Un tractor de dos mil libras se utiliza para levantar 900 libras de grava, determina la reacción de cada una de sus llantas

$[(-2100\ lb)\ 20'') + (900\ \ 110'') + [(RB)\ 60'']$

$RB - 42,00\ ton - 99,000 + RB\ 60'' = 0$

$RB = -\frac{141,000}{60\ ton} = +2,350\ lb$

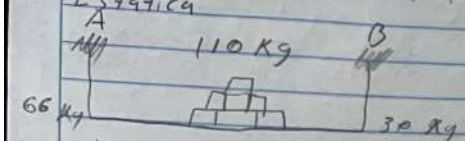
$2,350 - 2100 + 900$

$RA = +650$

Comprobación

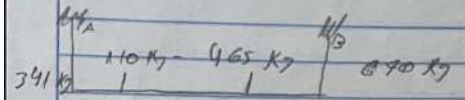
$650 - 2,100 + 2,850 - 900 = 0$

Estatica



① $P = -310\ Kg/m_2\ (3.0\ m)$

$P = -465\ Kg$



② D. C. L

$l/2$

$up = 30/2 = 1.50\ m$

$up = 1.50\ m + 1.0\ m = 2.50$

③ RB

$\Sigma mx = 0$

$(-10\ Kg \cdot 10\ m) + (-465\ Kg \cdot 2.50\ m) + (RB \cdot 50\ m) + (70 \cdot 120\ m) = 0$

$-110\ Kg - 1162.50\ Kg \cdot m + RB \cdot 50) = 434\ Kg\ m = 0$

$-1.706.50\ Kg \cdot m + RB\ 50\ m = 0$

$RB = \frac{1,706.50\ Kg\ m}{50\ m} = 341.3\ K$

④ RA

$\Sigma Fx = 0$

$RA - 110\ Kg - 465 + 341.3\ Kg - 70\ Kg = 0$

$RA - 303.7\ Kg = 0$

$RA = 303.7\ Kg$

*Comprobación

$\Sigma FX = 0 \quad 303.7\ Kg - 110\ Kg - 465\ Kg + 341.3\ Kg - 70\ Kg = 0$

$63\ Kg + 30K = 0$

$95\ Kg = 0$

⑥ $\Sigma Fx = 0$

$T_{2x} + T_{3x} - T_1 = 0$

$\sen 25° (T_2) + \sen 60° (T_3) - 490.5\ N = 0$

$\sen 25° (0.551 T_3) + \sen 60° (T_3) = 490.5\ N$

$0.238\ T_3 + 0.866\ T = 490.5\ N$

$1.099\ T_3 = 490.5\ N$

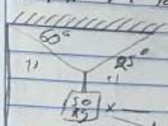
$T_3 = \frac{490.5\ N}{1.099} = 446.315\ N$

⑦ T2

$0.551\ (446.315\ N)$

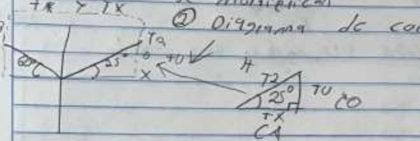
$T_2 = 245.919$

un saco de cemento de 50kg de masa, cuelga en equilibrios de 3 cuerdas, dos de las cuerdas forman angulos de 60° y 25° con horizontal. hallar la tension de las cuerdas.



① Fuerza gravitacional = 490.5 N
50 kg x 9.81 m/s²
se multiplican

② Diagrama de cuerpo libre



$\text{sen}\,\theta\ 25° = \frac{T_{2y}}{T_2}$

T1 490.5 N

$T_{2y} = \text{sen}\,25°\,(T_2)$

$T_{2x} = \cos\,25°\,(T_2)$

④

$\text{sen}\,60° = \frac{T_{3y}}{T_3}$

$T_{3y} = \text{sen}\,60°\,(T_3)$

$\cos 60° = \frac{T_{3x}}{T_3}$

$T_{3x} = \cos 60°\,(T_3)$

⑤ $\Sigma F_x = 0$

$T_{2x} + T_{3x} = 0$

$\cos 25°\,(T_2 = \cos 60°\,(T_3) = 0$

$\cos 25°\,(T_2 = \cos 60°\,(T_3)$

$T_2 = \frac{\cos 60°\,(T_3)}{\cos 25°} = 0.55\,(T_3$

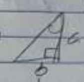
Fuerzas concurrentes

Teorema

$a^2 = b^2 + c^2$

$a = \sqrt{b^2 + c^2}$

Si tiene triangulo rectangulo, se podra hacer la formula

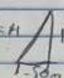


Razones trigonometricas

$\text{sen}\,\theta = CO$

$\cos\theta = \frac{CA}{H}$

$\tan\theta = \frac{CO}{CA}$



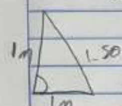
$H = \sqrt{1.50^2 m + 1.80^2 m}$

$H = \sqrt{2.25\,m^2 + 3.24\,m^2}$

No se quedo a sacar cl²

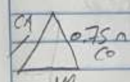
$H = \sqrt{5.49\,m^2}$

$H = 2.343\ m$



97.18

tecla ° ' "

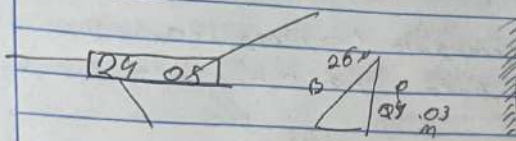


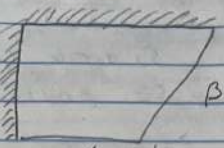
$\text{sen}\,\theta = 0.75$

$\theta = 48.59 \times 2 = 97.180$

97° 10' 50, 72"

Calcula la tensión de la cuerda horizontal
Sabiendo que la tensión de la cuerda B es de 26 N





2.95 Kg x 9.81 m/s² = 24.03

$H = \sqrt{a^2 + b^2}$

$26\,N = \sqrt{29.03\,m^2 + A^2}$

$-26\,N^2 = 29.03\,N^2 + A^2$

$676\,N^2 = 577.44\,N^2 + A^2$

Al cuadrado

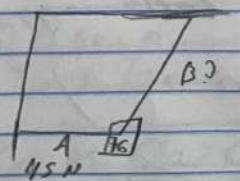
$A^2 = 577.44\,N^2$

$676\,N^2 - 577.44\,N^2 = A^2$

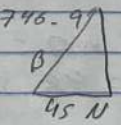
$98.56\,N^2 = A^2 \longrightarrow \sqrt{98.56\,N^2} = 9.927\,N = A$

se resta

① $76\,Kg\,(9.81\,m/s^2) = 745.56\,N$



② D.C.L



745.56 N

③ Hipotenusa

$H^2 = 45^2\,N + 745.56^2\,N$

$H = 2,025\,N^2 + 555,859.713$

$H = \sqrt{557,884.713\,N^2}$

$H = 746.91\,N$