1. Along solenoid with circular cross section has a radius, $R$, and $N$ turns per unit length each carrying current $I$. Calculate the magnetic energy stored in a length, $l$, of the solenoid (near the center of the solenoid) by two methods:
   a.) Using Equation 7.29 and the inductance you found in problem 7.22 of homework 7
   b.) Using Equation 7.34

2. One type of transmission line consists of two parallel thin metal ribbons, each of width $w$, separated by a small gap, $d$, with $d << w$. Current $I$ flows down one ribbon and back along the other ribbon. The current distributes itself uniformly across each ribbon.
   a.) Calculate the capacitance per unit length, $C/l$, between the ribbons.
   b.) Calculate the inductance per unit length, $L/l$, of the transmission line.
   c.) Find the numerical value for $\sqrt{\frac{I^2}{LC}}$.

3. Problem 7.54 in your textbook.

5. Problem 8.2 in your textbook.

6. Problem 8.6 in your textbook.

6. Problem 8.9 in your textbook. For part (b), because $b >> a$, you can use our result for the magnetic field along the axis from a circular current loop.