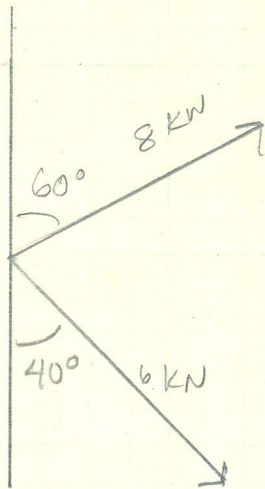


1)

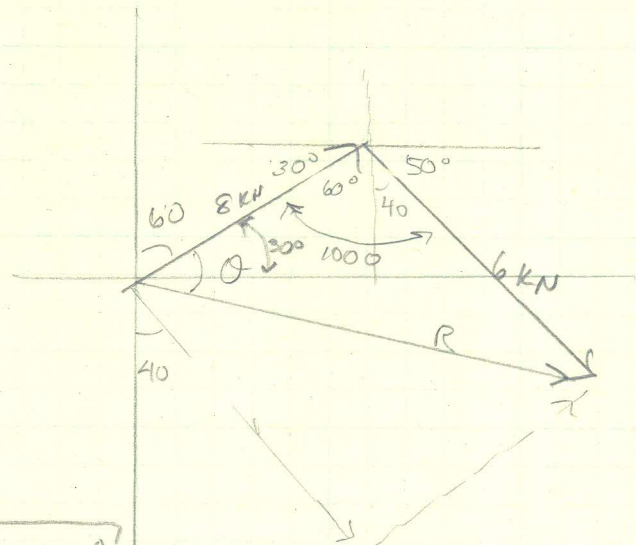


$$R = \sqrt{8^2 + 6^2 - 2(8)(6)\cos 100^\circ}$$

$$R = 10.80 \text{ kN}$$

angle cw from x-axis

$$33.16^\circ - 30^\circ = 3.16^\circ$$



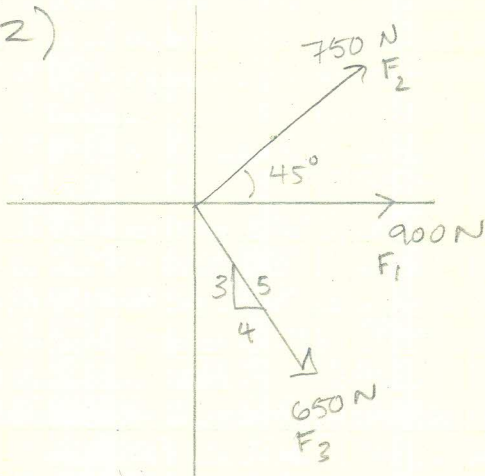
$$\frac{\sin \theta}{6 \text{ kN}} = \frac{\sin 100^\circ}{R}$$

$$\sin \theta = \frac{\sin 100^\circ (6 \text{ kN})}{10.8 \text{ kN}}$$

$$\theta = \sin^{-1}(0.5470)$$

$$\theta = 33.16^\circ$$

2)



$$\vec{F}_1 = 900 \hat{i} + 0 \hat{j}$$

$$\vec{F}_2 = 750 \cos 45^\circ \hat{i} + 750 \sin 45^\circ \hat{j}$$

$$\vec{F}_3 = \frac{4}{5} 650 \hat{i} - \frac{3}{5} 650 \hat{j}$$

$$\vec{R} = 1950.33 \hat{i} + 140.33 \hat{j}$$

$$R = \sqrt{1950.33^2 + 140.33^2} = 1955 \text{ N}$$

$$\tan \theta = \frac{140.33}{1950.33}$$

$$\theta = \tan^{-1}(0.071952)$$

$$\theta = 4.12^\circ$$