Thm: Every sequence $s_n$ has a monotonic subsequence.

**MAJOR THM #1:** Archimedean Property
- #2: $\mathbb{Q}$ is dense in $\mathbb{R}$
- #3: All bounded, monotone seq. converge
- #4: Cauchy iff convergent

**MAJOR THEOREM 5**

Thm (Bolzano-Weierstrass): Every bounded sequence has a convergent subsequence.

One more example of subsequences...

$$s_n = (1, \frac{1}{2}, 3, \frac{1}{4}, 5, \frac{1}{6}, ...)$$

$$n_k = (3, 7, 8, 250, ...)$$

$$s_{n_k} = (3, 7, \frac{1}{8}, 250, ...)$$