Problem Set 6   **Foundations**   **Due 3/14/18**

Four of these problems will be graded (our choice, not yours!), 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.

1. For sets A and B, $(A \cap B)' = A' \cup B'$.

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3. If $j \in I$, then $A_j \subseteq \bigcup_{i \in I} A_i$.

4. If $j \in I$, then $\bigcap_{i \in I} A_i \subseteq A_j$.

5. Let f and g be bounded functions, both with domain D. Then $f + g$ is a bounded function.

6. Let f and g be bounded functions, both with domain D. Then $f - g$ is a bounded function.

7. Let f and g be bounded functions, both with domain D. Then $f \cdot g$ is a bounded function.

8. Let f and g be bounded functions, both with domain D. Then f/g is a bounded function.

9. If $f : \mathbb{R} \to \mathbb{R}$ and $g : \mathbb{R} \to \mathbb{R}$ are strictly increasing, then $f + g$ is strictly increasing.

10. If $f : \mathbb{R} \to \mathbb{R}$ and $g : \mathbb{R} \to \mathbb{R}$ are odd functions, then $f - g$ is odd.