Theorem

For any $x \in \mathbb{R}$, $|x| \geq x$.

Proof.

- There are two cases: $x \geq 0$ and $x \leq 0$.
- If $x \geq 0$, then $|x| = x$, and thus $|x| \geq x$.
- If $x \leq 0$, then $|x| \geq 0$ and thus $|x| \geq x$.

$\square$

Note!!!

Every case has been covered: for any real number, it is either ≥ 0 or ≤ 0.