



Mi Universidad

**RESULTANTE DE FUERZAS
CONCURRENTES**

Nombre del Alumno: Aguilar Villar Luis Enrique

Nombre del tema: RESULTANTE DE FUERZAS CONCURRENTES

Parcial: I

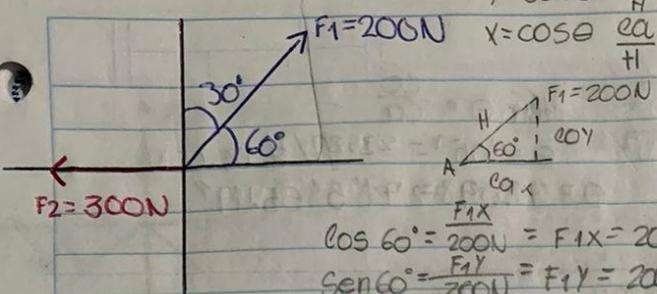
Nombre de la Materia: RESISTENCIA DE MATERIALES DE CONSTRUCCION

Nombre del profesor: PEDRO ALBERTO GARCIA LOPEZ

Nombre de la Licenciatura: Arquitectura

Cuatrimestre: 4to

$y = \text{sen } \theta = \frac{ca}{H}$
 $x = \text{cose } \theta = \frac{ca}{H}$



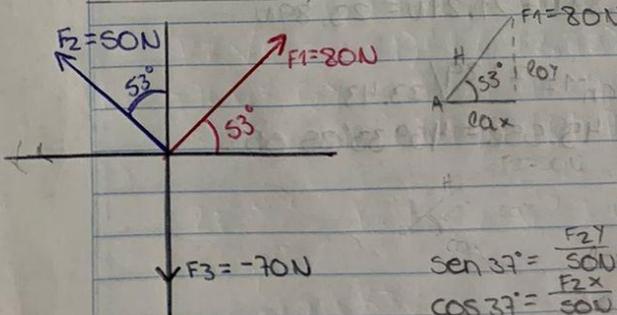
$\cos 60^\circ = \frac{F_{1x}}{200N} = F_{1x} = 200N (\cos 60^\circ)$
 $\text{Sen } 60^\circ = \frac{F_{1y}}{200N} = F_{1y} = 200N (\text{sen } 60^\circ)$
 $F_{1x} = 100N$
 $F_{1y} = 173.205N$

$F_2 = -300N = F_{2y}$ $\Sigma F_x = 100N - 300N = -200N$
 $\Sigma F_y = 173.205N$

$R = \sqrt{(-200N)^2 + (173.205N)^2}$ $\tan \theta = \frac{ca}{ca}$
 $R = \sqrt{40000^2 + 29999.972}$ $\theta = \tan^{-1} = 173.205N / -200N$
 $\theta = -40.893 = -40^\circ 53' 36.17''$

$R = \sqrt{69999.972}$
 $R = 264.575$

$F_2 = 50N$
 $F_1 = 80N$
 $F_3 = -70N$



$\cos 53^\circ = \frac{F_{1x}}{80N} = F_{1x} = 80N (\cos 53^\circ)$
 $\text{Sen } 53^\circ = \frac{F_{1y}}{80N} = F_{1y} = 80N (\text{sen } 53^\circ)$
 $F_{1x} = 48.08N$
 $F_{1y} = 63.84N$

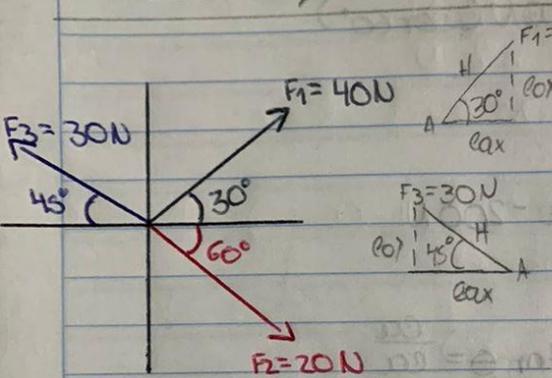
$\text{Sen } 37^\circ = \frac{F_{2y}}{50N} = F_{2y} = 50N (\text{sen } 37^\circ)$
 $\cos 37^\circ = \frac{F_{2x}}{50N} = F_{2x} = 50N (\cos 37^\circ)$
 $F_{2y} = -39.9N$
 $F_{2x} = 30.05N$

$F_3 = -70N = F_{3y}$

$\Sigma F_x = 48.08N + 39.9 = 8.18$
 $\Sigma F_y = 63.890 + 30.090 - 70 = 23.89$

$R = \sqrt{(18.88)^2 + (23.89)^2}$
 $R = \sqrt{63.912 \text{ N}^2 + 570.732 \text{ N}^2}$
 $R = \sqrt{634.644}$
 $R = 25.192$

$\tan \theta = \frac{co}{ca}$
 $\theta = \tan^{-1} = 23.89 / 8.18$
 $\theta = 71.098 = 71^\circ 5' 55.17''$



$F_1 = 40 \text{ N}$
 $\cos 30^\circ \frac{F_1}{40 \text{ N}} = F_{1x} = 40 \text{ N} (\cos 30^\circ)$
 $\sin 30^\circ \frac{F_1}{40 \text{ N}} = F_{1y} = 40 \text{ N} (\sin 30^\circ)$
 $F_{1x} = 34.641 \text{ N}$
 $F_{1y} = 20 \text{ N}$

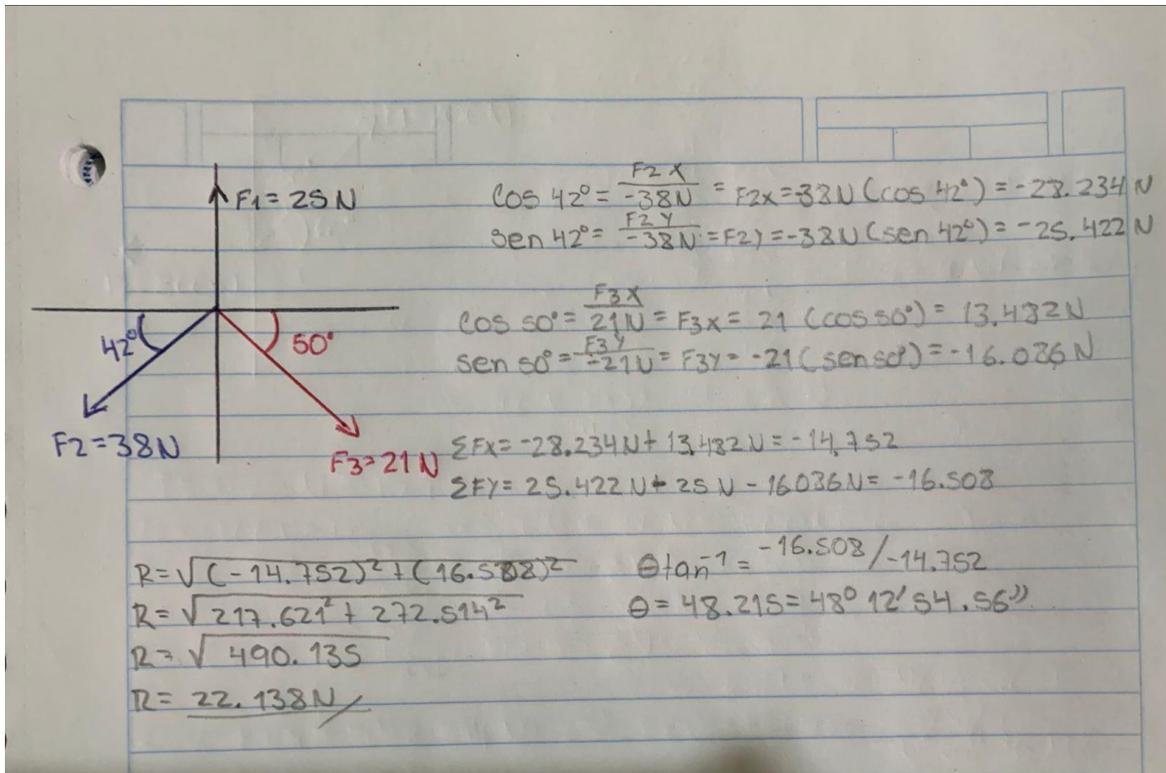
$F_2 = 20 \text{ N}$
 $\cos 60^\circ = \frac{F_{2x}}{20 \text{ N}} = F_{2x} = 20 \text{ N} (\cos 60^\circ)$
 $\sin 60^\circ = \frac{F_{2y}}{20 \text{ N}} = F_{2y} = 20 \text{ N} (\sin 60^\circ)$
 $F_{2x} = 10 \text{ N}$
 $F_{2y} = 17.32 \text{ N}$

$F_3 = 30 \text{ N}$
 $\cos 45^\circ = \frac{F_{3x}}{30 \text{ N}} = F_{3x} = 30 \text{ N} (\cos 45^\circ)$
 $\sin 45^\circ = \frac{F_{3y}}{30 \text{ N}} = F_{3y} = 30 \text{ N} (\sin 45^\circ)$
 $F_{3x} = -21.21 \text{ N}$
 $F_{3y} = 21.21 \text{ N}$

$\Sigma F_x = 34.64 \text{ N} + 10 \text{ N} - 21.21 \text{ N} = 23.43 \text{ N}$
 $\Sigma F_y = 20 \text{ N} - 17.32 \text{ N} + 21.21 \text{ N} = 23.89 \text{ N}$

$R = \sqrt{(23.43)^2 + (23.89)^2}$
 $R = \sqrt{548.964^2 + 570.732^2}$
 $R = \sqrt{1119.696}$
 $R = 33.461 \text{ N}$

$\theta = \tan^{-1} = 23.89 / 23.43$
 $\theta = 45.556 = 45^\circ 33' 25.05''$



$F_1 = 25 \text{ N}$
 $\cos 42^\circ = \frac{F_{2x}}{-38 \text{ N}} = F_{2x} = -38 \text{ N} (\cos 42^\circ) = -28.234 \text{ N}$
 $\text{sen } 42^\circ = \frac{F_{2y}}{-38 \text{ N}} = F_{2y} = -38 \text{ N} (\text{sen } 42^\circ) = -25.422 \text{ N}$

$\cos 50^\circ = \frac{F_{3x}}{21 \text{ N}} = F_{3x} = 21 (\cos 50^\circ) = 13.432 \text{ N}$
 $\text{sen } 50^\circ = \frac{F_{3y}}{-21 \text{ N}} = F_{3y} = -21 (\text{sen } 50^\circ) = -16.036 \text{ N}$

$\Sigma F_x = -28.234 \text{ N} + 13.432 \text{ N} = -14.752$
 $\Sigma F_y = 25.422 \text{ N} + 25 \text{ N} - 16.036 \text{ N} = -16.508$

$R = \sqrt{(-14.752)^2 + (-16.508)^2}$
 $R = \sqrt{217.621 + 272.514}$
 $R = \sqrt{490.135}$
 $R = 22.138 \text{ N}$

$\theta \tan^{-1} = -16.508 / -14.752$
 $\theta = 48.215 = 48^\circ 12' 54.56''$