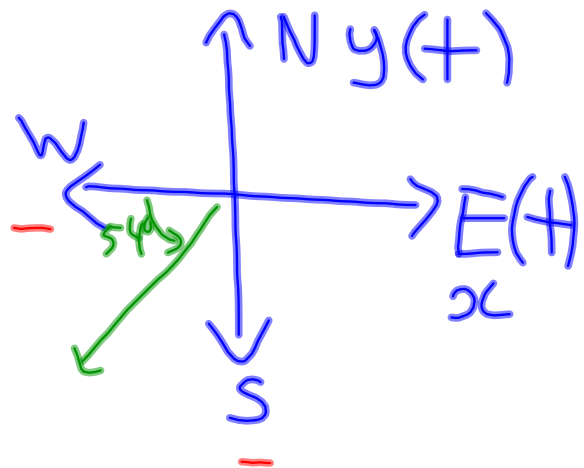
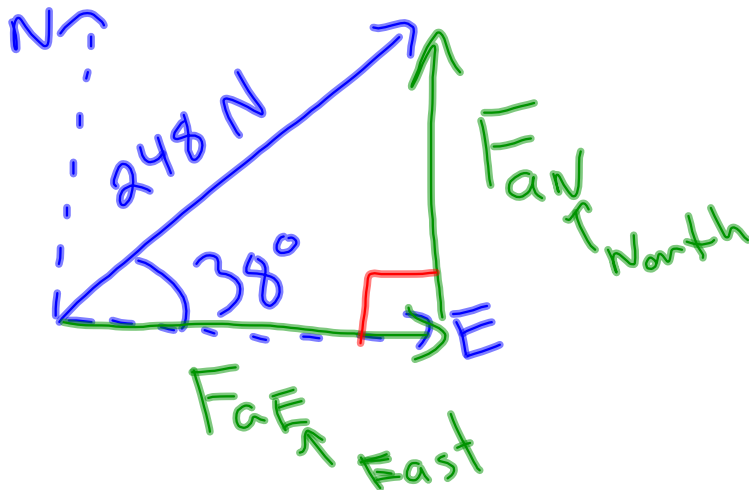


- a. $F_a = 248 \text{ N [E}38^\circ\text{N]}$
- b. $v = 65.6 \text{ m/s [W}56^\circ\text{N]}$
- c. $a = 38.4 \text{ m/s}^2 \text{ [E}81^\circ\text{S]}$
- d. $F_T = 614 \text{ N [W}22^\circ\text{S]}$
- e. $\Delta x = 1587 \text{ m [E}33^\circ\text{N]}$
- f. $a = 36.9 \text{ m/s}^2 \text{ [W}54^\circ\text{S]}$



$$F_{aE} = 248 \cos 38^\circ = 195 \text{ N}$$

$$F_{aN} = 248 \sin 38^\circ = 153 \text{ N}$$

$$f.) a = 36.9 \text{ m/s}^2 \text{ [W } 54^\circ \text{ S]}$$

$$a_E = -36.9 \cos 54^\circ = -22 \text{ m/s}^2$$

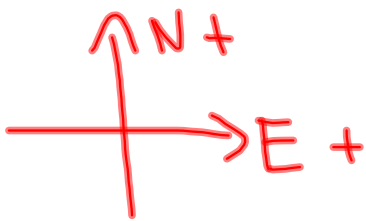
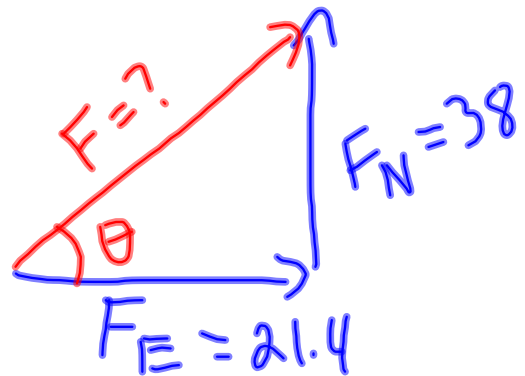
west

$$a_N = -36.9 \sin 54^\circ = -30 \text{ m/s}^2$$

south

$$2a) \quad F_E = 21.4 \text{ N}$$

$$F_N = 38 \text{ N}$$



$$F^2 = (F_E)^2 + (F_N)^2$$

$$F = \sqrt{(21.4)^2 + (38)^2}$$

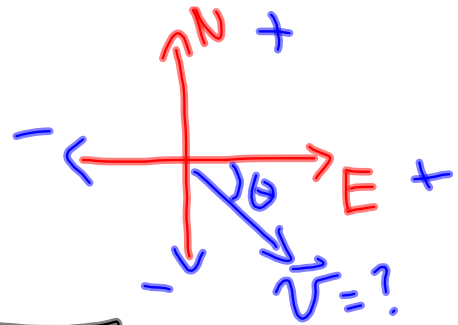
$$F = \underline{44} \text{ N} \quad \theta = \tan^{-1} \left| \frac{F_N}{F_E} \right|$$

$$\theta = \tan^{-1} \left| \frac{38}{21.4} \right| = \underline{61}^\circ$$

$$\vec{F} = 44 \text{ N} [E 61^\circ N]$$

$$2e) \quad v_E = 45 \text{ m/s}$$

$$v_N = -77 \text{ m/s}$$



$$|v| = \sqrt{(v_E)^2 + (v_N)^2}$$

$$= \sqrt{(45)^2 + (-77)^2} = 89 \text{ m/s}$$

$$\theta = \tan^{-1} \left| \frac{v_N}{v_E} \right| = \tan^{-1} \left(\frac{77}{45} \right) = 60^\circ$$

$$\vec{v} = 89 \text{ m/s} [E 60^\circ S]$$

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

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

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

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

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

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

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

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

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

$$R_E = A_E + B_E$$

$$R_N = A_N + B_N$$

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

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

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

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

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

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

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

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

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