Math 305, Problem Set #6
(due **by email** Friday, 10/30/09, 10:30 a.m.)

Abbott, section 3.2, problems 8, 9. For part (b) of exercise 8, use the result of exercise 9.

Abbott, section 3.3, problems 1, 7, 10. (For problem 1, you need only prove the result about $\sup K$, since the proof for $\inf K$ is essentially the same.)

Extra problem A: Is it the case for all sets A, B that $\overline{A \cap B} = \overline{A} \cap \overline{B}$?

Extra problem B: Is it the case for all sets A, B that $(A \cap B)^o = A^o \cap B^o$? (Recall that X^o denotes the interior of X.) Hint: For this problem you will want to make use of duality between open sets and closed sets. That is, use the fact (discussed in class) that the interior of the complement of A is the complement of the closure of A and the closure of the complement of A is the complement of the interior of A.

Extra problem C: Is it the case for all sets A, B that $(A \cup B)^o = A^o \cup B^o$?

Reminder: As always, a mere Yes or No does not suffice as the answer to a True/False question; I want a rigorous answer.

Note: In your solution to a problem, you may appeal to the results proved on the homework in earlier problem sets or the current problem set (as long as you don't engage in circular reasoning).

Please don't forget to write down **who you worked on the assignment with** (if nobody, then write "I worked alone"), and record **how much time you spent on each problem** (this doesn't need to be exact).