

## Analytical Solution

$$R_x = A_x + B_x = A \cos \theta_1 + B \cos \theta_2$$

$$R_y = A_y + B_y = A \sin \theta_1 + B \sin \theta_2$$

$$R = \sqrt{R_x^2 + R_y^2}$$

$$\theta = \tan^{-1} \frac{R_y}{R_x}$$

$$A = 3.43 \text{ N}$$

$$\theta_1 = 30^\circ$$

$$B = 2.45 \text{ N}$$

$$\theta_2 = 130^\circ$$

$$\begin{aligned} R_x &= 3.43 \text{ N} \cos(30^\circ) + 2.45 \text{ N} \cos(130^\circ) \\ &= 1.396 \text{ N} \end{aligned}$$

$$\begin{aligned} R_y &= 3.43 \text{ N} \sin(30^\circ) + 2.45 \text{ N} \sin(130^\circ) \\ &= 3.592 \text{ N} \end{aligned}$$

$$\begin{aligned} R &= \sqrt{(1.396 \text{ N})^2 + (3.592 \text{ N})^2} \\ &= 3.853 \text{ N} \end{aligned}$$

$$\theta = \tan^{-1} \left( \frac{3.592 \text{ N}}{1.396 \text{ N}} \right)$$

$$= 68.8^\circ$$