1. Define A as the average of the n numbers, x_1, x_2, ..., x_n. Prove that at least one of the $x_1, \ldots, x_n$ is greater than or equal to A.

2. Prove that for every integer x, $x^2 + x$ is even.

3. In class, we proved the Triangle Inequality,

   $$\text{For all } x, y \in \mathbb{R},\ |x + y| \leq |x| + |y|$$

   However, this may also be proved by using a number of cases. Prove the Triangle Inequality using cases.

4. Prove: If $T \subseteq A$, then $T \times B \subseteq A \times B$. (Problem 4.4.6)