



x

Given

$$F = 6.5 \text{ kN}$$

To find

Express F as a vector

Solution

$$\begin{aligned}\vec{F} &= F_x \hat{i} + F_y \hat{j} \\ &= -F \cos \theta \hat{i} - F \sin \theta \hat{j}\end{aligned}$$

$$\tan \theta = \frac{5}{12}$$

$$\theta = \tan^{-1} 5/12 = 22.62^\circ$$

$$\begin{aligned}\therefore \vec{F} &= -6.5 \times \cos 22.62^\circ \hat{i} - 6.5 \times \sin 22.62^\circ \hat{j} \\ &= -6.0 \hat{i} - 2.5 \hat{j} \text{ kN}\end{aligned}$$