Let $r \in \mathbb{R}, r \geq 0$. Suppose that for all $\epsilon \in \mathbb{R}^+, r \leq \epsilon$. We prove $r = 0$ by contradiction.

Suppose $r \neq 0$. Then $r > 0$ because we supposed $r \geq 0$.

By theorem 1.4.7 for all $r > 0$ there exists $n \in \mathbb{R}^+$ such that $\frac{1}{n} < r$. Let $\epsilon = \frac{1}{n}$. So $\epsilon < r$, but we supposed $r \leq \epsilon$ for all $\epsilon \in \mathbb{R}^+$ so we have reached a contradiction. Therefore $r \neq 0$ was false, instead $r = 0$. Q.E.D.