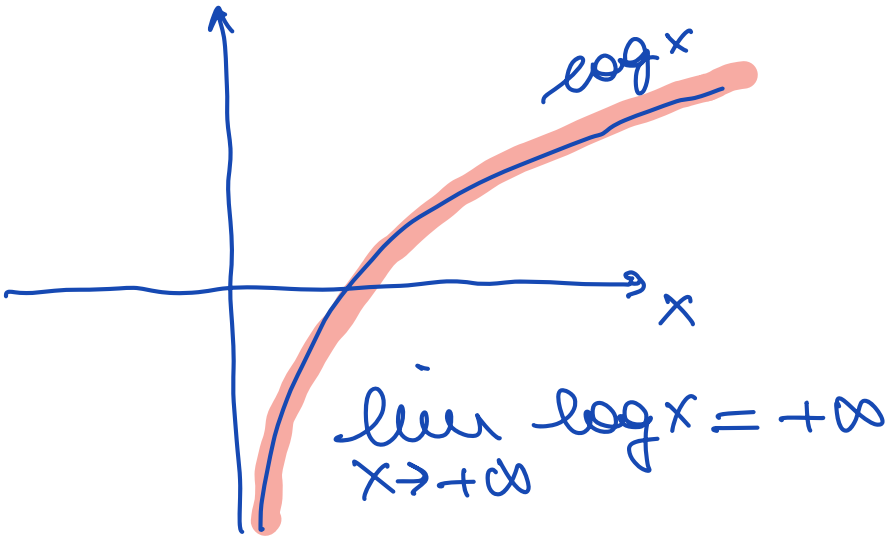
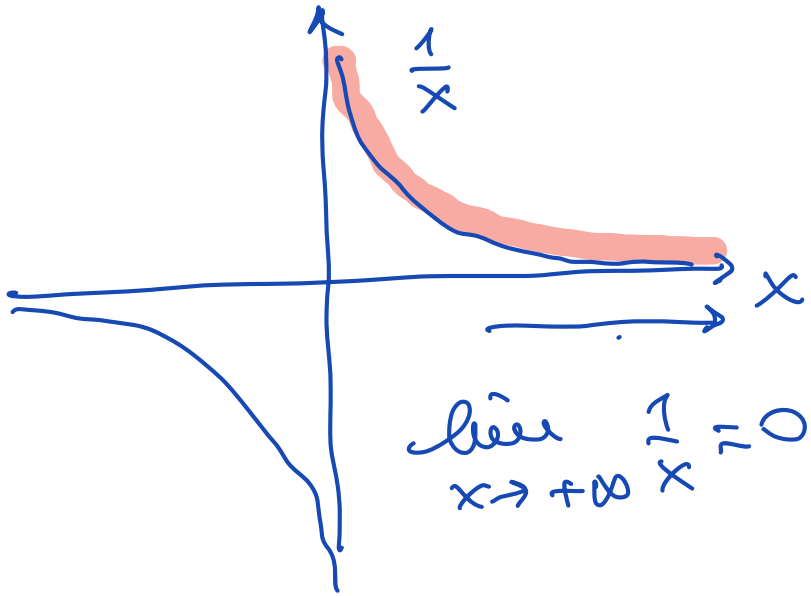
Esempi

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

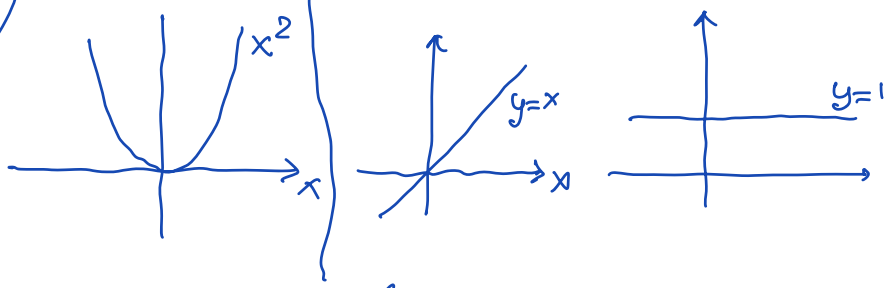
x_0

OK, abbiamo applicato l'algebra dei limiti correttamente.





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

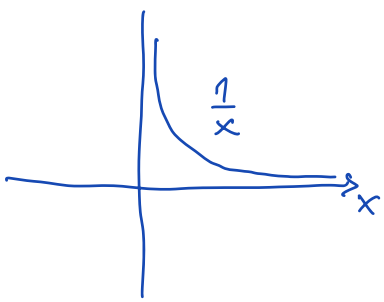


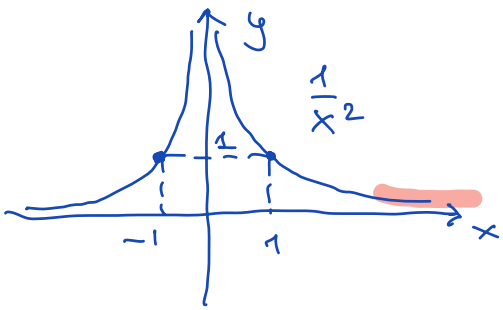
$$= +\infty - (+\infty) + 1$$

$$= +\infty - \infty + 1 \quad \text{forma indet}$$

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

$$= +\infty \cdot 1 = +\infty$$



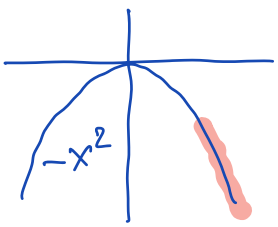


$$\lim_{x\to+\infty}(-x^2+x+1) = \lim_{x\to+\infty}(-x^2) + \lim_{x\to+\infty} x + \lim_{x\to+\infty} 1$$

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

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

$$= -\infty$$

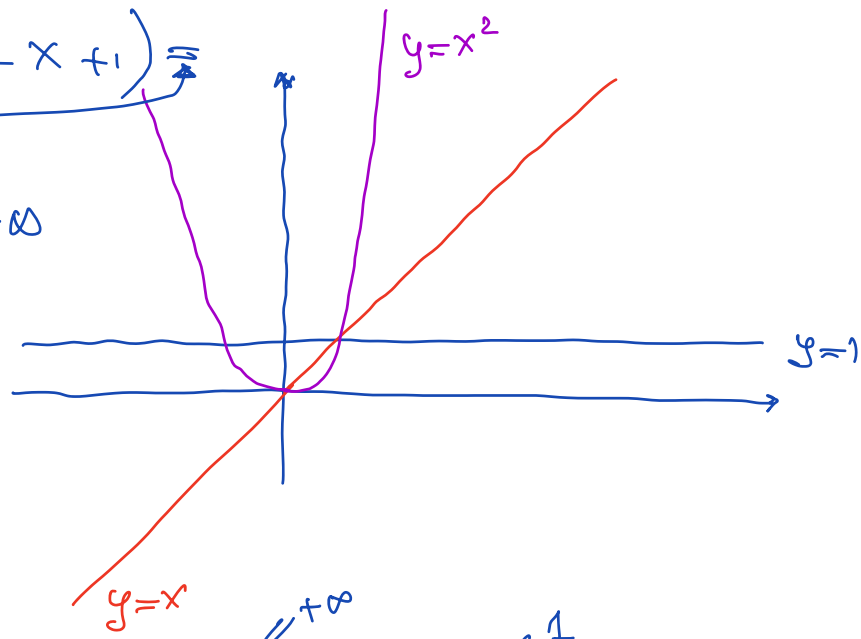


$$= -\infty \qquad +\infty \qquad 1$$

$$= -\infty + \infty$$

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

$$=\lim_{x\to+\infty}x^2=+\infty$$



$$\lim_{x\to+\infty}\frac{2x^2+1}{x^2}=\frac{\overbrace{\lim_{x\to+\infty}2x^2}^{=+\infty}+\overbrace{\lim_{x\to+\infty}1}^{=1}}{\underbrace{\lim_{x\to+\infty}x^2}_{=+\infty}}=\frac{+\infty+1}{+\infty}=\frac{+\infty}{+\infty}$$

Forma indet.

$$=\lim_{x\to+\infty}\frac{2\cancel{x^2}}{\cancel{x^2}}$$

$$=2$$

Esempi

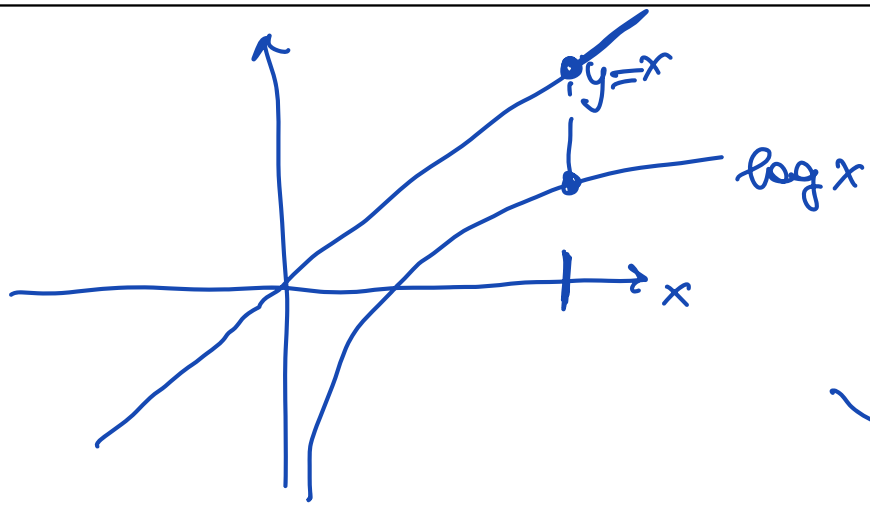
$$\lim_{x\to+\infty}\left(\log(x)+\frac{1}{x}\right) \overset{?}{=} \lim_{x\to+\infty}\log(x)+\lim_{x\to+\infty}\frac{1}{x} = +\infty+0=+\infty$$

OK, abbiamo applicato l'algebra dei limiti correttamente.

$$\lim_{x\to+\infty}(\log(x)-x) \overset{?}{=} \boxed{\lim_{x\to+\infty}\log(x)}-\lim_{x\to+\infty}x = +\infty-\infty$$

$+\infty-(+\infty)$

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



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

$$= -\infty$$