

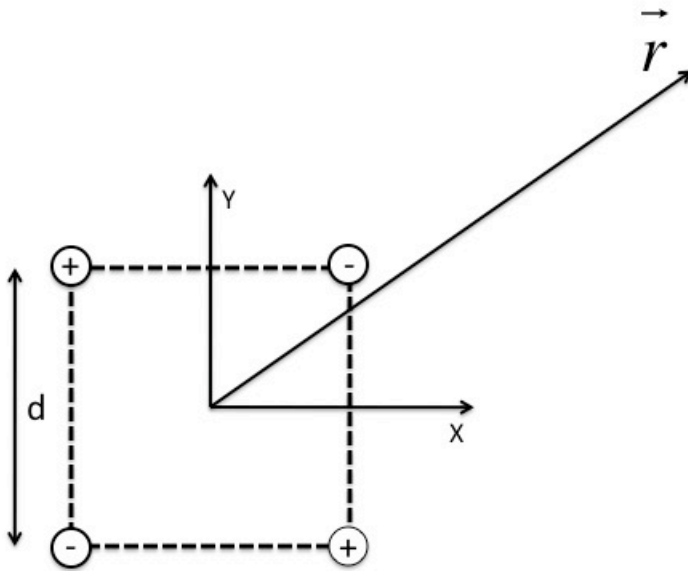
Quiz #1 2049 H

You should use extra scratch paper: show all your work: staple all the answers together.

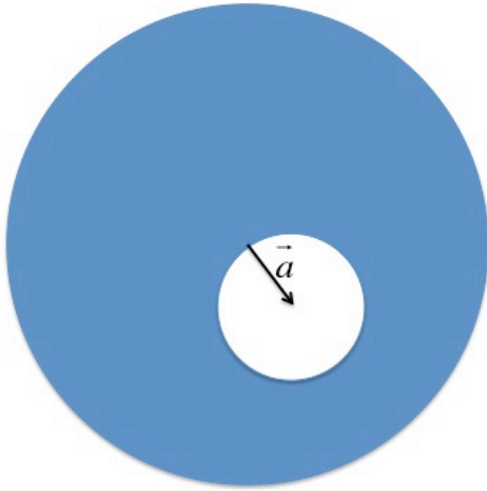
Due Feb 17th

Problem 1:

Calculate the electric field of a charge distribution as depicted below. Magnitude of all charges are q , but the signs differ. You may assume $r \gg d$.



Problem 2



a) Consider a sphere filled with uniform charge density, ρ , except for an internal sphere which is empty. Let \vec{a} be the vector from the center of the sphere to the center of the bubble. Calculate the vector electric field within the bubble and show that it is constant. (Hint: An empty bubble is equivalent to overlapping sphere of equal but opposite charge.)

(b) What is the surface charge distribution on a metal sphere of radius R which is in a constant external field \mathbf{E} in the z direction?

Problem 3

You have an infinite lattice of resistors, all of the same resistance, R , as illustrated below. What is the resistance between point A and B?

