

If  $A = 28 \text{ m [E}75^\circ\text{N]}$ ,  $B = 35 \text{ m [E}24^\circ\text{S]}$ ,  $C = 22 \text{ m [W}50^\circ\text{N]}$ , and  $D = 40 \text{ m [W}30^\circ\text{S]}$  Find:

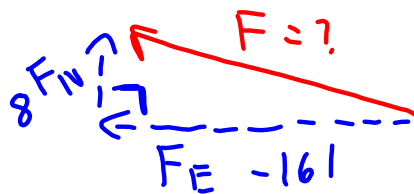
$$\vec{F} = 4\vec{C} + 3\vec{D} \quad \left\{ 160 \text{ m [W}2.6^\circ\text{N]} \right.$$

$$C_E = C \cos \theta = -22 \cos 50^\circ = -14 \text{ m} \quad C_N = C \sin \theta = 22 \sin 50^\circ = 17 \text{ m}$$

$$D_E = D \cos \theta = -40 \cos 30^\circ = -35 \text{ m} \quad D_N = D \sin \theta = -40 \sin 30^\circ = -20 \text{ m}$$

$$\begin{aligned} F_E &= 4C_E + 3D_E \\ &= 4(-14) + 3(-35) \\ &= -161 \text{ m} \end{aligned}$$

$$\begin{aligned} F_N &= 4C_N + 3D_N \\ &= 4(17) + 3(-20) \\ &= 8 \text{ m} \end{aligned}$$



$$\begin{aligned} |\vec{F}| &= \sqrt{(F_E)^2 + (F_N)^2} \\ &= \sqrt{(-161)^2 + (8)^2} \end{aligned}$$

$$|\vec{F}| = 162 \text{ m}$$

$$\tan \theta = \left| \frac{F_N}{F_E} \right|, \quad \theta = \tan^{-1} \left| \frac{F_N}{F_E} \right|$$

$$\theta = \tan^{-1} \frac{8}{161} = 3^\circ$$

$$\boxed{\vec{F} = 162 \text{ m [W } 3^\circ \text{ N]}}$$