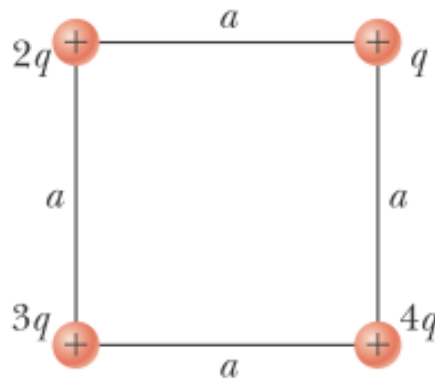


HW (3)

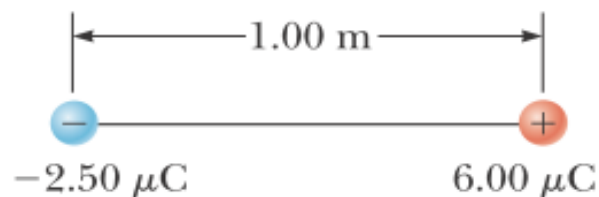
Electric Field

1. Two electrostatic point charges of $60\ \mu\text{C}$ and $50\ \mu\text{C}$ exert a repulsive force on each other of $175\ \text{N}$. What is the distance between the two charges?

25. Four charged particles are at the corners of a square of side a as shown in Figure P23.25. Determine (a) the electric field at the location of charge q and (b) the total electric force exerted on q .



29. In Figure P23.29, determine the point (other than infinity) at which the electric field is zero.



34. Two $2.00\text{-}\mu\text{C}$ point charges are located on the x axis. One is at $x = 1.00\text{ m}$, and the other is at $x = -1.00\text{ m}$. (a) Determine the electric field on the y axis at $y = 0.500\text{ m}$. (b) Calculate the electric force on a $-3.00\text{-}\mu\text{C}$ charge placed on the y axis at $y = 0.500\text{ m}$.

50. Three equal positive charges q are at the corners of an equilateral triangle of side a as shown in Figure P23.50. Assume the three charges together create an electric field. (a) Sketch the field lines in the plane of the charges. (b) Find the location of one point (other than ∞) where the electric field is zero. What are (c) the magnitude and (d) the direction of the electric field at P due to the two charges at the base?

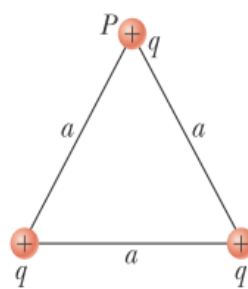


Figure P23.50

47. A negatively charged rod of finite length carries charge with a uniform charge per unit length. Sketch the electric field lines in a plane containing the rod.