Math 441 - Homework 7

Due Friday, Oct. 16

- 1. Use the ϵ -N definition of convergence to prove that $\lim_{n \to \infty} \frac{1}{\sqrt[3]{n}} = 0.$
- 2. Suppose that $A \subseteq \mathbb{R}$ is a closed set, and (s_n) is a convergent sequence such that $s_n \in A$ for all $n \in \mathbb{N}$. Prove that $\lim s_n \in A$. Hint: I recommend trying a proof by contradiction.
- 3. Suppose that $\lim s_n = s$ where s is a positive number. Prove that there exists $N \in \mathbb{R}$ such that $s_n > 0$ for all n > N.