

12. By symmetry we see the contributions from the $+q$ charges cancel each other, and we simply use Eq. 23-3 to compute magnitude of the field due to the $+2q$ charge (this field points at 45° , which is clear from the figure in the textbook).

$$\left| \vec{E}_{\text{net}} \right| = \frac{1}{4\pi\epsilon_0} \frac{2q}{r^2}$$

where $r = a/\sqrt{2}$. Thus, we obtain $\left| \vec{E}_{\text{net}} \right| = q/\pi\epsilon_0 a^2$.