Math 441 - Homework 6 Due Friday, Oct. 28

1. (10 points) Let (s_n) be a Cauchy sequence in $\mathbb{R}$. Prove that (s_n) is bounded.

2. (10 points) If (s_n) is an unbounded decreasing sequence, prove that $\lim s_n = -\infty$.

3. (16 points) Let C be a nonempty subset of $\mathbb{R}$. Prove that C is compact if and only if every sequence in C has a subsequence that converges to a point in C.