Two charges are placed on the $x$-axis as shown. The charges are separated by a distance $2a$ where $a$ is a given positive constant. The charge on the left has magnitude $+Q$ and the charge on the right has magnitude $-Q$.

Suppose we arrange a cartesian coordinate system as shown, with the $x$-axis connecting the charges, and the $y$-axis intersecting the $x$-axis midway between the charges.

Calculate the electric field at a point on the $y$-axis, a distance $a$ from the $x$-axis. Remember, electric field is a vector.

Answer: ______________________________