

Worksheet on Proofs involving Sets

September 21, 2015

1 Proofs that are similar to today's quiz

1. Suppose A , B and C are sets. Prove that $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$.

2. Suppose A , B and C are sets. Prove that $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.

3. Suppose A , B and C are sets. Suppose that $A \subseteq B$. Show that $A - C \subseteq B - C$.

2 More proofs

1. Suppose A and B are sets. Show that $\mathcal{P}(A) \cap \mathcal{P}(B) = \mathcal{P}(A \cap B)$.
2. Show that if A and B are sets, and $\mathcal{P}(A) \subseteq \mathcal{P}(B)$, then $A \subseteq B$.
3. Suppose A and B are sets. Show that $|A \cup B| = |A| + |B| - |A \cap B|$.
4. Generalize the last statement for sets A_1, A_2, \dots, A_n .