{1}{2} m v_I^2 + m g h_F = -F_r \cdot r$

$-\frac{1}{2} m v_I^2 + m g h_F = -F_r \cdot \frac{h_F}{\operatorname{sen} 30°}$



$N = mg\cos 30° \Rightarrow F_r = \mu mg \cos 30°$

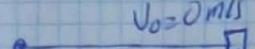
$-\frac{1}{2} m v_I^2 + m g h_F = -\mu mg \cos 30° \frac{h_F}{\operatorname{sen} 30°}$

$-\frac{1}{2} 8^2 + 9{,}8 h_F = -0{,}2 \cdot 9{,}8 \cdot \cos 30° \frac{h_F}{\operatorname{sen} 30°}$

$-32 = -3{,}395 h_F + 9{,}8 h_F$

$h_F = 2{,}425 \text{ m}$

[r]

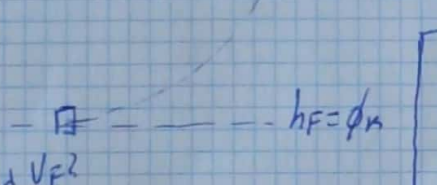


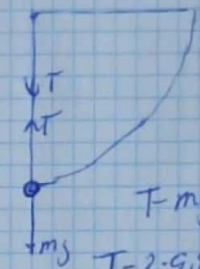
$E_{cF} - E_{cI}^{\nearrow 0} + E_{pF}^{\nearrow 0} - E_{pI} = 0$

$V = \sqrt{2gh} = 5{,}238 \text{ m/s}$

[c] 1º calculamos la velocidad que llegamos en el anterior

$V = 5{,}238$ m/s



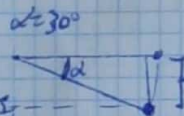


$T - mg = F_{cp}$

$T - 2 \cdot 9{,}8 = 2 \frac{5{,}238^2}{1{,}4}$

$T = 58{,}795 \text{ N}$

[r]

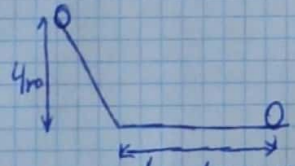


$\operatorname{sen} 30° = \frac{a}{l} \rightarrow a = 2 \operatorname{sen} 30° = 1 \text{ m} \Rightarrow$ LA ALTURA INICIAL ES $2 - 1 = 1$ m

$E_{cF} - E_{cI}^{\nearrow 0} + E_{pF}^{\nearrow 0} - E_{pI} = 0$

$V = \sqrt{2 \cdot gh} = \sqrt{2 \cdot 9{,}8 \cdot 1} = 4{,}427 \text{ m/s}$

[e]

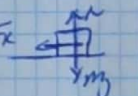


m=

$E_{cF}^{\nearrow 0} - E_{cI} + E_{pF}^{\nearrow 0} - E_{pI} = W_{Fr}$

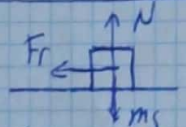
$-\frac{1}{2} m v_I^{2\,\nearrow 0} - mgh_I = -F_r \cdot r$

$-mgh_I = -\mu mg l \quad l = \frac{h_I}{\mu} = \frac{4}{0{,}12} = 33{,}333 \text{ m}$



$F_r = \mu mg$

[f]



$F_r = \mu N = \mu mg$

$V_0 = 12$ m/s $\quad r = 6$m $\quad V_F = 6$ m/s $\quad \mu$?

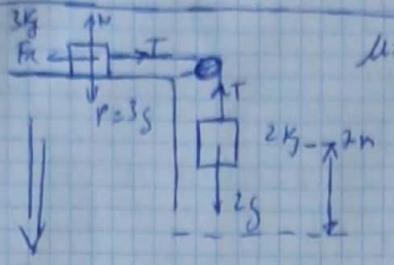
$E_{cF} - E_{cI} + E_{pF} - E_{pI} = W_{Fr}$

$\frac{1}{2} m v_F^2 - \frac{1}{2} m v_I^2 = -\mu mg \cdot r$

$\frac{1}{2} 6^2 - \frac{1}{2} 12^2 = -\mu \cdot 5 \cdot 6$

$\mu = 0{,}918$

(a)



$\mu = 0{,}3$

$E_{cp} - E_{cI} + E_{pF} - E_{pI} = W_{Fr}$ → HAY QUE APLICAR A LOS DOS CUERPOS

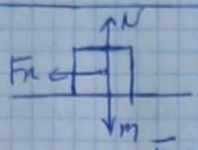
$\frac{1}{2} 3 v_F^2 - 0 + \frac{1}{2} 2 v_F^2 - 0 = -2 \cdot 9{,}8 \cdot 7 - 0 = -8{,}82 \cdot 7$ ↑ SE MUEVE 7m

$F_r = \mu m g = 0{,}3 \cdot 3 \cdot 9{,}8 = 8{,}82 N$

$1{,}5 v_F^2 + v_F^2 = 75{,}46$

$v_F = 5{,}499 \, m/s$

(g)



$V_0 = 2{,}5 \, m/s \quad V_F = 0 \, m/s \quad r = 10 m$

$F_r = \mu N = \mu m g$

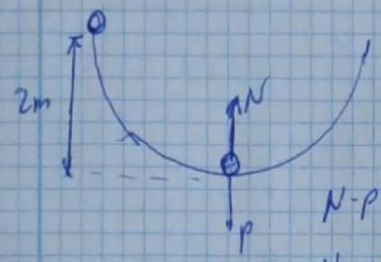
$E_{cF} - E_{cI} + \text{——} = W_{Fr}$

$-\frac{1}{2} m v_I^2 = -\mu m g \cdot r$

$\mu = \frac{V_I^2}{2 \cdot 5r} = 0{,}031$

(o)

$m = 0{,}1 kg$



→ $E_{cp} - E_{cI} + E_{pF} - E_{pI} = 0$

$\frac{1}{2} m v_p^2 + m g h_I = 0$

$V = \sqrt{2gh} = 6{,}26 \, m/s$

$N - P = F_{cp}$;

$N - mg = \frac{m v^2}{r}$

$N = mg + \frac{m v^2}{r} = 0{,}1 \cdot 9{,}8 + 0{,}1 \frac{6{,}26^2}{2} = 2{,}939 N$