

$$\vec{A} = 4\hat{i} - 2\hat{j} \quad \vec{B} = -3\hat{i} + 5\hat{j}$$

$$\text{Find: } \vec{F} = \vec{A} - 4\vec{B}$$

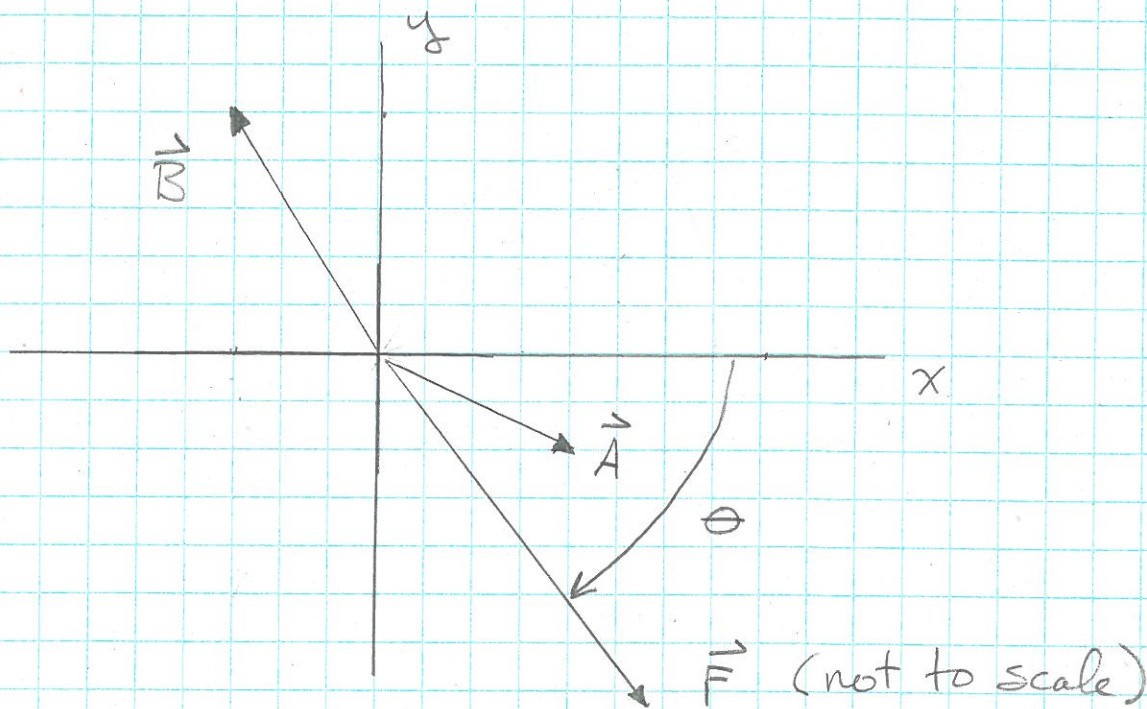
$$a.) \quad \vec{F} = \vec{A} - 4\vec{B}$$

$$= (4\hat{i} - 2\hat{j}) - 4(-3\hat{i} + 5\hat{j})$$

$$= (4\hat{i} - 2\hat{j}) + (12\hat{i} - 20\hat{j})$$

$$\underline{\vec{F} = 16\hat{i} - 22\hat{j}}$$

b.)



$$c.) \quad |\vec{F}| = \sqrt{F_x^2 + F_y^2} = \sqrt{16^2 + 22^2} = \underline{27.20}$$

$$\theta = \tan^{-1}\left(\frac{|F_y|}{F_x}\right) = 53.97^\circ \text{ below } +x \text{ axis}$$