Theorem (2.3.25)**.** *Let f be a function $f : \mathbb{R} \implies \mathbb{R}$ defined by $f(x) = |x|$. $f(x)$ is not invertible.*

Proof. Let x be a postive real number. $f(-x) = f(x) = x$. If f had an inverse then $f^{-1}(x) = x = -x$, but this is not a function by definition. Also, f^{-1} is not a function by contradiction since $\neg\exists x((x \in \mathbb{R}) \wedge (x = -x))$. Thus, f is not a bijection, and f is not invertible. ∎