

*Proof.* Let  $N \in \mathbb{N}$  such that  $\frac{1}{N} < \epsilon$  (By [LINK TO ARCHIMEDIAN PROPERTY](#)). Then let  $n > N$  such that:

$$\begin{aligned} n > N &> \frac{1}{\epsilon} \\ \frac{1}{n} < \frac{1}{N} < \epsilon & \quad \text{taking reciprocals} \\ \left| \frac{1}{n} - 0 \right| = \left| \frac{1}{n} \right| = \frac{1}{n} < \frac{1}{N} < \epsilon & \quad \text{since } \frac{1}{n} \text{ is always positive for } n \in \mathbb{N} \\ &< \epsilon \end{aligned}$$

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