Graded Homewework 2 Problems

1. Prove that $(A \cap B)^c = A^c \cup B^c$ implies $(A \cup B)^c = A^c \cap B^c$.

   Hint: Use the fact that a set's compliment is itself.

2. Prove that $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.

   Hint: If you can find analogous logical operations for the above statement, you can prove it as a tautology.

3. Prove that $A \Delta B = (A \cup B) - (A \cap B)$. Where

$$A - B = A \cap B^c \tag{1}$$

$$A \Delta B = (A - B) \cup (B - A) \tag{2}$$