ECON 703 Fall 2007
Homework 1

Due Tuesday, September 25.

1. Prove the following proposition: If $x \in \phi$, then x is a square orange. (Hint : Use a contrapositive proof).

2. Let A and B be sets of real numbers. Write the negation of each of the following statements:

   (a) For every $a \in A$, it is true that $a^2 \in B$.

   (b) For at least one $a \in A$, it is true that $a^2 \in B$.

   (c) For every $a \in A$, it is true that $a^2 \notin B$.

   (d) For at least one $a \notin A$, it is true that $a^2 \in B$.

3. Let $f : \mathbb{R} \longrightarrow \mathbb{R}$ be given by the rule $f(x) = x^3 - x$. By restricting the domain and range of f appropriately, obtain from f a bijective function g. Draw the graphs of g and g^{-1} (there are several possible choices for g).

4. Prove by induction that given $n \in Z+$, every nonempty subset of $\{1, \ldots, n\}$ has a largest element.

5. Sundaram, #9, p.67