$Q$ is at the origin, $+4Q$ is on the positive $x$-axis a distance $a$ from the origin, and $-3Q$ is on the positive $y$-axis a distance $a$ from the origin.

Determine the magnitude of the electric force on the charge $+Q$ at the bottom left-hand corner (at the origin).

A) $||\vec{F}|| = 3 \frac{Q^2}{r^2}$.  
B) $||\vec{F}|| = 4 \frac{Q^2}{r^2}$.  
C) $||\vec{F}|| = 5 \frac{Q^2}{r^2}$.  
D) $||\vec{F}|| = \sqrt{5} \frac{Q^2}{r^2}$.

Coulomb’s law is $\vec{F}_{AB} = k \frac{Q_A Q_B}{r^2} \hat{r}_{AB}$, which tells us that unlike charges attract and like charges repel.

$$||\vec{F}|| = \sqrt{4^2 + 3^2} \frac{Q^2}{a^2} = 5 \frac{Q^2}{r^2}.$$  

Answer C.