Problem 12: Find $\lim_{x \to 0^+} \dfrac{1}{x}$

*Proof.* Let $N$ be a real number. We want to find a $\delta > 0$ such that

$$0 < x < \delta \quad \implies \quad f(x) > N$$

Let $\delta = \left| \dfrac{1}{N} \right|$. Then

$$0 < x < \delta \quad \implies \quad \frac{1}{x} > N$$

Thus

$$\lim_{x \to 0^+} \frac{1}{x} = \infty$$

$\square$