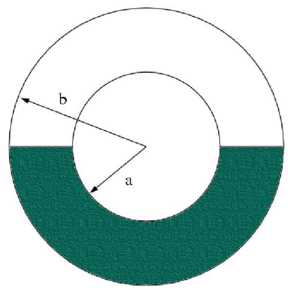
PHYS 621 – Homework # 9 – DUE FRIDAY, 11/06/2009

Problem 1. Two concentric conducting spheres of radii a and b carry charges $-Q$ and $+Q$, respectively. Half of the space between the two spheres is filled with a dielectric with dielectric constant ϵ (see figure below). Find:



Find:
1) The electric field between the two spheres.
2) The surface charge distribution on the outer surface of the inner sphere.
3) The polarization-charge density induced on the surface of the dielectric at $r = a$.

Problem 2. Jackson problem 4.8, parts (a) and (c).

Problem 3. Consider a flat face dielectric with a point charge q a distance d from the face.
1) Find the polarization charge density and the total charge on the face.
2) Find the force exerted on the dielectric by the point charge.