Homework #1

1) A thin ring of charge of radius R lies in the x-y plane and is centered on the z-axis. Unlike the example worked out in lecture, the linear charge density on the ring depends on ϕ according to $\lambda = \lambda_0 (1 + \cos\phi)$. Find $\vec{E}(z)$ for a point on the z-axis.

2) Griffiths problem 2.6 This is most easily done in cylindrical coordinates.

3) Griffiths problem 2.12 (don't bother comparing)

4) Griffiths problem 2.16

5) Griffiths problem 2.18 This is fairly easy if you start by writing the field inside of a uniform sphere in terms of a vector from the "observation" point to the sphere center and use superposition.