

TAVOLA DEI LIMITI

Limiti immediati

Nella somma: $\lim_{x \rightarrow \alpha} [f(x) + g(x)]$

$$\ell \pm \infty \rightarrow \pm \infty, \quad +\infty + \infty \rightarrow +\infty, \quad -\infty - \infty \rightarrow -\infty$$

Nel prodotto: $\lim_{x \rightarrow \alpha} f(x)g(x)$

$$(\ell > 0) \cdot (\pm \infty) \rightarrow \pm \infty, \quad (\ell < 0) \cdot (\pm \infty) \rightarrow \mp \infty$$

$$(+\infty) \cdot (+\infty) \rightarrow +\infty, \quad (+\infty) \cdot (-\infty) \rightarrow -\infty, \quad (-\infty) \cdot (-\infty) \rightarrow +\infty$$

Nella quoziente: $\lim_{x \rightarrow \alpha} \frac{f(x)}{g(x)}$

$$\frac{\ell}{\pm \infty} \rightarrow 0, \quad \frac{(\ell > 0)}{0 \pm} \rightarrow \pm \infty, \quad \frac{(\ell < 0)}{0 \pm} \rightarrow \mp \infty$$

$$\frac{\pm \infty}{(\ell > 0)} \rightarrow \pm \infty, \quad \frac{\pm \infty}{(\ell < 0)} \rightarrow \mp \infty$$

$$\frac{0}{\pm \infty} \rightarrow 0, \quad \frac{+\infty}{0 \pm} \rightarrow \pm \infty, \quad \frac{-\infty}{0 \pm} \rightarrow \mp \infty$$

Forme indeterminate

$$+\infty - \infty, \quad (0^\pm) \cdot (\pm \infty), \quad \frac{\pm \infty}{\pm \infty}, \quad \frac{0^\pm}{0^\pm}, \quad \pm \infty^0, \quad 1^{\pm \infty}$$

Limiti notevoli

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$$

$$\lim_{x \rightarrow 0} \frac{1 - \cos x}{x} = 0$$

$$\lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2} = \frac{1}{2}$$

$$\lim_{x \rightarrow +\infty} \frac{\log x}{x^p} = 0 \quad p \in \mathbf{N}_0$$

$$\lim_{x \rightarrow 0^+} x^p \log x = 0 \quad p \in \mathbf{N}_0$$

$$\lim_{x \rightarrow +\infty} \frac{e^x}{x^p} = +\infty \quad p \in \mathbf{N}_0$$

$$\lim_{x \rightarrow -\infty} x^p e^x = 0 \quad p \in \mathbf{N}_0$$

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

$$\lim_{x \rightarrow 0} \frac{e^x - 1}{x} = 1$$

$$\lim_{x \rightarrow 0} \frac{\log(1+x)}{x} = 1$$