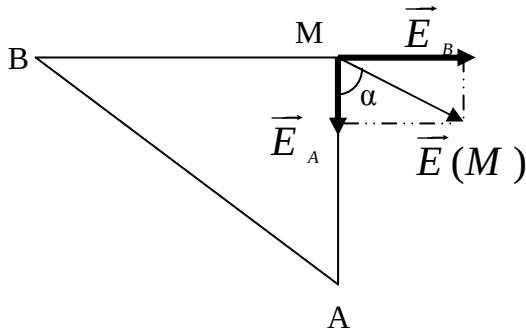




1.

$$\vec{E}_A = k \frac{q_1}{AM^2} \vec{u}_{AM} \quad \vec{E}_B = k \frac{q_2}{BM^2} \vec{u}_{BM}$$

$$\vec{E} = \vec{E}_A + \vec{E}_B$$

$$E^2 = k^2 \frac{q_1^2}{AM^4} + k^2 \frac{q_2^2}{BM^4}$$

$$E = k \sqrt{\frac{q_1^2}{AM^4} + \frac{q_2^2}{BM^4}}$$

تطبيق عددي :

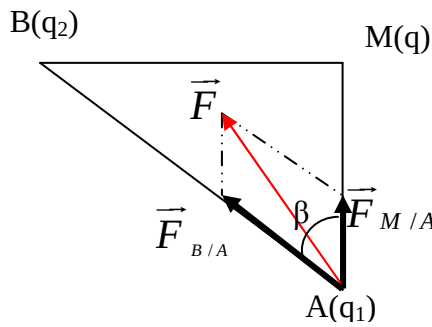
$$E = 9.10^9 \sqrt{\frac{(10.10^{-9})^2}{(3.10^{-2})^4} + \frac{(40.10^{-9})^2}{(4.10^{-2})^4}}$$

$$E = 2,5.10^5 \text{ V.m}^{-1}$$

$$\cos \alpha = \frac{E_A}{E} \Rightarrow \cos \alpha = \frac{k |q_1|}{E \times AM^2} = \frac{k |q_1|}{E \times AM^2}$$

$$\cos \alpha = 0,4 \Rightarrow \alpha = 66,4^\circ$$

Mohammed Sophi



$$\vec{F} = q \vec{E} \Rightarrow F = qE \quad .2$$

$$F = 2,5.10^{-4} \text{ N} \quad \text{تطبيق عددي :}$$

3.

$$\vec{F} = \vec{F}_{B/A} + \vec{F}_{M/A}$$

$$\vec{F} = k \frac{q_1 q_2}{AB^2} \vec{u}_{BA} + k \frac{q_1 q}{AM^2} \vec{u}_{MA}$$

$$F^2 = k^2 \frac{(q_1 q_2)^2}{AB^4} + k^2 \frac{(q_1 q)^2}{AM^4} + 2k^2 \frac{q_1^2 q q_2}{AB^2 \cdot AM^2} \cos \beta$$

$$F = k |q_1| \sqrt{\frac{q_2^2}{AB^4} + \frac{q^2}{AM^4} + 2 \frac{q q_2}{AB^2 \cdot AM^2} \cos \beta}$$

$$F = 2,2.10^{-6} \text{ N}$$