

$$\mathbf{A} = 25 [\text{E}30^\circ\text{N}] \quad \mathbf{B} = 50 [\text{W}60^\circ\text{S}] \quad \mathbf{C} = 40 [\text{E}45^\circ\text{S}]$$

$$A_E = 25 \cos 30^\circ = \underline{21.6}$$

$$A_N = 25 \sin 30^\circ = \underline{12.5}$$

$$B_E = -50 \cos 60^\circ = \underline{-25}$$

$$B_N = -50 \sin 60^\circ = \underline{-43.3}$$

$$C_E = 40 \cos 45^\circ = \underline{28.3}$$

$$C_N = -40 \sin 45^\circ = \underline{-28.3}$$

$$\mathbf{R} = \mathbf{A} + \mathbf{B}$$

$$R^2 = (R_E)^2 + (R_N)^2$$

$$R_E = A_E + B_E$$

$$R_N = A_N + B_N$$

$$R_E = (21.6) + (-25)$$

$$R_N = (12.5) + (-43.3)$$

$$R_E = \underline{-3.4}$$

$$\underline{\underline{R_N = -30.8}}$$

$$R = \sqrt{(R_E)^2 + (R_N)^2}$$

$$R = \sqrt{(-3.4)^2 + (-30.8)^2}$$

$$R = \underline{31} \quad \theta = \tan^{-1} \left| \frac{R_N}{R_E} \right| = \tan^{-1} \left(\frac{30.8}{3.4} \right)$$

$$\underline{\underline{\theta = 84^\circ}}$$

$$\boxed{\vec{R} = 31 [\text{W}84^\circ\text{S}]}$$

$$\mathbf{R} = (3\mathbf{C} - 2\mathbf{B})\mathbf{A}$$

$$|\vec{R}| = \sqrt{(R_E)^2 + (R_N)^2}$$

$$R_E = (3C_E - 2B_E)A_E$$

$$\begin{aligned} R_E &= [3(28.3) - 2(-25)](21.6) \\ &= [84.9 + 50](21.6) \quad \checkmark R_E \\ &= (134.9)(21.6) = \underline{\underline{2913}} \end{aligned}$$

$$R_N = (3C_N - 2B_N)A_N$$

$$\begin{aligned} R_N &= [3(-28.3) - 2(-43.3)](12.5) \\ &= (-84.9 + 86.6)(12.5) \quad \checkmark R_N \\ &= (+1.7)(12.5) = \underline{\underline{21.3}} \end{aligned}$$

$$|\vec{R}| = \sqrt{(2913)^2 + (21.3)^2}$$

$$= \underline{\underline{2913}} \quad \Theta = \tan^{-1} \left| \frac{R_N}{R_E} \right|$$

$$\Theta = \tan^{-1} \left(\frac{21.3}{2913} \right) = 0.4^\circ$$

$$\boxed{\vec{R} = 2913 [E 0.4^\circ N]}$$