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$$\lim_{x \to 2} \frac{x-2}{x} = 0$$

Siccome $f(x)$ è continua in $\mathbb{R} - \{0\}$
allora $f(x)$ è continua per $x=2$.
Quindi per il teorema sui limiti
delle funzioni continue:

$$\lim_{x \to 2} \frac{x-2}{x} = \frac{2-2}{2} = 0$$

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$$\lim_{x \to 2} \log_5\left(x - \frac{1}{3-x}\right) = 0$$

$$D: \left\{ x \in \mathbb{R} \,/\, x - \frac{1}{3-x} > 0 \right\}$$

$$\frac{3x - x^2 - 1}{3-x} > 0$$

$N > 0 \to -x^2 + 3x - 1 > 0$

$x^2 - 3x + 1 < 0$

$$x_{1,2} = \frac{3 \pm \sqrt{9-4}}{2} = \frac{3 \pm \sqrt{5}}{2}$$

$$N \quad \frac{3-\sqrt{5}}{2} < x < \frac{3+\sqrt{5}}{2}$$

$D > 0 \to x < 3$

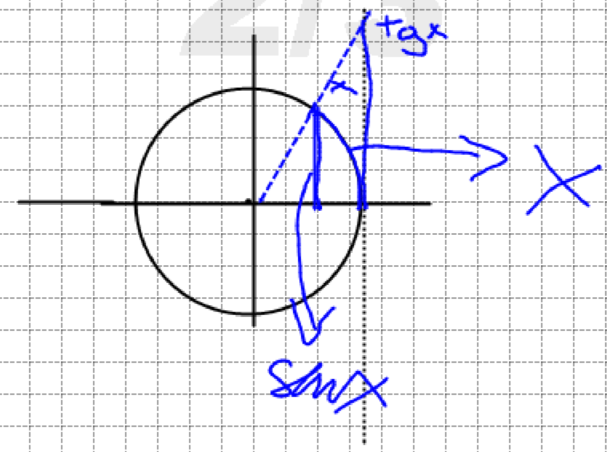
| | | $\frac{3-\sqrt{5}}{2}$ | | $\frac{3+\sqrt{5}}{2}$ | | $3$ | | $x$ |
|---|---|---|---|---|---|---|---|---|
| N | $-$ | | $+$ | | $-$ | | $-$ | |
| D | $+$ | | $+$ | | $+$ | | $-$ | |
| | $-$ | | $+$ | | $-$ | | $+$ | |

$$D: \left( \frac{3-\sqrt{5}}{2} ; \frac{3+\sqrt{5}}{2} \right) \cup (3 ; +\infty)$$

In $x=2$ la FUNZIONE È CONTINUA
allora $\lim_{x \to 2} \log_5\left(x - \frac{1}{3-x}\right) = \log_5\left(2 - \frac{1}{3-2}\right)$

$$\lim_{x \to 0} \frac{\operatorname{sen} x}{x} = 1$$

$$f(x) = f(-x)$$




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

$$\left\{ \begin{array}{l} \operatorname{sen} x < x < \operatorname{tg} x \\ 1 < \dfrac{x}{\operatorname{sen} x} < \dfrac{1}{\cos x} \end{array} \right.$$

$$\cos x < \frac{\operatorname{sen} x}{x} < 1$$

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$$\lim_{x\to a}\frac{\sqrt[3]{x}-\sqrt[3]{a}}{x-a}=\begin{cases}\dfrac{\sqrt[3]{a}}{3a} & \text{se } a\neq 0\\ +\infty & \text{se } a=0\end{cases}$$

se $a=0$

$$\lim_{x\to 0}\frac{\sqrt[3]{x}}{x}=\lim_{x\to 0}(x)^{\frac{1}{3}-1}=$$

$-\frac{2}{3}$

$$\lim_{x\to 0}\frac{1}{\sqrt[3]{x^2}}=+\infty$$

se $a\neq 0$

$$\lim_{x\to a}\frac{\sqrt[3]{x}-\sqrt[3]{a}}{x-a}=\left[\frac{0}{0}\ \text{FI}\right]$$

$$\lim_{x\to a}\frac{\left(\sqrt[3]{x}-\sqrt[3]{a}\right)\left(\sqrt[3]{x^2}+\sqrt[3]{ax}+\sqrt[3]{a^2}\right)}{(x-a)\left(\sqrt[3]{x^2}+\sqrt[3]{ax}+\sqrt[3]{a^2}\right)}=$$

$$A^3-B^3=(A-B)(A^2+AB+B^2)$$

$$\lim_{x\to a}\frac{\cancel{x-a}}{\cancel{(x-a)}\left(\sqrt[3]{x^2}+\sqrt[3]{ax}+\sqrt[3]{a^2}\right)}=\frac{1}{3\sqrt[3]{a^2}}$$