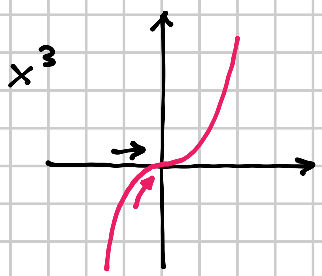
25 $\lim_{x\to 1} \frac{x+1}{x^2-2x+1}$ = $[+\infty]$

$$= \frac{1+1}{1^2-2\cdot 1+1} = \frac{2}{0} = \infty$$ ma con quale segno?

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

27 $\lim_{x\to 0^-} \frac{1}{x^3} = \frac{1}{0^-} = -\infty$ $[-\infty]$



11 $\lim_{x\to+\infty} (e^x + \ln x) =$ $[+\infty]$

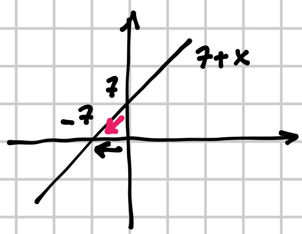
$$= +\infty + \infty = +\infty$$

29 $\lim_{x\to -7^+} \frac{\sqrt{2-x}+x}{7+x} =$ $[-\infty]$

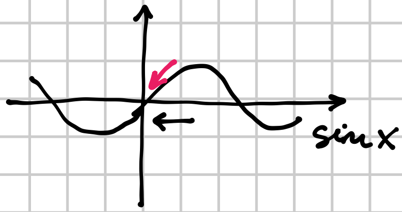
$$= \frac{\sqrt{2+7} - 7}{0^+} = \frac{3-7}{0^+} = \frac{-4}{0^+} = -\infty$$

x tende a -7 dall'alto, cioè per valori maggiori di -7

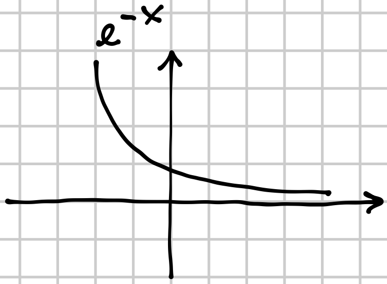
$-6{,}8$ $\quad -6{,}9$ $\quad -6{,}99$ $\quad -6{,}999\ldots$



30 $\lim_{x \to 0^+} \frac{\ln(2+\sin x)}{\sin x} =$ $[+\infty]$



$$= \frac{\ln(2+0)}{0^+} = \frac{\ln 2}{0^+} = +\infty$$



31 $\lim_{x \to +\infty} \frac{e^{-x}}{x^2+2x} =$ $[0^+]$

$$= \frac{0^+}{+\infty+\infty} = \frac{0^+}{+\infty} = 0^+$$

28 $\lim_{x \to -\infty} \frac{-2}{x^4} = \frac{-2}{+\infty} = 0^-$ $[0]$

143 $\lim_{x \to +\infty} \left(\sqrt{x^2+1} - \sqrt{x^2-4}\right) = +\infty - \infty$ F.I. $[0]$

$$= \lim_{x \to +\infty} \left(\sqrt{x^2+1} - \sqrt{x^2-4}\right) \cdot \frac{\sqrt{x^2+1}+\sqrt{x^2-4}}{\sqrt{x^2+1}+\sqrt{x^2-4}} =$$

$$= \lim_{x \to +\infty} \frac{\cancel{x^2}+1-\cancel{x^2}+4}{\sqrt{x^2+1}+\sqrt{x^2-4}} = \frac{5}{+\infty+\infty} = \frac{5}{+\infty} = 0$$

275 $\lim_{x\to-\infty} \frac{-x+\sqrt{x^2-8}}{6x+7} = \frac{+\infty}{-\infty}$ F.I. $\left[-\frac{1}{3}\right]$

$|x| = \begin{cases} x & \text{se } x \geq 0 \\ -x & \text{se } x < 0 \end{cases}$

$-x$ perché $x \to -\infty$

$$= \lim_{x\to-\infty} \frac{-x+\sqrt{x^2\left(1-\frac{8}{x^2}\right)}}{6x+7} = \lim_{x\to-\infty} \frac{-x+|x|\sqrt{1-\frac{8}{x^2}}}{6x+7} =$$

$$= \lim_{x\to-\infty} \frac{-x-x\sqrt{1-\frac{8}{x^2}}}{6x+7} = \lim_{x\to-\infty} \frac{\cancel{x}\left(-1-\sqrt{1-\overset{\to 0}{\frac{8}{x^2}}}\right)}{\cancel{x}\left(6+\underset{\to 0}{\frac{7}{x}}\right)} = \frac{-1-\sqrt{1}}{6} =$$

$$= \frac{-2}{6} = -\frac{1}{3}$$

213 $\lim_{x\to-2} \frac{3x^2+x-10}{x^2-5x-14} =$ $\left[\frac{11}{9}\right]$

$$= \frac{3(-2)^2+(-2)-10}{(-2)^2-5(-2)-14} = \frac{12-12}{4+10-14} = \frac{0}{0} \quad \text{F.I.}$$

	3	1	-10
-2		-6	10
	3	-5	//

$$= \lim_{x\to-2} \frac{(3x-5)\cancel{(x+2)}}{\cancel{(x+2)}(x-7)} =$$

$$= \frac{-11}{-9} = \frac{11}{9}$$

113 $\lim_{x\to+\infty} \frac{1+\cos x}{x^2}$ [0]

il limite di $\cos x$ per $x \to +\infty$ non esiste!

$$-1 \leq \cos x \leq 1$$

$$0 \leq 1+\cos x \leq 2$$

$$\underset{\downarrow \atop 0}{0} \leq \underset{\downarrow \atop 0}{\frac{1+\cos x}{x^2}} \leq \underset{\downarrow \atop 0}{\frac{2}{x^2}} \quad \text{per } x \to +\infty$$

per il teorema dei 2 carabinieri il limite della funzione esiste ed è 0

$$\lim_{x\to+\infty} \frac{1+\cos x}{x^2} = 0$$