$\lim_{x \to a} f(x) = b$

$\lim_{x \to 1} 3x+1 = 4$

$\forall \varepsilon > 0 \quad \exists \delta > 0 \quad \forall x: \ 0 < |x-a| < \delta \ \text{je} \ |f(x)-b| < \varepsilon$

$\forall \varepsilon > 0 \quad \exists \delta > 0 \quad \forall x: \ 0 < |x-1| < \delta \ \text{je} \ |3x+1-4| < \varepsilon$ (epsilon)

$|a.b| = |a|.|b|$

$|3x-3| < \varepsilon$

$|3(x-1)| < \varepsilon$

$|3|.|x-1| < \varepsilon \quad / :3$

$|x-1| < \frac{\varepsilon}{3}$

$|x-1| < \delta$

stačí zvolit $\delta = \frac{\varepsilon}{3}$

$\lim_{x \to a} f(x) = b$

$\lim_{x \to 0} \frac{3x^2+x}{x} = \lim_{x \to 0} \frac{x(3x+1)}{x} = \lim_{x \to 0} 3x+1 = 1$

$\forall \varepsilon > 0 \quad \exists \delta > 0 \quad \forall x: \ 0 < |x-a| < \delta \ \text{je} \ |f(x)-b| < \varepsilon$

$\forall \varepsilon > 0 \quad \exists \delta > 0 \quad \forall x: \ 0 < |x-0| < \delta \ \text{je} \ \left|\frac{3x^2+x}{x} - 1\right| < \varepsilon$

$|3x+1-1| < \varepsilon$

$|3x| < \varepsilon$

$|3||x| < \varepsilon$

$|x| < \frac{\varepsilon}{3}$

$|x| < \delta$

stačí zvolit $\delta = \frac{\varepsilon}{3}$

$$\lim_{x\to 2}\frac{x^2-4}{x-2}=\lim_{x\to 2}\frac{(x-2)(x+2)}{x-2}=4$$

$\forall \varepsilon>0\ \exists \delta>0\ \forall x: 0<|x-a|<\delta$ je $|f(x)-b|<\varepsilon$

$\forall \varepsilon>0\ \exists \delta>0\ \forall x: 0<|x-2|<\delta$ je $\left|\frac{x^2-4}{x-2}-4\right|<\varepsilon$

$|x+2-4|<\varepsilon$

$|x-2|<\varepsilon$

$|x-2|<\delta$

Stačí volit $\delta=\varepsilon$

$\lim_{x\to a} f(x)=b$

$$\lim_{x\to 3}\frac{x^2-1}{x-1}=\frac{8}{2}=4$$

$\forall \varepsilon>0\ \exists \delta>0\ \forall x: 0<|x-a|<\delta$ je $|f(x)-b|<\varepsilon$

$\forall \varepsilon>0\ \exists \delta>0\ \forall x: 0<|x-3|<\delta$ je $\left|\frac{x^2-1}{x-1}-4\right|<\varepsilon$

$\left|\frac{(x-1)(x+1)}{x-1}-4\right|<\varepsilon$

$|x+1-4|<\varepsilon$

$|x-3|<\varepsilon$

$|x-3|<\delta$

Stačí volit $\delta=\varepsilon$

$\lim_{x\to a} f(x)=b$

$$\lim_{x\to 3}\frac{x^2-9}{x-3}=\lim_{x\to 3}\frac{(x-3)(x+3)}{x-3}=6$$

$\forall \varepsilon>0\ \exists \delta>0\ \forall x: 0<|x-a|<\delta$ je $|f(x)-b|<\varepsilon$

$\forall \varepsilon>0\ \exists \delta>0\ \forall x: 0<|x-3|<\delta$ je $|x+3-6|<\varepsilon$

$|x-3|<\varepsilon$

$|x-3|<\delta$

Stačí volit $\delta=\varepsilon$