

6. For concreteness, consider that charge 2 lies 0.15 m east of charge 1, and the point at which we are asked to evaluate their net field is $r = 0.075$ m east of charge 1 and $r = 0.075$ m west of charge 2. The values of charge are $q_1 = -q_2 = 2.0 \times 10^{-7}$ C. The magnitudes and directions of the individual fields are specified:

$$\left| \vec{E}_1 \right| = \frac{q_1}{4\pi\epsilon_0 r^2} = 3.2 \times 10^5 \text{ N/C} \quad \text{and} \quad \vec{E}_1 \text{ points east}$$

$$\left| \vec{E}_2 \right| = \frac{|q_2|}{4\pi\epsilon_0 r^2} = 3.2 \times 10^5 \text{ N/C} \quad \text{and} \quad \vec{E}_2 \text{ points east}$$

Since they point the same direction, the magnitude of the net field is the sum of their amplitudes, $\left| \vec{E}_{\text{net}} \right| = 6.4 \times 10^5 \text{ N/C}$, and it points east (that is, towards the negative charge).