

Methods of Resolution

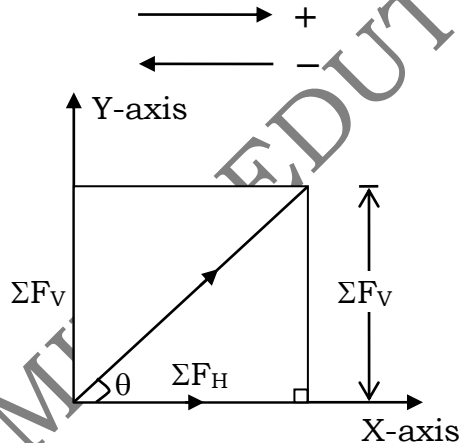
[TO SOLVE NUMERICALS BASED ON RESOLUTION]

Steps:

1. Resolve all the forces horizontally.

ΣF_H = Addition of all horizontal forces.

Sign convention:



2. Resolve all the forces vertically

ΣF_V = Addition of all vertical forces.

Sign convention:



3. Resultant 'R' is given by,

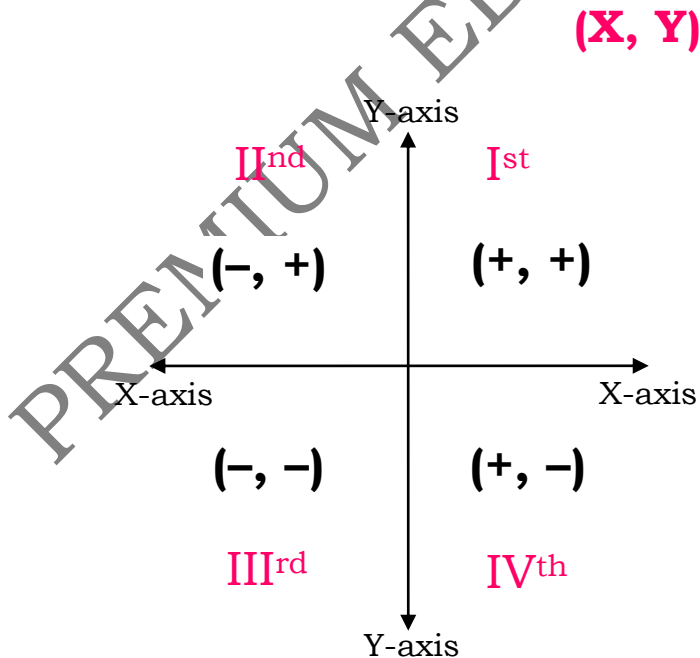
$$R = \sqrt{(\sum F_H)^2 + (\sum F_V)^2}$$

4. $\tan \theta = \frac{\sum F_V}{\sum F_H}$

$$\theta = \tan^{-1} \left(\frac{\sum F_V}{\sum F_H} \right)$$

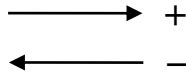
How to add forces

Coordinates

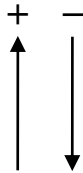


Sign Conventions

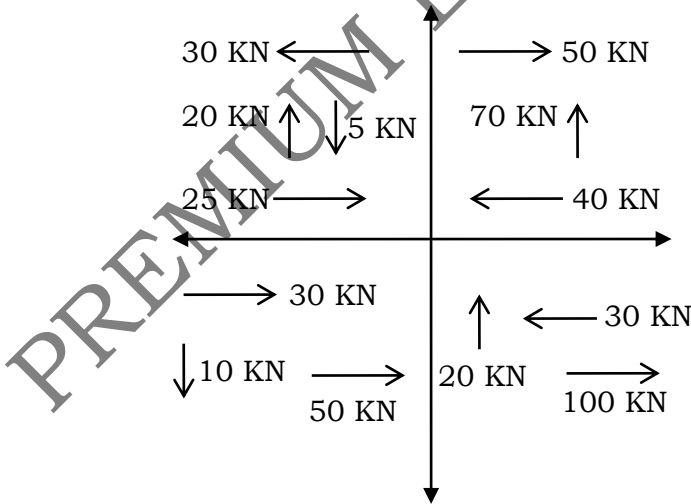
ΣF_H = Addition of all horizontal forces



ΣF_V = Addition of all vertical forces



1. Determine $\Sigma F_H = ?$ $\Sigma F_V = ?$



Engineering Mechanics

$$\Sigma F_H = ? \quad \Sigma F_V = ?$$

$$\Sigma F_H = +50 - 40 + 25 - 30 + 30 + 50 + 100 - 30$$

$$\Sigma F_H = \mathbf{155kN}$$

$$\Sigma F_V = +70 + 20 - 5 - 10 + 20$$

$$\Sigma F_V = \mathbf{95kN}$$

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