Topics for today

Electric Fields

1. Homework questions

2. Charging insulators; electric dipoles: 2 demos

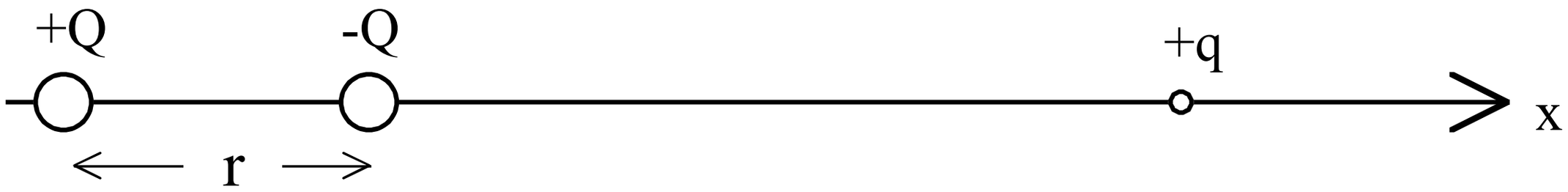
3. Electric field definition; graphical picture

4. Forces on charges and dipoles in E-fields

5. Field created by an electric dipole (?)

6. Electric fields of a continuous charge distribution.

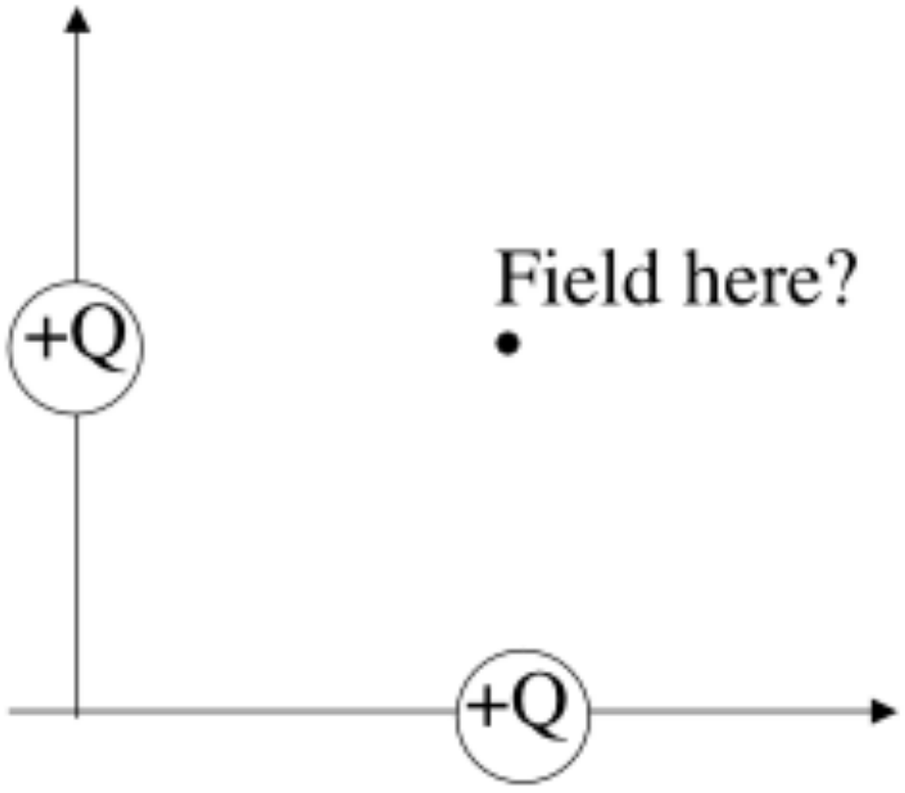
An electric dipole (+Q and -Q separated by a distance "r") is placed along the x-axis as

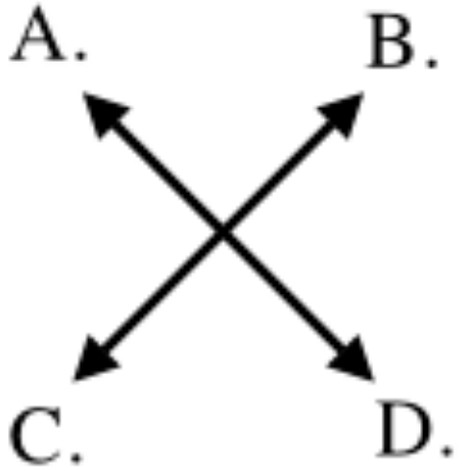


A positive test charge +q is placed to the right of a dipole. The test charge feels a force that is

1: zero.
2: toward the right.
3: toward the left.

Two positive charges, each of size +Q, are equal distances from the origin as shown. What is the direction of the electric field at the point that forms a square with the two charges and the origin?

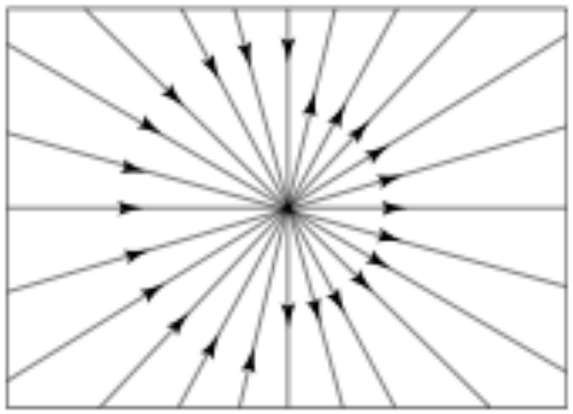


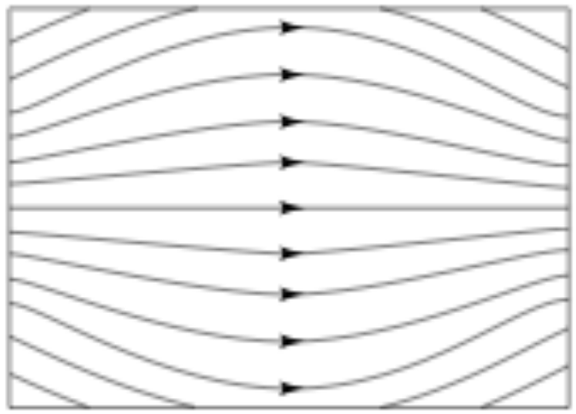


E. = none of these

Consider the four field patterns shown. Assuming there are no charges in the regions shown, which of the patterns represent(s) a possible electrostatic field:

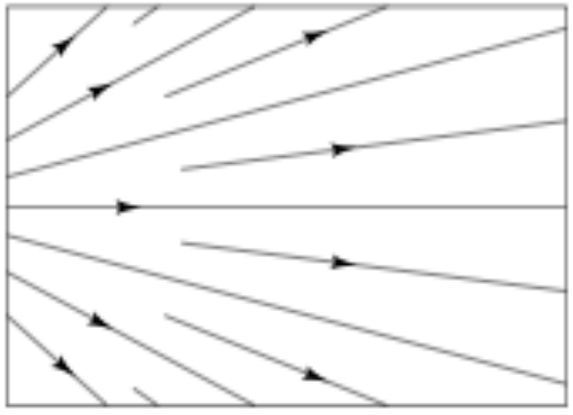
(a)





(b)

(c)

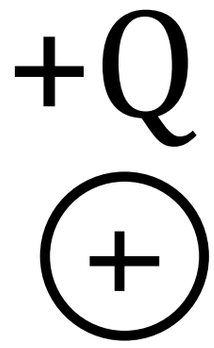


(d)

1. (*a*)
2. (*b*)
3. (*b*) and (*d*)
4. (*a*) and (*c*)
5. (*b*) and (*c*)
6. some other combination
7. None of the above.

A charge +Q is brought near a block of wood and induces a polarization as shown. The net force on the block due to the charge Q is

A) Attractive B) repulsive C) zero



A horizontal electric field causes the charged ball in **FIGURE 22.29** to hang at a 15° angle, as shown. The spring is plastic, so it doesn't discharge the ball, and in its equilibrium position the spring extends only to the vertical dashed line. What is the electric field strength?

FIGURE 22.29 A charged ball hanging in static equilibrium.