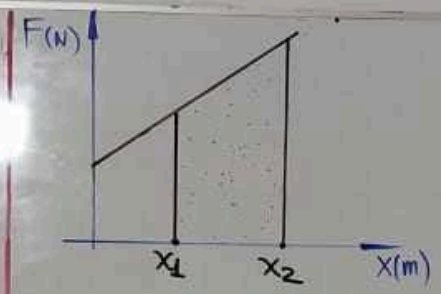
# TRABAJO, POTENCIA ENERGÍA.

$\vec{F} \parallel \vec{d}$

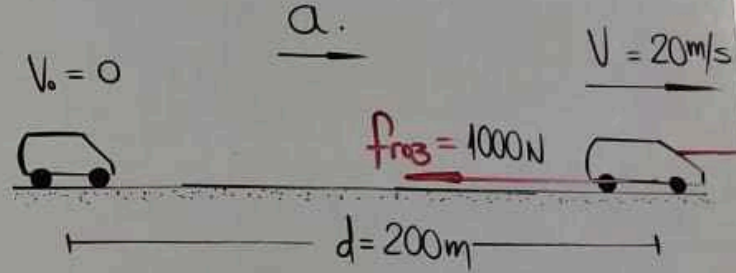
$$W = F_{MOV.} \cdot d$$

Unidad: Joule (J)




ÁREA = TRABAJO.

① $m = 1500\ kg$




✓ $V_F^2 = V_0^2 + 2ad$

$20^2 = 2a(200)$

$a = 1\ m/s^2$

✓ $\underline{FR} = ma$

$F_M - 1000 = 1500(1)$

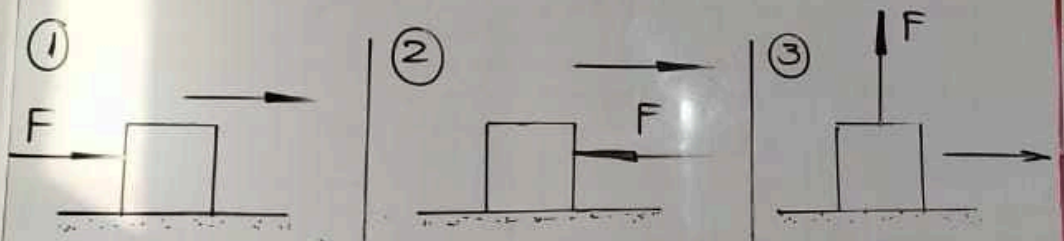
$F_M = 2500N$

✓ $W^F = F \cdot d$

$(2500)(200)$

$500\ 000\ J$

$\therefore W^F = 500\ KJ$ !

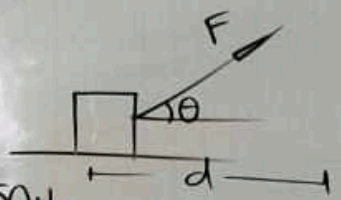



Positivo (MOTOR)

Negativo (Resistivo).

Nulo (CERO).

# TRABAJO, POTENCIA ENERGÍA.




**(10)** $\vec{F} = 30\hat{i} + 40\hat{j}$ (N) $= 50$ N

$\vec{d} = 6\hat{i} - 2\hat{j}$ (m) $= 2\sqrt{10}$ m

*) $W = \vec{F} \cdot \vec{d}$

$(30)(6) - (40)(2)$

$W = 100$ J

*) $W = F.d.\cos\theta$

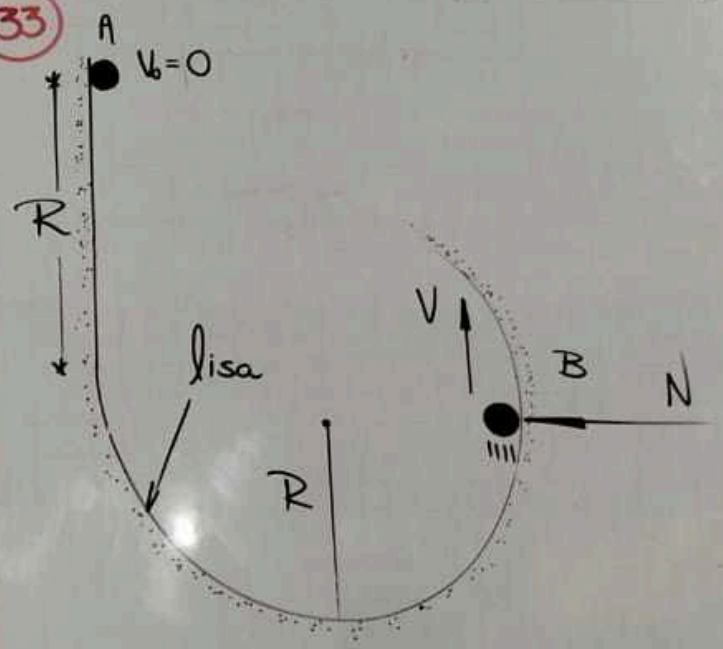
$100 = (50)(2\sqrt{10}).\cos\theta$

$\frac{1}{\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}} = \cos\theta$

$\frac{\sqrt{10}}{10} = \cos\theta$

$\theta = \text{arc}\cos\left(\frac{\sqrt{10}}{10}\right)$

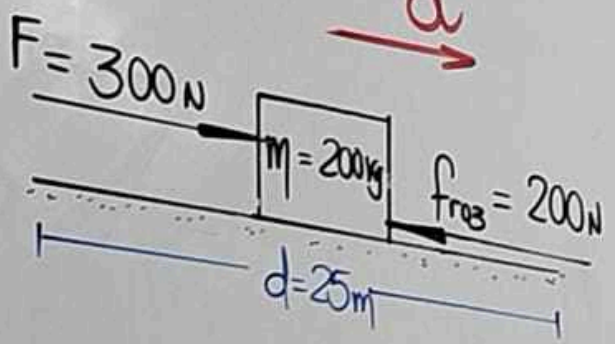
**(33)**



0m/s

$F_{MOT.}$

② $W^{NETO} = F_R \cdot d$




$W^{NETO} = F_R \cdot d$

$(300 - 200)(25)$

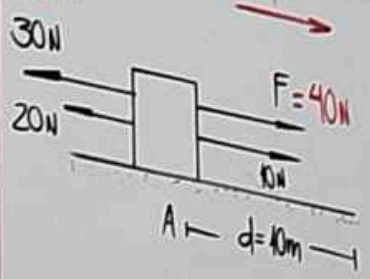
$W^{NETO} = 2500\,J$

$F_R = ma$

$100 = 200 \cdot a$

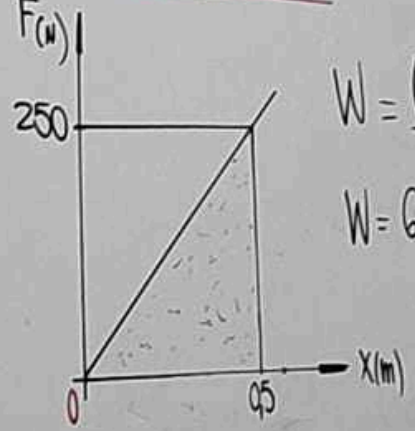
$a = 0{,}5\ m/s^2$ !

④




$W = (40)(10) = 400\,J$ !

⑪




$W = \frac{(0{,}5)(250)}{2}$

$W = 62{,}5\,J$ !

$E_M^A = E_M^B$

$mg \cdot \quad \frac{1}{2}mV^2$

$2g \cdot R = V^2$

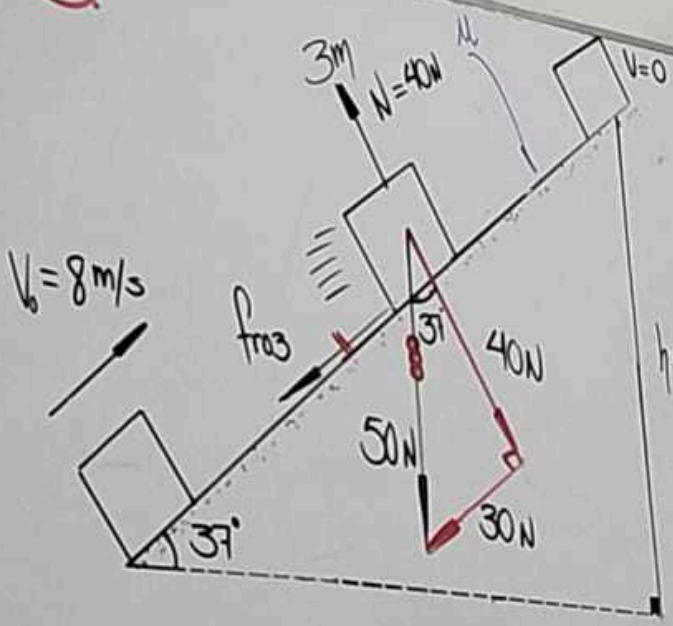
$F_{cp} = m\,a_{cp}$

$N = m \cdot \frac{V^2}{R}$

$N = m \cdot \frac{2gR}{R}$

$N = 2mg$ ✓

(17)




$W^{FNC} = E_M^{final} - E_M^{inicial}$

$W^{Roz} = (mgh) - \left(\frac{1}{2}mV^2\right)$

$h = \frac{9}{5}m \quad -f_{roz} \cdot d = (5)(10)\left(\frac{9}{5}\right) - \frac{1}{2}(5)(8)^2$

$-\mu \cdot N \cdot (3) = 90 - 160$

$+\mu \cdot (40)(3) = +70$

$\mu = \frac{7}{12}$

$\mu = 0.58$

Cuando

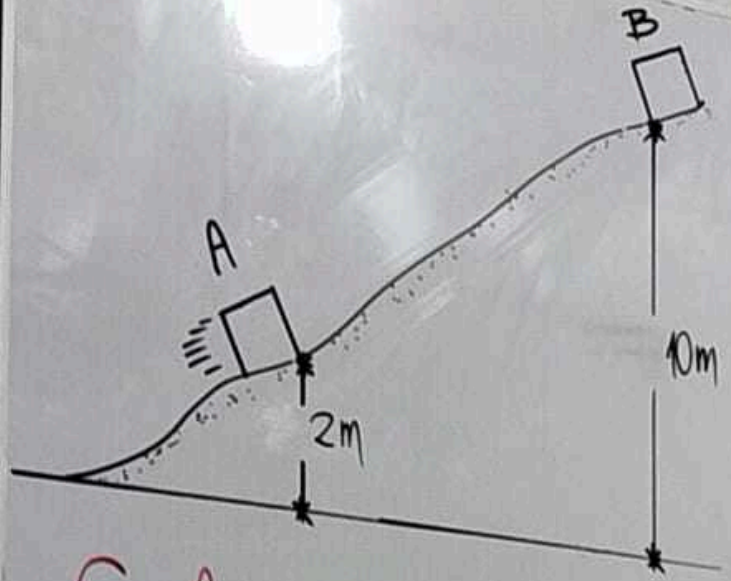
o Sist.

sertativas.

stica.

trica.

⑥




$E_{pg}^{A} = m \cdot g \cdot h_A$

$(0,5)(10)(2) = 10J$

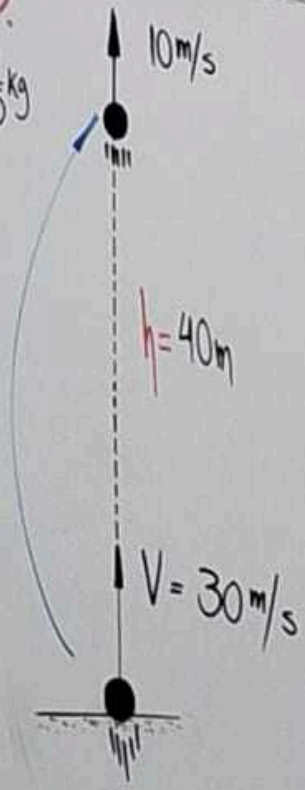
$E_{pg\,B} = m \cdot g \cdot h_B$

$(0,5)(10)(10) = 50J$

} 40J

⑬

$m = \frac{1}{5}kg$




2s

$E_c = \frac{1}{2} m V^2$

$\frac{1}{2}\left(\frac{1}{5}\right)(10)^2$

$E_c = 10J$

$E_{pg} = mgh$

$\left(\frac{1}{5}\right)(10)(40)$

$E_{pg} = 80J$

$h = \left(\frac{V_0 + V_F}{2}\right)T$

$\frac{E_c}{E_{pg}} = \frac{10}{80}$

$\frac{1}{8}$

# Trabajo, Potencia Energía.

## Energía Mecánica.

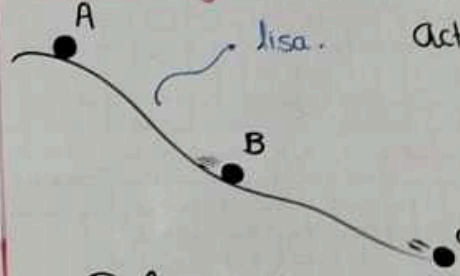
E. Cinética $\Rightarrow E_c = \frac{1}{2} m V^2$

E. Pot.
- E. pot. gravitatoria. $\Rightarrow E_{pg} = m.g.h$
- E. pot. Elástica. $\Rightarrow E_{pe} = \frac{1}{2} K x^2$

$E_M^{TOTAL} = E_c + E_{pot.}$

## Principio de Conservación de Energía Mecánica

Sólamente Cuando Sobre el Cuerpo o Sist. actúen fuerzas Consertativas




- ✓ Peso.
- ✓ Fuerza Elástica.
- ✓ Fuerza Eléctrica.

$E_M^A = E_M^B = E_M^C$

## Teorema del $W^{FNC}$ y $E_M$

$W^{FNC} = \Delta E_M = E_M^{FINAL} - E_M^{INICIAL}$.

- ✓ fricción (F. de Rozamiento)
- ✓ $F_{externa}$.