ASSIGNMENT 30 (ASSIGNED 4/16, DUE 4/18)

These propositions were discussed in class today. Either the proof was given and you were allowed to take notes, or the proof is assigned below.

Proposition 1: If A and B are sets of real numbers, and $A \subset B$, then $\sup A \leq \sup B$ and $\inf A \geq \inf B$.

Definition: The subset relation, denoted $\subset$, is defined as follows: $A \subset B$ means for all x, if $x \in A$ then $x \in B$.

Definition: If A is a subset of the domain of f, then

$$f(A) = \{y \in \mathbb{R} : (\exists x \in A) y = f(x)\}.$$

This definition was given earlier, but only for the case that A was an interval.

Proposition 2: If A and B are subsets of the domain of f, and $A \subset B$, then $f(A) \subset f(B)$.

Proposition 3: If P is any partition of $[a, b]$, then $L(f, P) \leq U(f, P)$.

Assignment:

1. Prove the infimum part of proposition 1.
2. Prove proposition 2.