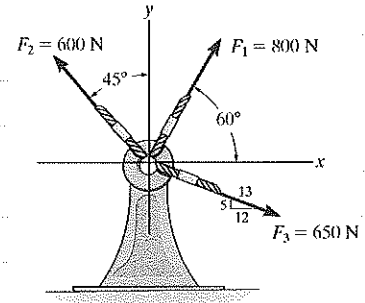


SOLUTIONS

PROBLEM AP-04

GIVEN:

Determine the magnitude of the resultant force and its direction θ , measured counterclockwise from the positive x axis.



REQUIRED:

 \vec{F}_R

SOLUTION:

Using Components

$$F_{1x} = 800 \cos 60 = 400 \text{ N} \rightarrow$$

$$F_{1y} = 800 \sin 60 = 693 \text{ N} \uparrow$$

$$F_{2x} = 600 \sin 45 = 424 \text{ N} \leftarrow$$

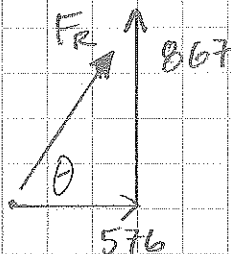
$$F_{2y} = 600 \cos 45 = 424 \text{ N} \uparrow$$

$$F_{3x} = \left(\frac{12}{13}\right) 650 = 600 \rightarrow$$

$$F_{3y} = \left(\frac{5}{13}\right) 650 = 250 \downarrow$$

$$F_{Rx} = 400 - 424 + 600 = 576 \rightarrow \quad \left. \begin{array}{l} \\ \\ \end{array} \right\} F_R = 1041 \text{ N}$$

$$F_{Ry} = 693 + 424 - 250 = 867 \uparrow$$



$$\theta = \tan^{-1}\left(\frac{867}{576}\right)$$

$$= 56.4^\circ$$

$$F_R = 1.04 \text{ kN}$$

$$\theta = 56.4^\circ$$