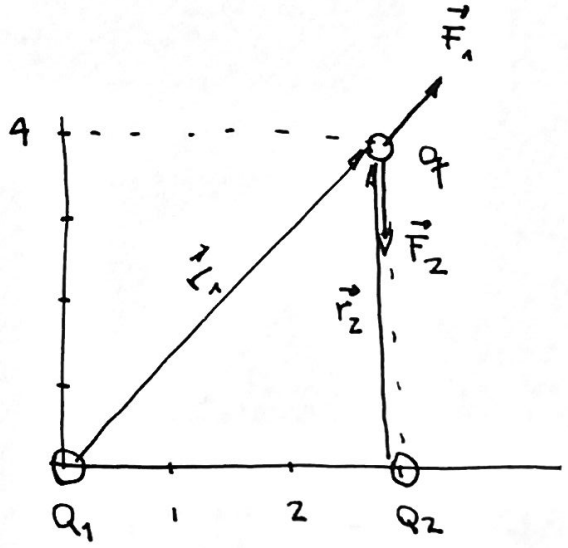

$Q_1 = 10\,\mu C$

$Q_2 = -10\,\mu C$

$q = 1\,\mu C$

$k = 9\times10^9 \frac{N\,m^2}{C^2}$

La càrrega q està sotmesa a la força $\vec{F}_1$ produïda per la càrrega Q_1, i la força $\vec{F}_2$ que fa la càrrega Q_2 sobre q

on $\vec{F}_1 = k\frac{Q_1 q}{r_1^2}\hat{r}_1$

i $\vec{r}_1 = 3\hat{i} + 4\hat{j} \quad |\vec{r}_1| = \sqrt{3^2+4^2} = 5\,m$

$\hat{r}_1 = \frac{\vec{r}_1}{|\vec{r}_1|} = \frac{3}{5}\hat{i} + \frac{4}{5}\hat{j}$

$$\vec{F}_1 = 9\times10^9 \cdot \frac{10\times10^{-6}\cdot 1\times10^{-6}}{25}\left(\frac{3}{5}\hat{i} + \frac{4}{5}\hat{j}\right) = 3{,}6\times10^{-3}\cdot\left(\frac{3}{5}\hat{i} + \frac{4}{5}\hat{j}\right)$$

$$\vec{F}_1 = \left(2{,}16\times10^{-3}\hat{i} + 2{,}88\times10^{-3}\hat{j}\right) N$$

$$\vec{F}_2 = k\frac{Q_2 q}{r_2^2}\hat{r}_2 = 9\times10^9 \cdot \frac{(-10\times10^{-6})\cdot 1\times10^{-6}}{4^2}\cdot\hat{j} = -5{,}63\times10^{-3}\hat{j}\ N$$

$$\vec{F} = \vec{F}_1 + \vec{F}_2 = \left(2{,}16\times10^{-3}\hat{i} + \left[2{,}88\times10^{-3} - 5{,}63\times10^{-3}\right]\hat{j}\right) N$$

$$\boxed{\vec{F} = \left(2{,}16\times10^{-3}\hat{i} - 2{,}75\times10^{-3}\hat{j}\right) N}$$

Si les càrregues estiguessin submergides en aigua $k' = \frac{k_0}{\varepsilon_r} = \frac{9\times10^9}{81}$

Per tant $$\boxed{\vec{F}' = \frac{\vec{F}}{81} = \left(2{,}66\times10^{-5}\hat{i} - 3{,}40\times10^{-5}\hat{j}\right) N}$$