

Name: _____

Drawing Equipotential Surfaces

Working in small groups (2 or 3 people), solve as many of the problems below as possible. Try to resolve questions within the group before asking for help. Each group member should then write up solutions in their own words.

Start with a Simple(r) Case: The electrostatic potential due to a particle with charge q is:

$$V(r) = \frac{kq}{r}$$

where k is the electrostatic constant and r is the distance from the particle.

On your whiteboard, identify all the points with the same value of potential around a single point charge. Repeat for several different values of potential.

- What shapes have you drawn?
- If you wanted the difference in potential represented by the shapes to be equal, how are they spaced?

Add Complexity: Draw equipotential surfaces for the potential due to 4 particles with equal, positive charge arranged in a square.

Examine a New Case: Repeat for a quadrupole - 2 positively charged particles and 2 negatively charged particles arranged in a square, with “like” charged particles on opposite corners.

Activity Evaluation

What was the main point of this activity?

Describe one thing you understand as a result of this activity.

Describe one thing that is confusing after completing this activity.