

## Operazioni con i limiti

Addizione e sottrazione			
$\lim_{x \rightarrow x_0} f(x)$	$\lim_{x \rightarrow x_0} g(x)$	$\lim_{x \rightarrow x_0} [f(x) + g(x)]$	$\lim_{x \rightarrow x_0} [f(x) - g(x)]$
$l_1$	$l_2$	$l_1 + l_2$	$l_1 - l_2$
$l$	$\pm \infty$	$\pm \infty$	$\mp \infty$
$\pm \infty$	$l$	$\pm \infty$	$\pm \infty$
$+\infty$	$+\infty$	$+\infty$	<i>Forma indeterminata</i>
$-\infty$	$-\infty$	$-\infty$	<i>Forma indeterminata</i>
$+\infty$	$-\infty$	<i>Forma indeterminata</i>	$+\infty$
$-\infty$	$+\infty$	<i>Forma indeterminata</i>	$-\infty$

Prodotto		
$\lim_{x \rightarrow x_0} f(x)$	$\lim_{x \rightarrow x_0} g(x)$	$\lim_{x \rightarrow x_0} [f(x) \cdot g(x)]$
$l_1$	$l_2$	$l_1 \cdot l_2$
$l_1 > 0$	$\pm \infty$	$\pm \infty$
$l_1 < 0$	$\pm \infty$	$\mp \infty$
$\pm \infty$	$+\infty$	$\pm \infty$
$\pm \infty$	$-\infty$	$\mp \infty$
$0$	$l$	$0$
$0$	$\pm \infty$	<i>Forma indeterminata</i>
$\pm \infty$	$0$	<i>Forma indeterminata</i>

Reciproco	
$\lim_{x \rightarrow x_0} f(x)$	$\lim_{x \rightarrow x_0} \frac{1}{f(x)}$
$l \neq 0$	$\frac{1}{l}$
$0$	$\infty$
$\infty$	$0$

Quoziente		
$\lim_{x \rightarrow x_0} f(x)$	$\lim_{x \rightarrow x_0} g(x)$	$\lim_{x \rightarrow x_0} [f(x) / g(x)]$
$l_1$	$l_2$	$l_1 / l_2$
$\pm \infty$	$l_2 > 0$	$\pm \infty$
$\pm \infty$	$l_2 < 0$	$\mp \infty$
$l_1$	$\pm \infty$	$0$
$l_1$	$0$	$\infty$
$0$	$0$	<i>Forma indeterminata</i>
$\pm \infty$	$\pm \infty$	<i>Forma indeterminata</i>

Altre proprietà utili	
$\lim_{x \rightarrow x_0} \log_a f(x) = \log_a \lim_{x \rightarrow x_0} f(x) = \log_a l$	Se $\begin{cases} a \in \mathbb{R} - \{1\} \\ \lim_{x \rightarrow x_0} f(x) = l > 0 \end{cases}$
$\lim_{x \rightarrow x_0} a^{f(x)} = a^{\lim_{x \rightarrow x_0} f(x)} = l$	Se $\begin{cases} a \in \mathbb{R}_0^+ \\ \lim_{x \rightarrow x_0} f(x) = l \end{cases}$
$\lim_{x \rightarrow x_0} [f(x)]^a = \left[ \lim_{x \rightarrow x_0} f(x) \right]^a = l^a$	Se $\begin{cases} a \in \mathbb{R} \\ \lim_{x \rightarrow x_0} f(x) = l > 0 \end{cases}$
$\lim_{x \rightarrow x_0} [f(x)]^{g(x)} = \left[ \lim_{x \rightarrow x_0} f(x) \right]^{\lim_{x \rightarrow x_0} g(x)} = [l_1]^{l_2}$	Se $\begin{cases} \lim_{x \rightarrow x_0} f(x) = l_1 > 0 \\ \lim_{x \rightarrow x_0} g(x) = l_2 \end{cases}$
$\lim_{x \rightarrow x_0} [f(x)]^{g(x)} = \text{Forma indeterminata}$	Se $\begin{cases} \lim_{x \rightarrow x_0} f(x) = 0 \\ \lim_{x \rightarrow x_0} g(x) = 0 \end{cases}$
$\lim_{x \rightarrow x_0} [f(x)]^{g(x)} = \text{Forma indeterminata}$	Se $\begin{cases} \lim_{x \rightarrow x_0} f(x) = \infty \\ \lim_{x \rightarrow x_0} g(x) = 0 \end{cases}$
$\lim_{x \rightarrow x_0} [f(x)]^{g(x)} = \text{Forma indeterminata}$	Se $\begin{cases} \lim_{x \rightarrow x_0} f(x) = 1 \\ \lim_{x \rightarrow x_0} g(x) = \infty \end{cases}$