1. Show that the relation $R(x, y) : |x| \leq |y|$ is reflexive and transitive.

2. Show that if $|x| \leq |y|$, then $|\mathcal{P}(x)| \leq |\mathcal{P}(y)|$.

3. Show that $|A \times (B \oplus C)| = |(A \times B) \oplus (A \times C)|$, for any sets $A, B, C$.

4. Show that for any nonempty sets $A$ and $B$, if there is an injection from $F : A \to B$, then there is a surjection $G : B \to A$.

Due in class Monday, October 14