ECE341 HW #11

P1. Problem **5.33** in textbook.
Note: Answer in Appendix at end of book.

P2. Problem **6.2** in textbook and in Answer Sheet.

P3. Problem **6.5** in textbook and in Answer Sheet.
Hint: The TV signal carrying electromagnetic wave has a **B** field, which induces maximum voltage in the loop when we turn the loop so the maximum flux of **B** goes through the loop.

P4. Problem **6.10** in textbook (**Problem 6.9** in Answer Sheet).
Note: I found the figure confusing. It actually means the **B** field is along the +z direction.
Hint: The ***E*** along the rod varies with position so we have to integrate **E** from point 1 to point 2 to get V.

P5. Problem **6.11** in textbook (**Problem 6.10** in Answer Sheet).

P6. Problem **6.13** in textbook and in Answer Sheet.
Hint: This problem is related to P4.

P7. Two infinitely long parallel wires (as in the parallel wire transmission line) of radius a carry currents of equal magnitude I but in opposite directions. The distance between the axes of the two wires is d.
(1) What is the force between the two wires, assuming $d >> a$ (meaning you can ignore the finite radii of the wires)? Derive the expression rather than copy it from the book. Do the two wires attract or repel each other?
(2) What is the magnetic field due to the two wires at a point mid way between the two wires?
(3) Find the total flux per unit length threading through the area between the two lines.

P8. Problem **6.1** in textbook and in Answer Sheet.