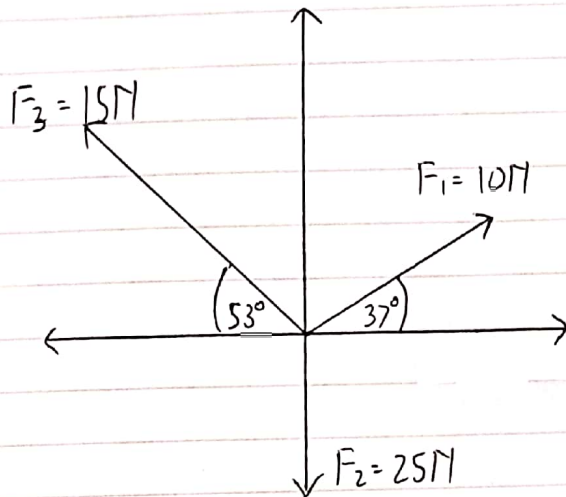


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1.



$$\begin{aligned} A. \sum F_x &= F_1 \cos 37^\circ - F_3 \cos 53^\circ \\ &= 10 \cdot \frac{4}{5} - 15 \cdot \frac{3}{5} \\ &= 8 - 9 \\ &= -1 \text{ N} \end{aligned}$$

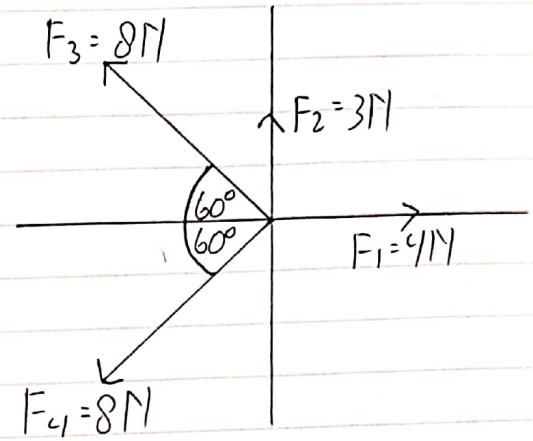
$$\begin{aligned} \sum F_y &= F_1 \sin 37^\circ + F_3 \sin 53^\circ - F_2 \\ &= 10 \cdot \frac{3}{5} + 15 \cdot \frac{4}{5} - 25 \\ &= 6 + 12 - 25 \\ &= -7 \text{ N} \end{aligned}$$

$$\begin{aligned} R &= \sqrt{(\sum F_x)^2 + (\sum F_y)^2} \\ &= \sqrt{(-1)^2 + (-7)^2} \\ &= \sqrt{1 + 49} \\ &= \sqrt{50} \\ &= 5\sqrt{2} \text{ N} \end{aligned}$$

$$\begin{aligned} B. \tan \theta &= \frac{\sum F_y}{\sum F_x} \\ &= \frac{-7}{-1} \\ &= 7 \end{aligned}$$

$$\begin{aligned} \theta &= \arctan 7 \\ &= 81,87^\circ \end{aligned}$$

2.



$$\begin{aligned} *F_1 \\ F_{1x} &= 4 \text{ N} \\ F_{1y} &= 0 \text{ N} \end{aligned}$$

$$\begin{aligned} *F_2 \\ F_{2x} &= 0 \text{ N} \\ F_{2y} &= 3 \text{ N} \end{aligned}$$

$$\begin{aligned} *F_3 \\ \cos 60^\circ = \frac{F_{3x}}{F_3} \quad \cos 30^\circ = \frac{F_{3y}}{F_3} \end{aligned}$$

$$\begin{aligned} \frac{1}{2} = \frac{F_{3x}}{8} \quad \frac{1}{2} \sqrt{3} = \frac{F_{3y}}{8} \\ -4 \text{ N} = F_{3x} \quad 4\sqrt{3} = F_{3y} \end{aligned}$$

$$\begin{aligned} *F_4 \\ \cos 60^\circ = \frac{F_{4x}}{F_4} \quad \cos 30^\circ = \frac{F_{4y}}{F_4} \end{aligned}$$

$$\begin{aligned} \frac{1}{2} = \frac{F_{4x}}{8} \quad \frac{1}{2} \sqrt{3} = \frac{F_{4y}}{8} \\ -4 \text{ N} = F_{4x} \quad -4\sqrt{3} = F_{4y} \end{aligned}$$

$$\begin{aligned} \sum F_x &= F_{1x} + F_{2x} - F_{3x} - F_{4x} \\ &= 4 + 0 - 4 - 4 \\ &= -4 \text{ N} \\ &= 4 \text{ N ke kiri} \end{aligned}$$

$$\begin{aligned}\Sigma F_y &= F_{1y} + F_{2y} + F_{3y} - F_{4y} \\ &= 0 + 3 + 4\sqrt{3} - 4\sqrt{3} \\ &= 3 \text{ N} \\ &= 3 \text{ N} \text{ kekanan}\end{aligned}$$

$$\begin{aligned}FR &= \sqrt{F_x^2 + F_y^2} \\ &= \sqrt{(-4)^2 + (3)^2} \\ &= \sqrt{16 + 9} \\ &= \sqrt{25} \\ &= 5 \text{ N}\end{aligned}$$

3. Perhitungan silang =

$$\begin{array}{lll} i \times i = 0 & i \times j = k & j \times i = -k \\ j \times j = 0 & j \times k = i & k \times j = -i \\ k \times k = 0 & k \times i = j & i \times k = -j \end{array}$$

$$\begin{aligned}A \times B &= (4i + 3j - 2k) \times (7i + 2j + 5k) \\ &= 8k - 20j - 21k + 15i - 14j + 4i \\ &= 19i - 34j - 13k\end{aligned}$$

$$\begin{aligned}|A \times B| &= \sqrt{19^2 + (-34)^2 + (-13)^2} \\ &= \sqrt{361 + 1156 + 169} \\ &= \sqrt{1686} \\ &= 41,06\end{aligned}$$

$$\begin{aligned}\cos \theta &= \frac{A \cdot B}{|A| \cdot |B|} = \frac{28 + 6 - 10}{(\sqrt{4^2 + 3^2 + (-2)^2}) \cdot (\sqrt{7^2 + 2^2 + 5^2})} \\ &= \frac{24}{(\sqrt{29}) \cdot (\sqrt{78})} = \frac{24}{(5,38) \cdot (8,84)} \\ &= \frac{24}{47,5592} \\ &= 0,505\end{aligned}$$

$$\theta \sim 60^\circ$$