

Analytical solution

$$R_x = A_x + B_x = A \cos(\theta) + B \cos(\theta_2)$$

$$R_y = A_y + B_y = A \sin(\theta) + B \sin(\theta_2)$$

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

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

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

$$\theta_1 = 30^\circ$$

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

$$\theta_2 = 130^\circ$$

$$R_x = 3.43 \cos(30^\circ) + 2.45 \cos(130^\circ)$$

$$R_x = 1.396$$

$$R_y = 3.43 \sin(30^\circ) + 2.45 \sin(130^\circ)$$

$$R_y = 3.592$$

$$R = \sqrt{1.396^2 + 3.592^2}$$

$$R = 3.854$$

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

$$\theta = 68.76^\circ$$