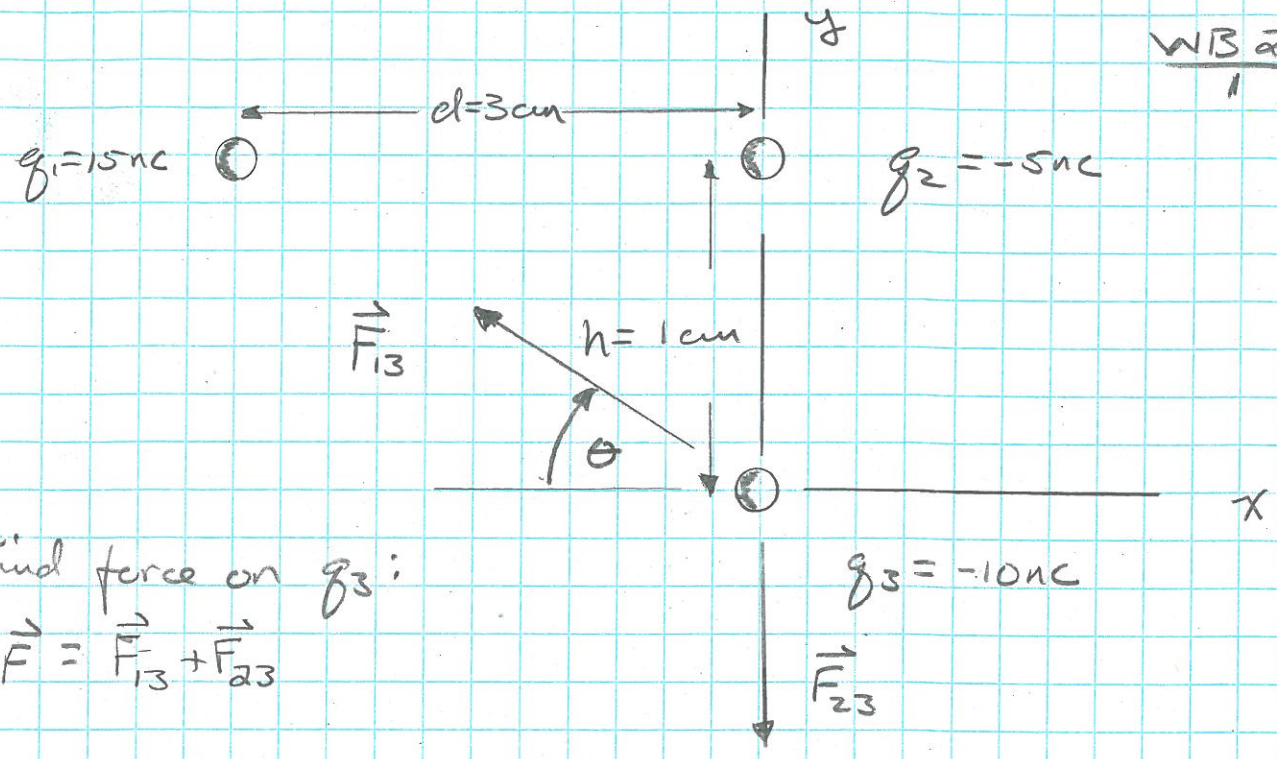


Find force on q_3:

$\vec{F} = \vec{F}_{13} + \vec{F}_{23}$

$$|\vec{F}_{23}| = \frac{K|q_2||q_3|}{h^2} = 4.495 \times 10^{-3}\ N$$

So: $\vec{F}_{23} = -4.495\times10^{-3}\,\hat{j}\ N$

Now:

$$|\vec{F}_{13}| = \frac{K|q_1||q_2|}{r^2} = \frac{K|q_1||q_2|}{(d^2+h^2)} = 1.348\times10^{-3}\ N$$

and,

$$\vec{F}_{13} = -|\vec{F}_{13}|\cos\theta\,\hat{i} + |\vec{F}_{13}|\sin\theta\,\hat{j}$$

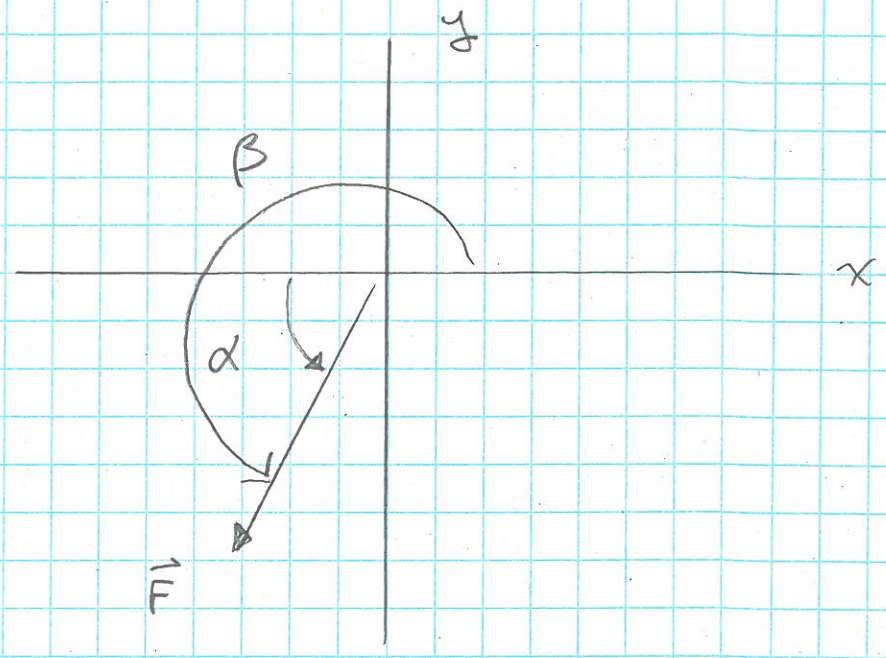
$$\theta = \tan^{-1}\left(\frac{h}{d}\right) = 18.43^\circ$$

So $\vec{F}_{13} = -1.279\times10^{-3}\,\hat{i} + 4.262\times10^{-4}\,\hat{j}\ N$

$\therefore\ \vec{F} = \vec{F}_{23} + \vec{F}_{13}$

$$\vec{F} = -1.279\times10^{-3}\,\hat{i} - 4.069\times10^{-3}\,\hat{j}\ N$$

Now:



$$\vec{F} = \sqrt{F_x^2 + F_y^2} = 4.265 \times 10^{-3} N$$

and,

$$\alpha = \tan^{-1}\left(\frac{|F_y|}{|F_x|}\right) = 72.55°$$

$\therefore$ $\beta = 180° + \alpha = 252.5°$ ccw from +x axis.