) Le potentiel crée par ces deux charges au point M

$$V_M = V_A + V_B$$

$$= \frac{kq_A}{(MA)} + \frac{kq_B}{(MB)}$$

$$= \frac{-kq}{\sqrt{(a+b)^2}} + \frac{kq}{\sqrt{a^2+b^2}} = 0V$$

) La force électrostatique au point M

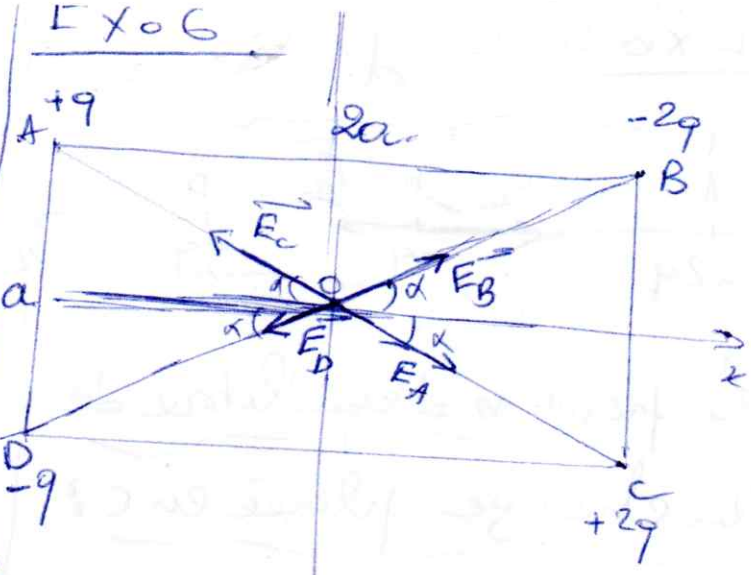
$$\vec{F}_M = q_M \vec{E}_M = 2q \vec{E}_M$$

$$= 2q\left(\frac{-2kqa}{(a^2+b^2)^{\frac{3}{2}}}\right)\vec{i}$$

$$= -\frac{4kq^2 a}{(a^2+b^2)^{\frac{3}{2}}}\vec{i}$$

$$\vec{F}_M = \frac{4kq^2a^2}{(a^2+b^2)^{\frac{3}{2}}} N$$

EXO 6



$$\vec{E}_O = \vec{E}_A + \vec{E}_B + \vec{E}_C + \vec{E}_D$$

$$\vec{E}_A = E_A(\cos\alpha\vec{i} - \sin\alpha\vec{j})$$

$$\vec{E}_B = E_B(\cos\alpha\vec{i} + \sin\alpha\vec{j})$$

$$\vec{E}_C = E_C(-\cos\alpha\vec{i} + \sin\alpha\vec{j})$$

$$\vec{E}_D = E_D(-\cos\alpha\vec{i} - \sin\alpha\vec{j})$$

$$E_A = \frac{kq}{(OA)^2},\ E_B = \frac{2kq}{(OB)^2},\ E_C = \frac{2kq}{(OC)^2}$$

$$E_D = \frac{kq}{(OD)^2}$$

on a: $OA = OB = OC = OD$

$$= \sqrt{a^2 + \left(\frac{a}{2}\right)^2} = \sqrt{5}\frac{a}{2}$$

$\Rightarrow E_A = E_D$, $E_B = E_C$

$$\cos\alpha = \frac{a}{\sqrt{5}\frac{a}{2}} = \frac{2}{5}$$

$$\sin\alpha = \frac{a/2}{\sqrt{5}\frac{a}{2}} = \frac{1}{\sqrt{5}}$$