Problem Set 5   **Foundations**   **Due 2/19/2010**

The instructors will select four of these problems to grade, with each problem worth 5 points. Clear and complete justification is required for full credit. You are welcome to discuss these problems with anyone and everyone, but must write up your own final submission without reference to any sources other than the textbook and instructor. Submissions must be on clean paper with no ragged edges.

For the following propositions, assume that A, B, and the A_i and B_i for each $i \in I$ are all sets.

1. $A \cup A' = X$

2. $(A \cup B)' = A' \cap B'$

3. $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

4. $\left(\bigcup_{i \in I} A_i \right)' = \bigcap_{i \in I} A_i'$

5. $A \cup \bigcup_{i \in I} B_i = \bigcup_{i \in I} (A \cup B_i)$

6. $A \cup \bigcap_{i \in I} B_i = \bigcap_{i \in I} (A \cup B_i)$