Homework 8   **Math 254**

Due in class Friday, March 25. Make sure to copy the proposition for each proof and then clearly indicate where your proof starts and ends.

Prove the following statements.

1. Prove that $\{n^2 : n \in \mathbb{Z}\} \cap \{7m : m \in \mathbb{Z}\} \neq \varnothing$.

2. If A, B are subsets of the same universal set, then $\overline{(A \cap B)} = \overline{A} \cup \overline{B}$.

3. Prove that $\{7a + 8b : a, b \in \mathbb{Z}\} = \mathbb{Z}$.

4. Let A, B, C be sets. If $A \neq \varnothing$ and $A \times B \subseteq C \times A$, then $B \subseteq C$.