(12)

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

$\lim_{x\to 0}\frac{x^2+3-x^2}{x^3}=\frac{3}{0}$ (Ind) $\begin{cases}\lim_{x\to 0^-} f(x)=\frac{3}{0^-}=-\infty\\ \lim_{x\to 0^+} f(x)=\frac{3}{0^+}=+\infty\end{cases}$ ~~$\exists$~~

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

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

$\begin{cases}\lim_{x\to 1^-} f(x)=\frac{2}{0^+}=+\infty\\ \lim_{x\to 1^+} f(x)=\frac{2}{0^+}=+\infty\end{cases}$ $+\infty$

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(15) $\lim_{x\to 0}\left(\frac{x^2+1}{2x+1}\right)^{1/x}=1^{\infty}$ (Ind)

$e^{\lim_{x\to 0}\frac{1}{x}\left(\frac{x^2+1}{2x+1}-1\right)}=e^{\lim_{x\to 0}\frac{1}{x}\frac{x^2+1-2x-1}{2x+1}}$

$e^{\lim_{x\to 0}\frac{x^2-2x}{x(2x+1)}}=e^{\%}=e^{\lim_{x\to 0}\frac{x(x-2)}{x(2x+1)}}=e^{\frac{-2}{1}}=e^{-2}$ $1/e^2$

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$\lim_{x\to 2}\left(\frac{2x^2-x-1}{7-x}\right)^{\frac{1}{x-2}}=1^{\infty}$ (Ind)

$e^{\lim_{x\to 2}\frac{1}{x-2}\left(\frac{2x^2-x-1}{7-x}-1\right)}$

$e^{\lim_{x\to 2}\frac{1}{x-2}\frac{2x^2-x-1-7+x}{7-x}}$

$e^{\lim_{x\to 2}\frac{2x^2-8}{(x-2)(7-x)}}=e^{\%}$ (Ind)

$e^{\lim_{x\to 2}\frac{2(x-2)(x+2)}{(x-2)(7-x)}}=e^{8/5}=\sqrt[5]{e^8}=e\sqrt[5]{e^3}$

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0·∞ $\lim f(x)\cdot g(x)=\lim\frac{f(x)}{1/g(x)}$

$\lim_{x\to 0^+} x\ln x=0\cdot\ln 0=0\cdot(-\infty)$

$0{,}001\cdot 1000=1$

$0{,}001\cdot 10000000\to+\infty$

$0{,}0000001\cdot 1000\to 0$

$\lim_{x\to 0^+}\frac{\ln x}{1/x}=\frac{-\infty}{+\infty}$ $\frac{-9{,}21}{10\,000}=0$

$0{,}0001$

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$\lim_{x\to+\infty} e^{-x}\cdot x = e^{-\infty}\cdot+\infty = 0\cdot+\infty$ (Ind)

$\lim_{x\to+\infty} \frac{x}{e^x} = \frac{\infty}{\infty} = 0$

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∞^0 ó 0^0 – Toman logaritmo

$\ln e^2 = 2$ $e^{\ln 2} = 2$ $\ln f(x)^{g(x)} = e^{\ln f(x)^{g(x)}}$

$\lim_{x\to+\infty} (\ln x)^{1/x} = (+\infty)^{1/+\infty} = (+\infty)^0$

$e^{\lim_{x\to+\infty} \ln\left[(\ln x)^{1/x}\right]} = e^{\lim_{x\to+\infty} \frac{1}{x}\ln(\ln x)}$

$e^{\lim_{x\to+\infty} \frac{\ln(\ln x)}{x}} = e^{\frac{+\infty}{+\infty}} = e^0 = 1$

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$\lim_{x\to0^+} x^x = 0^0$

$\lim_{x\to0^+} e^{\ln x^x} = \lim_{x\to0} e^{x\ln x} = e^{0\cdot-\infty}$ (Ind)

$\lim_{x\to0^+} e^{\frac{\ln x}{1/x}} = e^{\frac{-\infty}{\infty}} = e^0 = 1$

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Equivalencias (Solo en prod., cocientes. No +,−)

$f(x)\to0$

$\operatorname{sen} f(x) \sim f(x)$

$\operatorname{tg} f(x) \sim f(x)$

$1-\cos f(x) \sim \frac{f(x)^2}{2}$

$\arcsen f(x) \sim f(x)$

$\arctg f(x) \sim f(x)$

$\ln(f(x)+1) \sim f(x)$

$e^{f(x)}-1 \sim f(x)$

$\lim_{x\to0} \frac{\operatorname{sen} x}{2x} = \frac{0}{0}$ $\lim_{x\to0} \frac{x}{2x} = \frac{1}{2}$

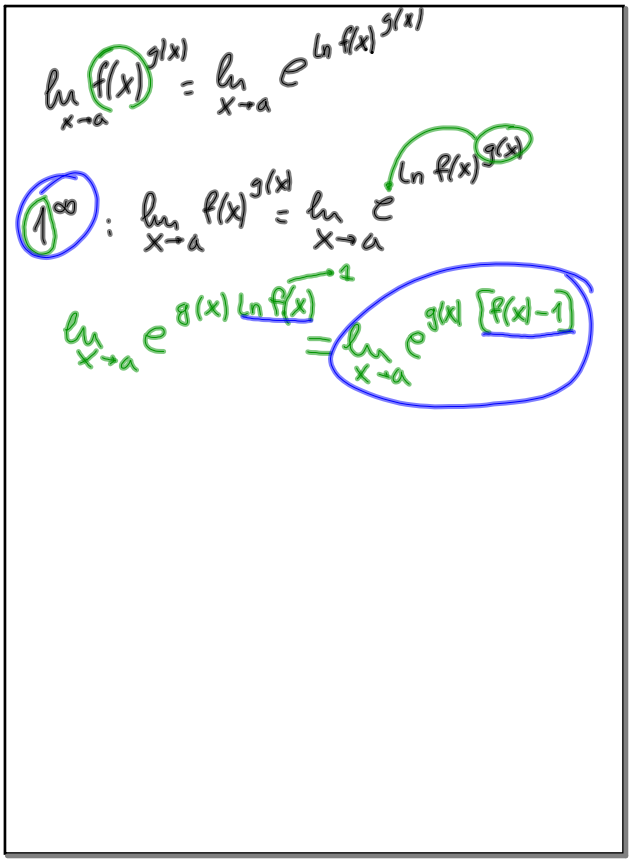
$\lim_{x\to0} \frac{\operatorname{sen} x + x}{2x} = \frac{0}{0}$

$\lim_{x\to0} \frac{\operatorname{sen}(2x)}{2x} = \lim_{x\to0} \frac{2x}{2x} = 1$

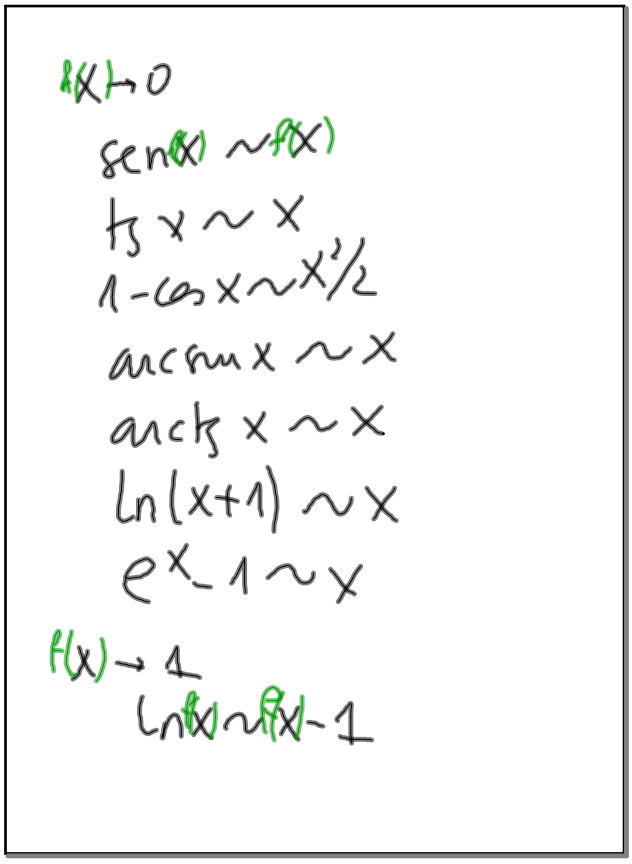
$\lim_{x\to-1} \frac{\operatorname{sen}(x+1)}{2x+2} = \frac{0}{0}$

$\lim_{x\to-1} \frac{x+1}{2(x+1)} = \frac{1}{2}$

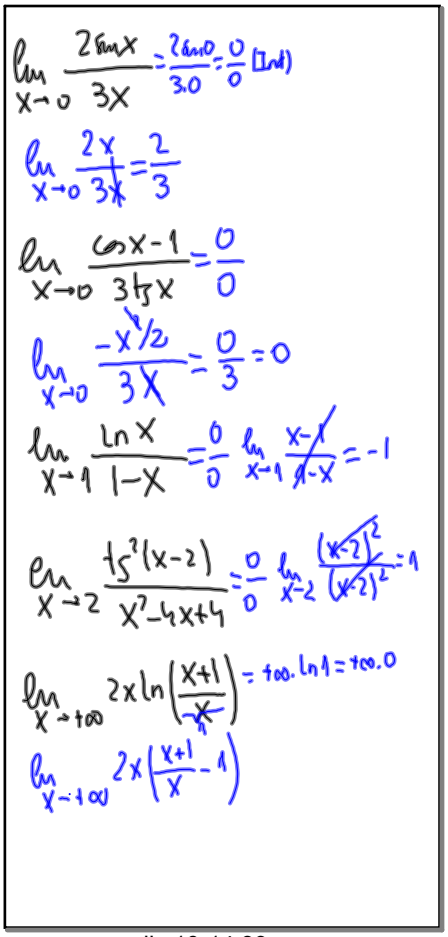
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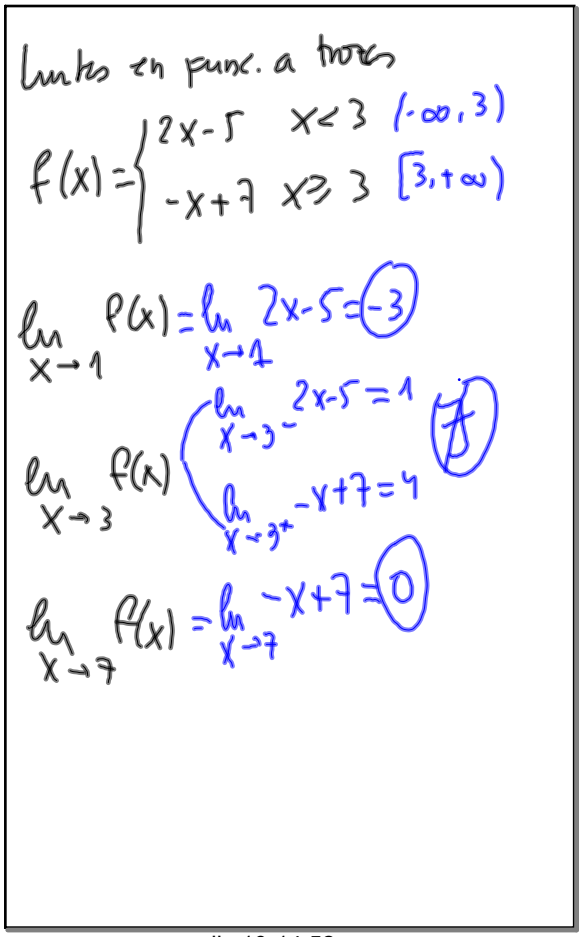
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dic 10-14:39

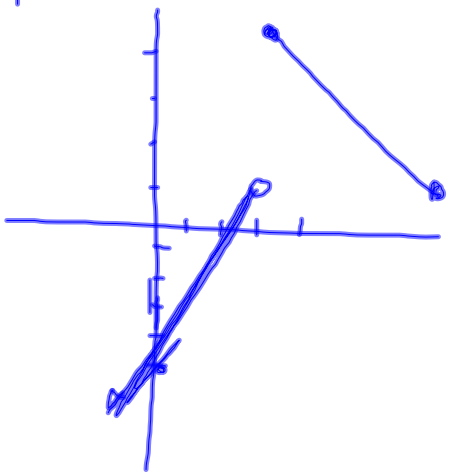


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x	$-\infty$	-3	3	4	$+\infty$
y	-5	1	$\not\exists$	3	



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(1) $\lim_{x\to+\infty}\left(e^x-x^2+1\right)$

(2) $\lim_{x\to-\infty}\dfrac{\ln(x^2+1)}{x}$

(3) $\lim_{x\to+\infty}\left(\dfrac{x^2-1}{x+2}-\dfrac{x^3}{x^2+1}\right)$

(4) $\lim_{x\to 2}\dfrac{2x^2+x-10}{x^3-3x^2+4}$

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(5) $\lim_{x\to 1}\left(\dfrac{2x+4}{x^2-x+6}\right)^{\frac{3x}{x-1}}$

(6) $\lim_{x\to-\infty}\left(\dfrac{2-3x}{-2x+1}\right)^{-x/2}$

(7) $\lim_{x\to 0}\dfrac{x\sin x}{x^3+3x^2}$

(8) $\lim_{x\to 0}\dfrac{4-4\cos x}{x^2}$

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