Method of Proving Conv: Monotone Sequences

Let $\{a_n\}$ be a seq of reals. We say $\{a_n\}$ is monotonic if either

$$a_1 \leq a_2 \leq \cdots \leq a_n \leq \cdots$$

or else

$$a_1 \geq a_2 \geq \cdots \geq a_n \geq \cdots$$

In the first case $\{a_n\}$ is said to be (monotone) non-decreasing and in the second case it is (monotone) non-increasing.

Thm Supp $\{a_n\}$ is monotonic and bounded. Then it converges in $\mathbb{R}$.