## 2-3)

Here's a classic problem. Consider two metal spheres of different radiuses  $R_A$  and  $R_B$ , separated by a great distance. Sphere A has a charge Q and Sphere B is initially uncharged. Now suppose that we run a conducting wire from one to the other, then disconnect and discard the wire.

- A) Determine the amount of charge on each sphere in terms of the quantities given in the problem.
- B) Determine the magnitude of the electric field at the surface of each in terms of the quantities given in the problem.

HINTS: There may be some information that was not discussed in class. First, the electric field at the surface of a metal is perpendicular to the surface of the metal. If it were not, there would be a component of E along the surface that would force charges to redistribute themselves until that component goes to zero. Second, once charges have stopped moving from A to B, what can you say about their surfaces? Lastly, you may want to consider Gauss's law.