

Mathematical Proof: Final Assignment

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Proving $\lim_{x \rightarrow 4} = \frac{1}{4}, \{x \in \mathbb{R} | 1 < x < 7\}$

Formal Definition of a Limit

$\lim_{x \rightarrow a} f(x) = L$ if for every $\epsilon > 0$ there is a corresponding number $\delta > 0$ such that $0 < |x - a| < \delta \Rightarrow |f(x) - L| < \epsilon$.

Applying Formal Definition to the Current Proof

$\lim_{x \rightarrow 4} = \frac{1}{4}$ if for every $\epsilon > 0$ there is a corresponding number $\delta > 0$ such that $0 < |x - 4| < \delta \Rightarrow \left| \frac{1}{x} - \frac{1}{4} \right| < \epsilon$.

Intuition - Graph

Formal Proof