Math 564, Homework 1, January 30, 2004
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Throughout, $\mathbf{R}$ is the set of real numbers, $\mathbf{Q}$ is the set of rational numbers and $\mathbf{Z}$ is the set of integers.

1. Let X be a set. For any three subsets of X, say, A, B, and C, prove the following:

   (a)
   $$A - (B \cup C) = (A - B) \cap (A - C)$$

   (b)
   $$A - (B \cap C) = (A - B) \cup (A - C)$$

   (c)
   $$A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$$

   (d)
   $$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$$

2. Problems Chapter 2.1: 1, 3, 6
3. Problems Chapter 2.2: 13, 15, 17
4. Problems Chapter 2.4: 27, 28