

VERIFICA I SEGUENTI LIMITI

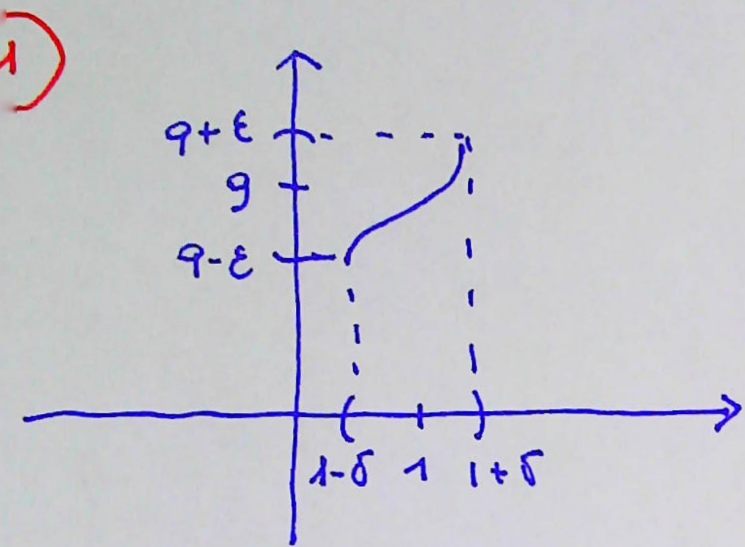
①

1) $\lim_{x \rightarrow 1} x + 8 = 9$

2) $\lim_{x \rightarrow 3^-} \frac{1}{3-x} = +\infty$

3) $\lim_{x \rightarrow +\infty} \frac{2}{x+10} = 0$

4) $\lim_{x \rightarrow +\infty} x + 5 = +\infty$



$\forall \epsilon > 0 \exists \delta > 0 / \forall x \in I(1) = (1-\delta, 1+\delta) \setminus \{1\} \exists \epsilon > 0$

$x \neq 1 \Rightarrow |(x+8) - 9| < \epsilon$

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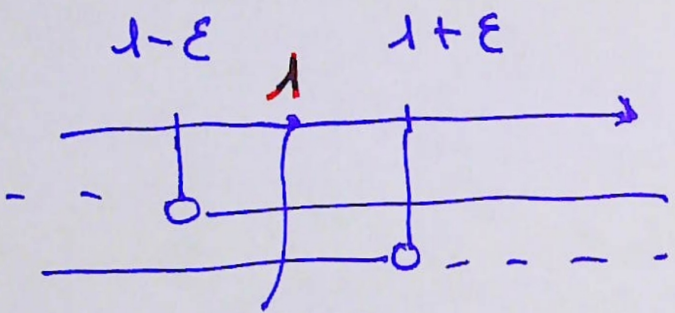
$|x-1| < \epsilon$

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$-\epsilon < x-1 < \epsilon$

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$\begin{cases} x-1 < \epsilon \\ x-1 > -\epsilon \end{cases} \Rightarrow \begin{cases} x < 1+\epsilon \\ x > 1-\epsilon \end{cases}$



S: $I(1) = (1-\epsilon, 1+\epsilon)$ LIMITE VERIFICATO.

2) $\lim_{x \rightarrow 3^-} \frac{1}{3-x} = +\infty$

$\forall M > 0 \exists \delta > 0 / \forall x \in I(3^-) = (3-\delta, 3)$

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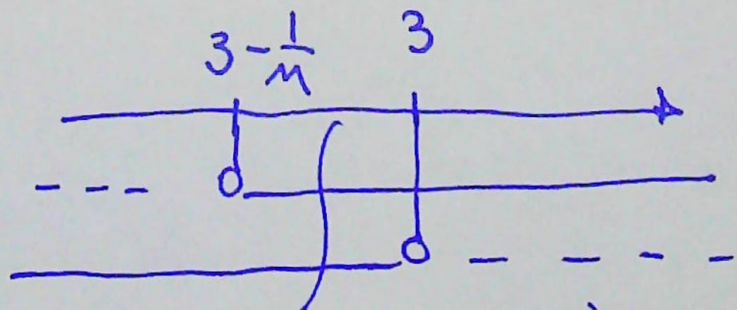
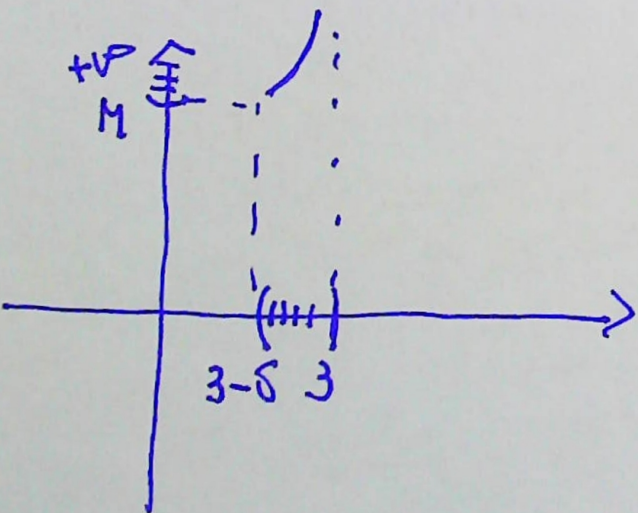
$f(x) > M \Rightarrow \frac{1}{3-x} > M \Rightarrow \frac{1}{3-x} - M > 0$

$\frac{1-3M+Mx}{3-x} > 0$

$Mx - 3M + 1 > 0$

$x > \frac{3M-1}{M} \Rightarrow x > 3 - \frac{1}{M}$

$3-x > 0 \Rightarrow x < 3$



LIMITE VERIFICATO S: $(3 - \frac{1}{M}, 3) = I(3^-)$