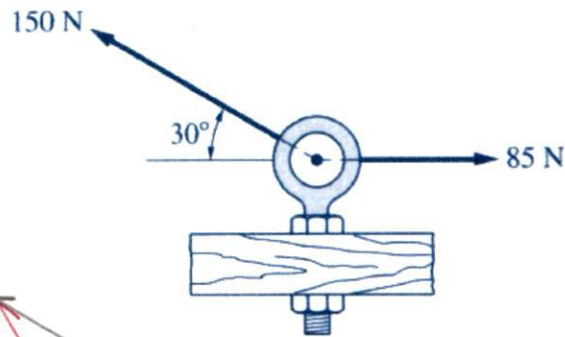


2-3

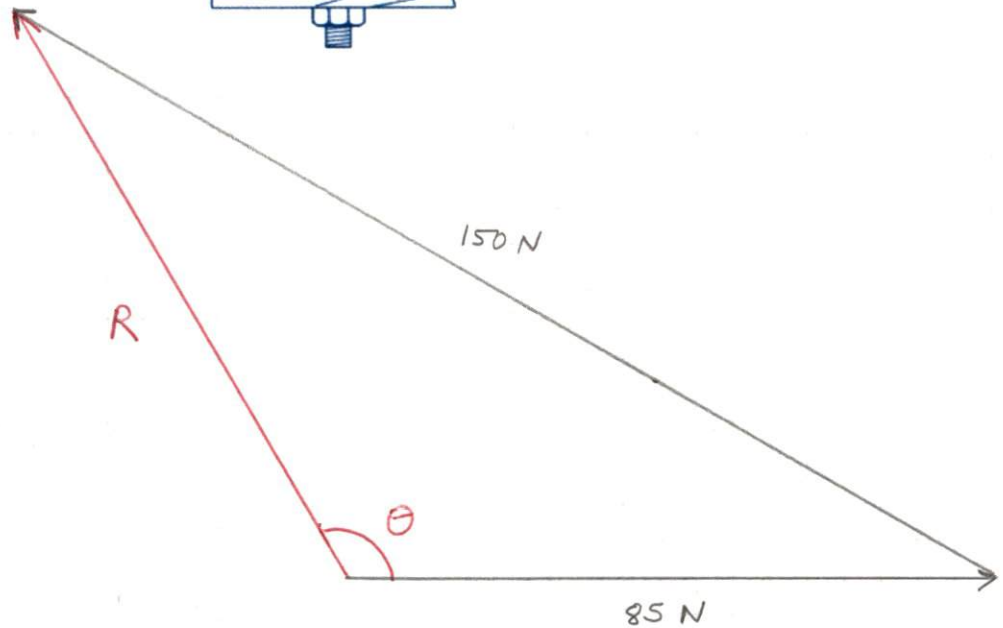
Determine the magnitude and direction of the resultant of two forces acting on the eye hook shown in Fig. P2-3 by (a) the graphical method and (b) the trigonometric method.

Solution.

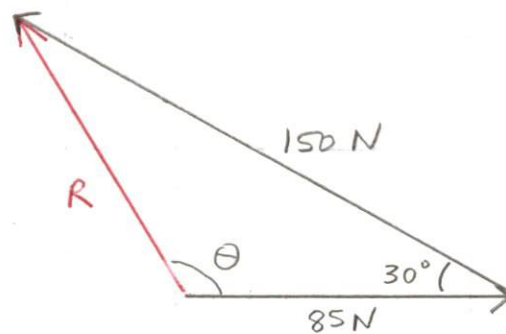


(a) Graphical
scale 1cm = 10N

$$R = 87N$$
$$\theta = 120^\circ$$



(b) Trig Triangle-Rule (Head-to-Tail)



Law of Cosines

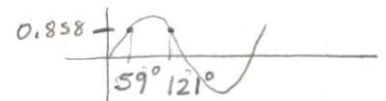
$$R = \sqrt{85N^2 + 150N^2 - 2(85N)(150N) \cos 30^\circ} = 87.4N$$

Law of Sines

$$\frac{\sin \theta}{150N} = \frac{\sin 30^\circ}{87.4N}$$

$$\sin \theta = \frac{150N (\sin 30^\circ)}{87.4N} = 0.85812357$$

$$\theta = \sin^{-1}(0.85812357) = 59.1^\circ$$



θ is obtuse

$$\theta = \underline{\underline{121^\circ}}$$