Math 441 - Homework 7   Due Wednesday, Oct. 28

1. Prove that if $\limsup s_n = +\infty$ and $k > 0$, then $\limsup(ks_n) = +\infty$.

2. Use the $\epsilon - \delta$ definition to prove that $\lim\limits_{x \to 1} \dfrac{x^2 - 1}{x - 1} = 2$.

3. Let $f : \mathbb{R} \to \mathbb{R}$ and suppose that $\lim_{x \to c} f(x) > 0$. Prove that there exists a deleted neighborhood U of c such that $f(x) > 0$ for all $x \in U$.