Lab X: Electrostatics with COMSOL Multiphysics

**Question**: If the spheres could be modeled as infinitely small points obeying Coulomb’s law, the force would be inversely proportional to 1/sep^2. That is, a graph of 1/sep^2 vs. force should be a straight line. Is it?

The graph of 1/sep^2 for the dual sphere system does not look completely linear. It appears to have some sort of decay factor as sep increases. This a result of the independent charges in each sphere repelling each other making the sphere not uniformly charged.

**Question**: In what ways is the force between parallel plates qualitatively different than the force between spheres?

The plot of inverse separation vs. force between the two setups provides a few conclusions. The first plot shows slight concavity upwards at high inverse separations, indicating that at shorter distances the force is not proportional to only 1/r2. However, in the parallel plate case, the force followed the 1/r2 proportionality.