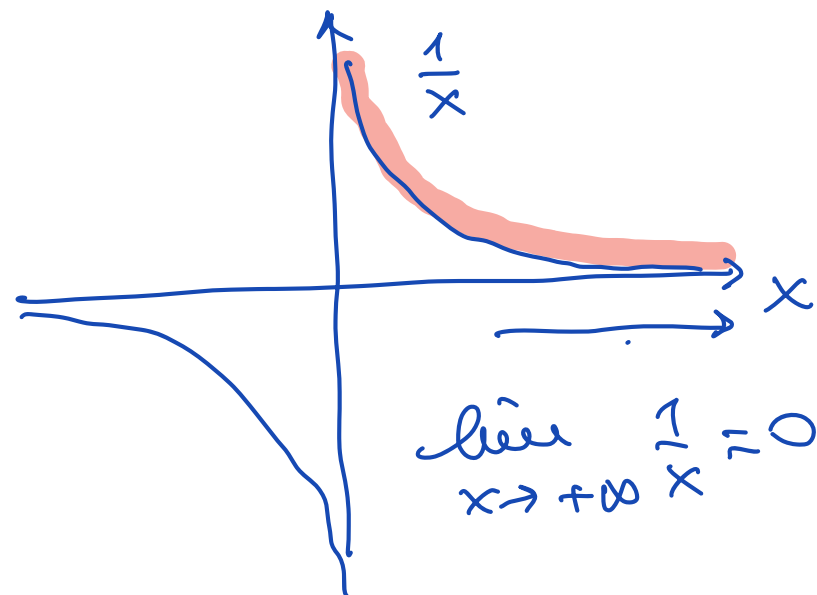
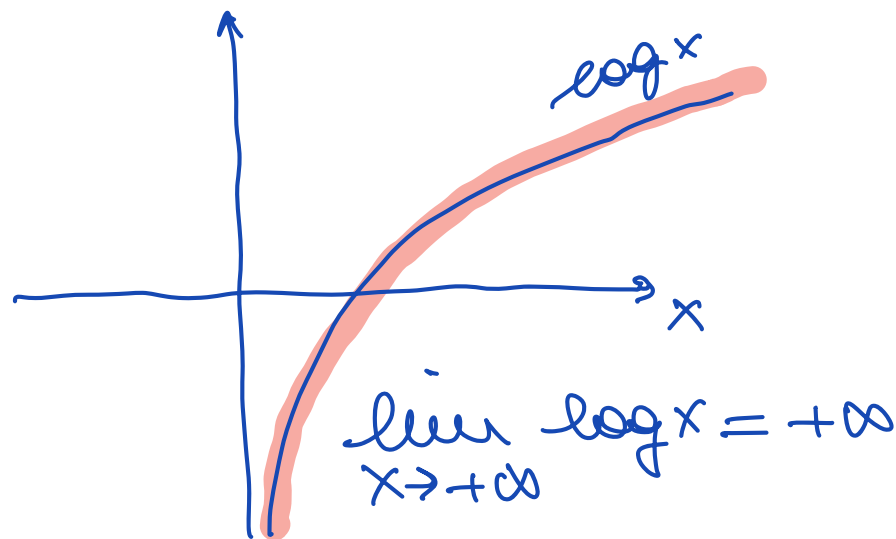


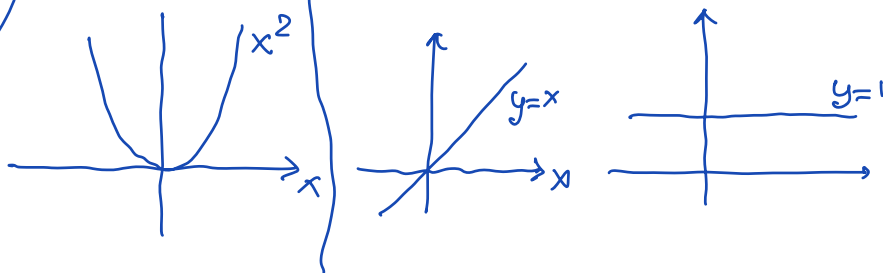
## Esempi

$$\lim_{x \rightarrow +\infty} \left( \log(x) + \frac{1}{x} \right) \stackrel{?}{=} \lim_{x \rightarrow +\infty} \log(x) + \lim_{x \rightarrow +\infty} \frac{1}{x} = +\infty + 0 = \underline{+\infty}$$

OK, abbiamo applicato l'algebra dei limiti correttamente.



$$\lim_{x \rightarrow +\infty} (x^2 - x + 1) \stackrel{?}{=} \lim_{x \rightarrow +\infty} x^2 - \lim_{x \rightarrow +\infty} x + \lim_{x \rightarrow +\infty} 1$$

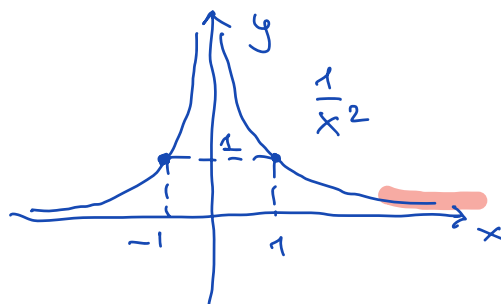
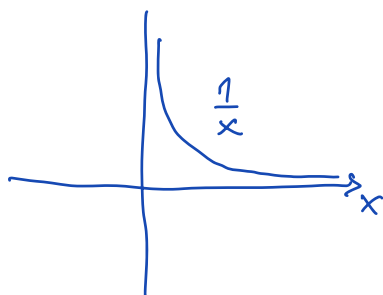


$$= +\infty - (+\infty) + 1$$

$$= +\infty - \infty + 1 \text{ forme indéterminée}$$

$$= \lim_{x \rightarrow +\infty} x^2 \cdot \left( 1 - \frac{1}{x} + \frac{1}{x^2} \right) = +\infty \cdot (1 - 0 + 0) = +\infty \cdot 1 = \boxed{+\infty}$$

$\begin{matrix} \downarrow & \downarrow & \downarrow & \downarrow \\ +\infty & 1 & 0 & 0 \end{matrix}$

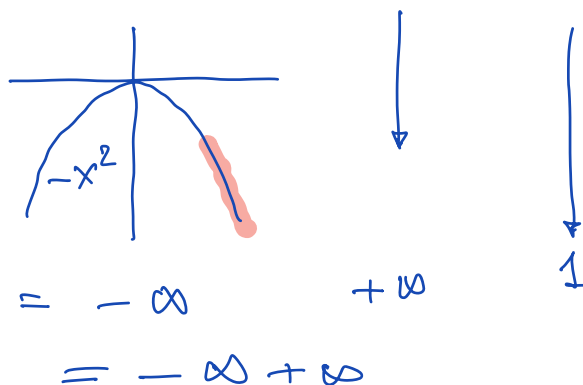


$$\lim_{x \rightarrow +\infty} (-x^2 + x + 1) = \lim_{x \rightarrow +\infty} (-x^2) + \lim_{x \rightarrow +\infty} x + \lim_{x \rightarrow +\infty} 1$$

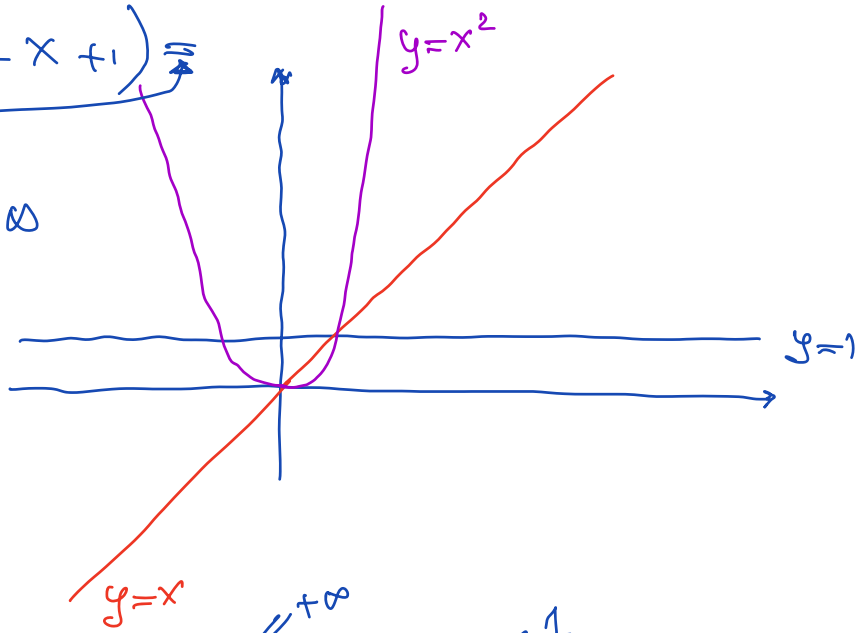
$$= \lim_{x \rightarrow +\infty} x^2 \left( -1 + \frac{1}{x} + \frac{1}{x^2} \right)$$

$\begin{matrix} \downarrow & \downarrow & \downarrow & \downarrow \\ +\infty & -1 & 0 & 0 \end{matrix}$

$$= +\infty (-1 + 0 + 0) = -\infty$$



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



$$\begin{aligned} \lim_{x \rightarrow +\infty} \frac{2x^2+1}{x^2} &= \frac{\lim_{x \rightarrow +\infty} 2x^2 + \lim_{x \rightarrow +\infty} 1}{\lim_{x \rightarrow +\infty} x^2} = \frac{+\infty + 1}{+\infty} = \frac{+\infty}{+\infty} \\ &= \lim_{x \rightarrow +\infty} \frac{2x^2}{x^2} = 2 \end{aligned}$$

# Esempi

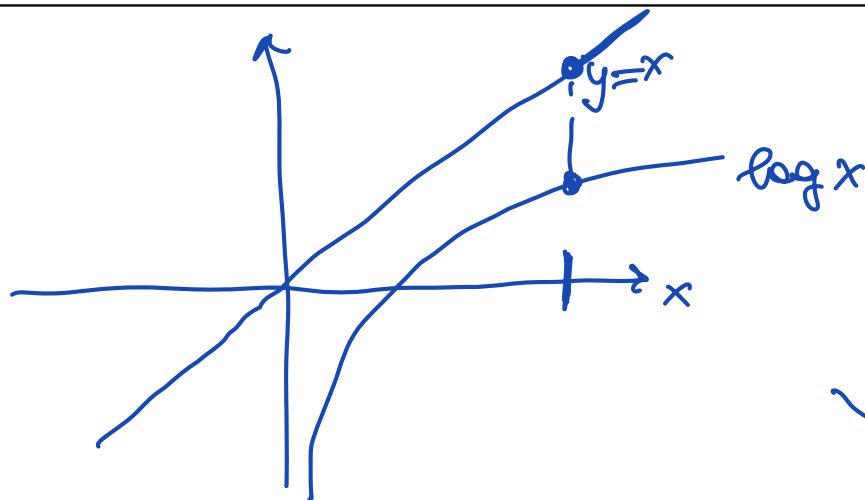
$$\lim_{x \rightarrow +\infty} \left( \log(x) + \frac{1}{x} \right) \stackrel{?}{=} \lim_{x \rightarrow +\infty} \log(x) + \lim_{x \rightarrow +\infty} \frac{1}{x} = +\infty + 0 = +\infty$$

OK, abbiamo applicato l'algebra dei limiti correttamente.

$$\lim_{x \rightarrow +\infty} (\log(x) - x) \stackrel{?}{=} \lim_{x \rightarrow +\infty} \log(x) - \lim_{x \rightarrow +\infty} x = +\infty - \infty$$

*(Handwritten notes: A bracket connects the two limit terms to the result. Above the result, it says  $+\infty - (+\infty)$ . Below the result, it says  $+\infty - \infty$ .)*

È una **forma indeterminata**, l'algebra dei limiti non ci consente di risolvere il limite.



$$\lim_{x \rightarrow +\infty} (\log x - x) = \lim_{x \rightarrow +\infty} (-x)$$

