1. Suppose that X is an uncountable set, and A is a subset of X.

   a) Give an example where $X - A$ is uncountable, or explain why this can't happen.

   b) Give an example where $X - A$ is denumerable, or explain why this can't happen.

   c) Give an example where $X - A$ is finite, or explain why this can't happen.

2. Let A be a subset of $\mathbb{R}$ with n elements, where $n \in \mathbb{N}$. Then A is bounded.

3. Complete and defend:

   Suppose that f and g are both odd functions from $\mathbb{R}$ to $\mathbb{R}$. Then $f \circ g$ is _____.

4. If $f{:}A \to B$ and $g{:}B \to C$ are surjective functions, then $g \circ f$ is surjective.

5. Prove, directly from the definitions: If A is a denumerable set, and $b \notin A$, then $A \cup \{b\}$ is denumerable.