Homework due April 29

1. Read all of chapter 6.

2. Chapter 2 problem 48

3. Chapter 4 problem 23

4. Chapter 6 problems 3, 6, 8, 9, 12, 16.

5. (a) Find an expression for the dipole vector potential of rectangular current loop located symmetrically about the origin in the x-y plane. The rectangle distance along the x direction is a while it is b along the y direction. In the integral for the components of the vector potential use the analogy between the potential for an electric dipole. Then calculate the components of the vector potential using the dipole approximation for the dipole potential. Write the vector dipole potential in the cartesian coordinates.
   (b) Derive an expression for the dipole magnetic field from the previous result.