MATH 323 Section 2

QUIZ 8

April 29^{th}*, 2013*

Your Name: _____

a. For a set S, give the definition of $\sup S$ without using the term "upper bound."

Answer: We have $x = \sup S$ if both (a) for all $s \in S$, $s \leq x$, and (b) if $y < x$, then there exists $s \in S$ such that $y < s$.

b. Give one form of the Archimedean property for $\mathbb{N}$.
Answer: There are several choices:

- The set $\mathbb{N}$ is unbounded above in $\mathbb{R}$.
- For all $y > 0$ there exists $n \in \mathbb{N}$ such that $\frac{1}{n} < y$.
- For all $x \in \mathbb{R}$ there exists $n \in \mathbb{N}$ such that $n > x$.
- For all $x, y \in \mathbb{R}$ with $y > 0$, there exists $n \in \mathbb{N}$ such that $ny > x$.