Answer on question #55892, Physics / Electromagnetism

Question Two charges Q1=500C and Q2=100C are located on the XY plane at the positions r1=3j m and r2=4i m. Find the force exerted on the Q2

Solution Total force is

$$F = k\frac{Q_1 Q_2}{\sqrt{r_1^+ r_2}} = 9 \cdot 10^9 \frac{500 \cdot 10^{-6} \cdot 100 \cdot 10^{-6}}{5^2} = 18\,N$$

X-component is

$$F \cdot \cos\alpha = 18 \cdot \frac{4}{5} = 14.4$$

Y-component is

$$F \cdot \sin\alpha = 18 \cdot \frac{-3}{5} = -10.8$$

Hence, answer is 14.4i-10.8j N