Alumno: Jarib Jahziel Hernández Toledo

Licenciatura: Arquitectura

Cuatrimestre: 4

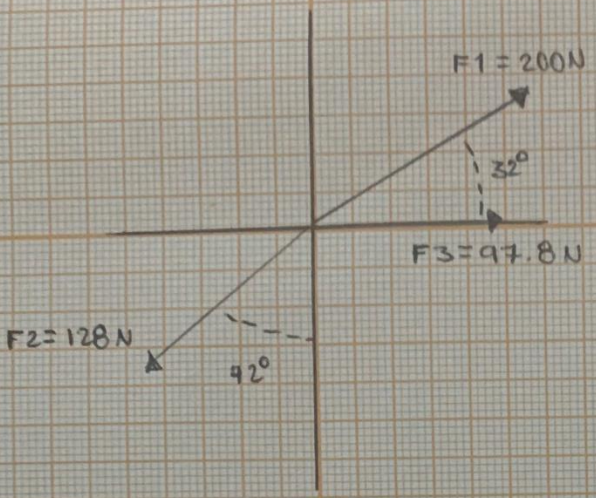
Materia: Resistencia de materiales de construcción

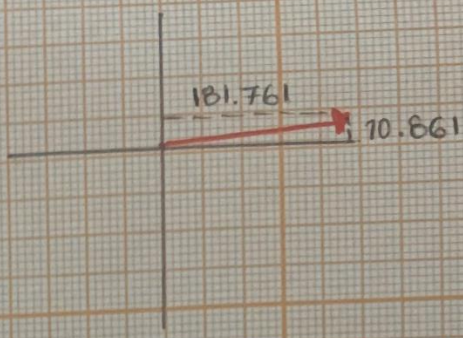
Profesor: García López Pedro Alberto

Actividad: Fuerzas coplanares

Fecha: 24/09/2023

1.-

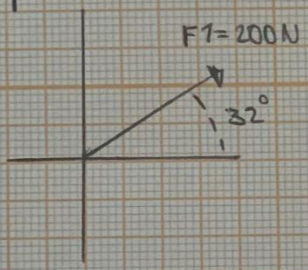




$\text{Tan}\,\theta = \frac{10.861}{181.761} \rightarrow \text{Tan}\,\theta = 0.059$

$\theta = \text{Tan}^{-1}(0.059) \rightarrow \boxed{\theta = 3.419^{\circ}}$

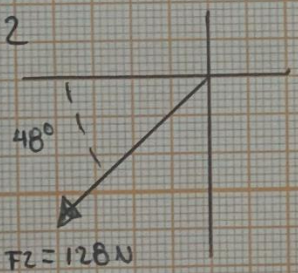
F1



$\text{Sen}\,\theta = \frac{F_{1y}}{200}$ $\quad \text{Sen}\,32^{\circ}(200) = 105.983$

$\cos\theta = \frac{F_{1x}}{200}$ $\quad \cos 32^{\circ}(200) = 169.609$

F2



$\text{Sen}\,\theta = \frac{F_{2y}}{128}$ $\quad \text{Sen}\,48^{\circ}(128) = -95.122$

$\cos\theta = \frac{F_{2x}}{128}$ $\quad \cos 48^{\circ}(128) = -85.648$

$F_3 = F_{3x} = 97.8$

$\Sigma F_x = 169.609 - 85.648 + 97.8$

$\Sigma F_x = 181.761$

$\Sigma F_y = 105.983 - 95.122$

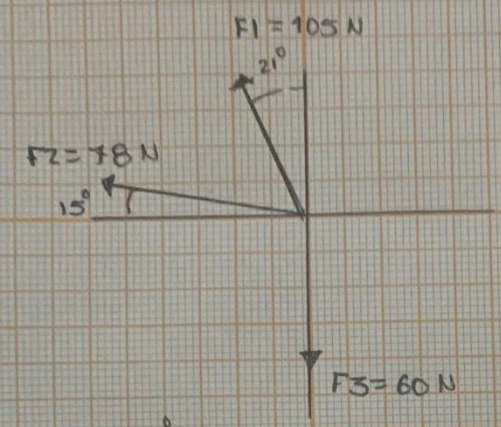
$\Sigma F_y = 10.861$

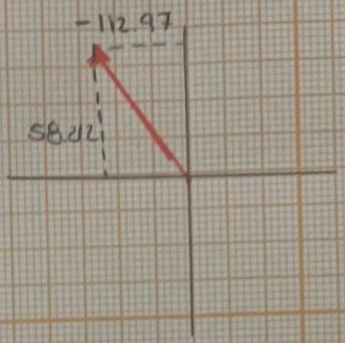
$h = \sqrt{(181.761)^2 + (10.861)^2}$

$h = \sqrt{33155.022}$

$\boxed{h = 182.085}$

2.-



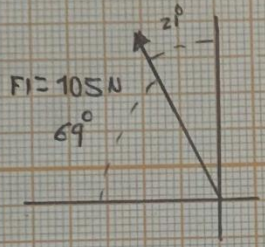


$\text{Tan}\theta = \frac{58.212}{-112.97} \longrightarrow \text{Tan}\theta = -0.515$

$\theta = \text{Tan}^{-1}(-0.515) \longrightarrow \theta = -27.261$

$\theta = 180° - 27.261 \rightarrow \boxed{152.738°}$

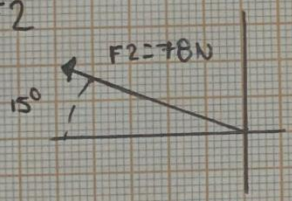
F1



$\text{Sen}\theta = \frac{F_{1y}}{105}$ $\quad \text{Sen } 69(105) = 98.025$

$\text{COS}\theta = \frac{F_{1x}}{105}$ $\quad \text{COS } 69(105) = -37.628$

F2



$\text{Sen}\theta = \frac{F_{2y}}{78}$ $\quad \text{Sen } 15(78) = 20.187$

$\text{COS}\theta = \frac{F_{2x}}{78}$ $\quad \text{COS } 15(78) = -75.342$

$F3 = F3y = -60$

$\Sigma Fy = 98.025 + 20.187 - 60$

$\Sigma Fy = 58.212$

$\Sigma Fx = -37.628 - 75.342$

$\Sigma Fx = -112.97$

$h = \sqrt{(58.212)^2 + (-112.97)^2}$

$h = \sqrt{16150.857}$

$\boxed{h = 127.086}$