<u>problem</u> any infinite sequence of real numbers contains a monotonic infinite subsequence.

<u>solution</u> call an index n a giant if $a_n \geq a_{n+1}, a_{n+2}, \ldots$.

case i. there exists infinitely many giant indices - then they form a weakly decreasing subsequence.

case ii. there exists only finitely many giant indices - then $\exists N \ \forall n \geq N \ \exists m > n : a_n < a_m$, which yields $a_N < a_{f(N)} < a_{f(f(N))} < \ldots$.