1. Thm 14.7: Let A be a set. Then $\boxed{|A| \qquad |\mathscr{P}(A)|.}$

2. Thm 14.8: Let A be a countably infinite set and B be an infinite set such that $B \subseteq A$. Then

3. Thm 14.10 (The Cantor-Bernstein-Schröder Theorem)
   Let $f : A \to B$ and $g : B \to A$ be injective. Then,

4. Thm 14.9: Let $B \subseteq A$ such that B is uncountable. Then,

5. Let $f(x) = \frac{1}{1+e^x}$

   (a) Suppose that the domain of f is $\mathbb{R}$. Determine the range of f and justify your conclusion.

   (b) Is $f(x)$ injective? Justify your conclusion.

   (c) Now use $f(x)$ (and your work above) to prove two sets have the same cardinality.

6. Show that $|(0,1)| = |[0,1)|$ by finding a bijection between them.

7. Show that $|(0,1)| = |[0,1)|$ using the Cantor-Bernstein-Schröder Theorem.

8. Thm 14.11 $|\mathbb{R}| = |\mathscr{P}(\mathbb{N})|$