



FUERZAS COPLANARES

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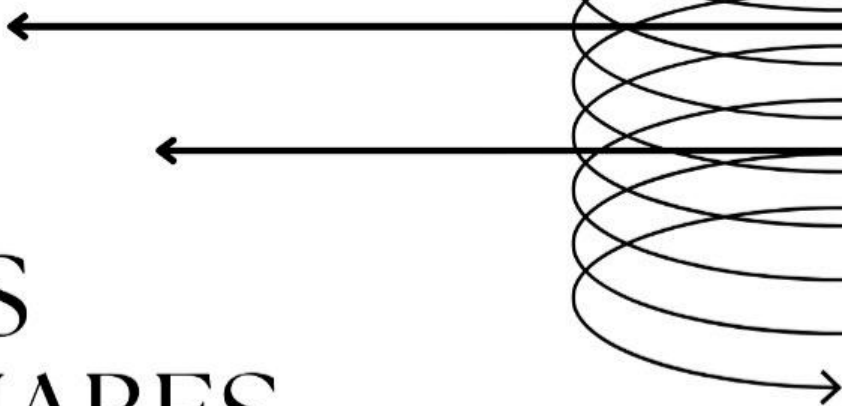
LOPEZ

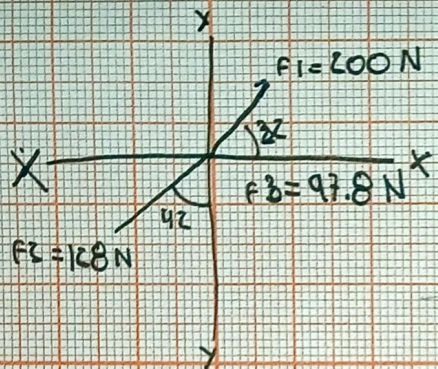
4. CUATRIMESTRE

RESISTENCIA DE MATERIALES DE

CONSTRUCCION

24 DE SEPTIEMBRE DEL 2023





$$\sin \theta F = \sin 32 (200 \text{ N}) = 105.983$$

$$\sin 32 (200 \text{ N}) = 109.609$$

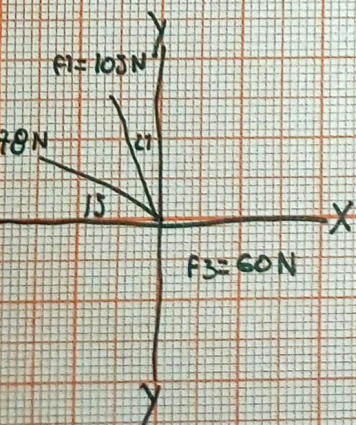
$$\sin \theta F = \sin 48 (128) = 93.722$$

$$\cos \theta F = \cos 48 (128) = 83.648$$

$$\Sigma F_x = 109.609 - 83.648 + 97.8 \text{ N} = 181.761$$

$$\Sigma F_y = 105.983 - 93.722 = 10.861$$

$$\sqrt{(181.761)^2 + (10.861)^2} = 182.008$$

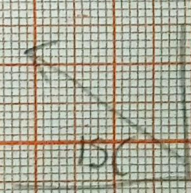


$$\sin \theta F = \sin 21 (105) = 37.02$$

$$\cos \theta F = \cos 21 (105) = 98.02$$

$$\sin \theta F = \sin 15 (78) = 20.18$$

$$\cos \theta F = \cos 15 (78) = 75.39$$



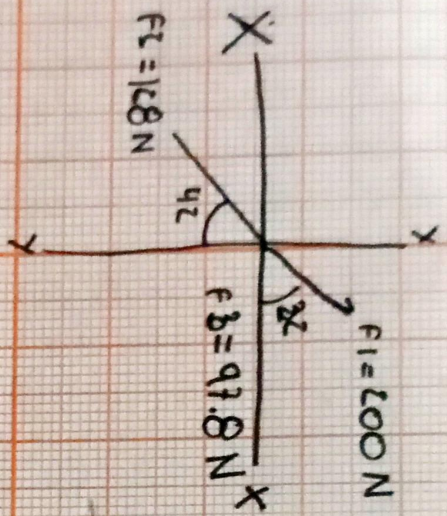
$$\Sigma F_x = 37.02 - 75.39 = -38.37 \text{ N}$$

$$\Sigma F_y = 98.02 + 20.18 - 60 = 58.2 \text{ N}$$

$$R = \sqrt{(-38.37)^2 + (58.2)^2}$$

$$R = 70.07$$

0.82



$$\sin \alpha = \frac{200 \sin 32}{200} = 0.5298$$

$$\sin 32 = 0.5298 \Rightarrow 169.609$$

$$\sin \alpha = 0.5298 = \sin 32 \quad | \quad 28 = 95.122$$

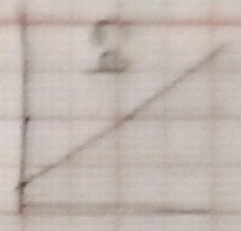
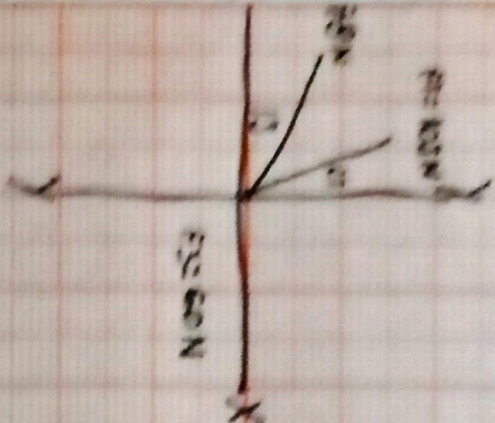
$$\cos \alpha = \cos 32 = 0.8480 \quad | \quad 28 = 83.415$$

$$E_{FX} = 169.609 - 83.415 = 86.194 \text{ N} \approx 86.2 \text{ N}$$

$$E_{FY} = 105.983 - 95.122 = 10.861 \text{ N} \approx 10.9 \text{ N}$$

$$\sqrt{(181.767)^2 + (10.867)^2} = 182.087$$

$$\sin 69 = \cos 21 = 0.9336 \Rightarrow 181.767$$

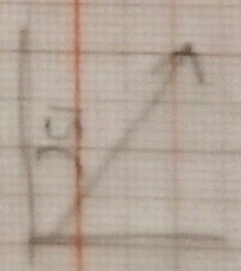


$$\sin \theta = \frac{98.02}{152.79} = 0.642$$

$$\cos \theta = \frac{114.96}{152.79} = 0.753$$

$$\sin \theta = \frac{98.02}{152.79} = 0.642$$

$$\cos \theta = \frac{114.96}{152.79} = 0.753$$



$$R_x = 98.02 + 10.18 = 108.20 \text{ N}$$

$$R_y = 114.96 + 4.76 = 119.72 \text{ N}$$

$$R = \sqrt{108.20^2 + 119.72^2} = 164.1 \text{ N}$$

$$h = \sqrt{108.20^2 + 119.72^2}$$

$$h = 164.1$$

$$\theta = \tan^{-1} \frac{119.72}{108.20} = 47.7^\circ$$

$$\theta = 152.79$$

382

112.96 N

$$\theta = 152.79$$