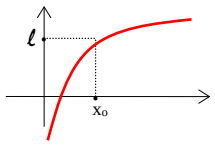
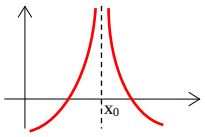
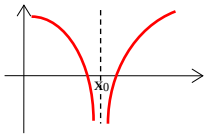
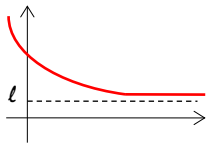
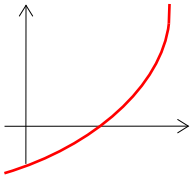
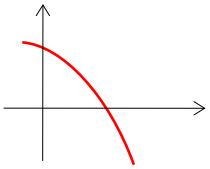
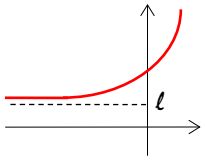
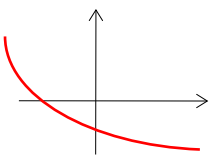
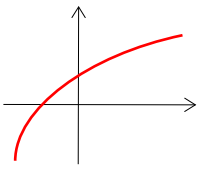
Tutte le definizioni di limite di una funzione:

topologica, algebrica, mista

Data una funzione $y = f(x)$ sia D il suo dominio e sia x_0 un punto di accumulazione per il dominio

$\lim_{x\to x_0} f(x) = l$		$\forall\, I_l\ \exists\, I_{x_0}: \forall x \in I_{x_0} \cap D - \{x_0\} \Rightarrow f(x) \in I_l$ $\forall\, \varepsilon > 0\ \exists\, \delta > 0 : \forall x \in D: 0 \neq \lvert x - x_0\rvert < \delta \Rightarrow \lvert f(x) - l\rvert < \varepsilon$ $\forall\, \varepsilon > 0\ \exists\, I_{x_0}: \forall x \in I_{x_0} \cap D - \{x_0\} \Rightarrow \lvert f(x) - l\rvert < \varepsilon$
$\lim_{x\to x_0} f(x) = +\infty$		$\forall\, I_{+\infty}\ \exists\, I_{x_0} : \forall x \in I_{x_0} \cap D - \{x_0\} \Rightarrow f(x) \in I_{+\infty}$ $\forall\, M > 0\ \exists\, \delta > 0 : \forall x \in D: 0 \neq \lvert x - x_0\rvert < \delta \Rightarrow f(x) > M$ $\forall\, M > 0\ \ \exists\, I_{x_0} : \forall x \in I_{x_0} \cap D - \{x_0\} \Rightarrow f(x) > M$
$\lim_{x\to x_0} f(x) = -\infty$		$\forall\, I_{-\infty}\ \exists\, I_{x_0} : \forall x \in I_{x_0} \cap D - \{x_0\} \Rightarrow f(x) \in I_{-\infty}$ $\forall\, M > 0\ \exists\, \delta > 0 : \forall x \in D: 0 \neq \lvert x - x_0\rvert < \delta \Rightarrow f(x) < -M$ $\forall\, M > 0\ \ \exists\, I_{x_0} : \forall x \in I_{x_0} \cap D - \{x_0\} \Rightarrow f(x) < -M$
$\lim_{x\to +\infty} f(x) = l$		$\forall\, I_l\ \exists\, I_{(+\infty)}: \forall x \in I_{(+\infty)} \cap D \Rightarrow f(x) \in I_l$ $\forall\, \varepsilon > 0\ \exists\, N > 0 : \forall x \in D: x > N \Rightarrow \lvert f(x) - l\rvert < \varepsilon$ $\forall\, \varepsilon > 0\ \exists\, I_{(+\infty)} : \forall x \in I_{(+\infty)} \cap D \Rightarrow \lvert f(x) - l\rvert < \varepsilon$
$\lim_{x\to +\infty} f(x) = +\infty$		$\forall\, I_{(+\infty)}\ \exists I_{(+\infty)}: \forall x \in I_{(+\infty)} \cap D \Rightarrow f(x) \in I_{(+\infty)}$ $\forall\, M > 0\ \exists\, N > 0 : \forall x \in D: x > N \Rightarrow f(x) > M$ $\forall\, M > 0\ \exists\, I_{(+\infty)} : \forall x \in I_{(+\infty)} \cap D \Rightarrow f(x) > M$
$\lim_{x\to +\infty} f(x) = -\infty$		$\forall\, I_{(-\infty)}\ \exists I_{(+\infty)}: \forall x \in I_{(+\infty)} \cap D \Rightarrow f(x) \in I_{(-\infty)}$ $\forall\, M > 0\ \exists\, N > 0 : \forall x \in D: x > N \Rightarrow f(x) < -M$ $\forall\, M > 0\ \exists\, I_{(+\infty)} : \forall x \in I_{(+\infty)} \cap D \Rightarrow f(x) < -M$
$\lim_{x\to -\infty} f(x) = l$		$\forall\, I_l\ \exists\, I_{(-\infty)}: \forall x \in I_{(-\infty)} \cap D \Rightarrow f(x) \in I_l$ $\forall\, \varepsilon > 0\ \exists\, N > 0 : \forall x \in D: x < -N \Rightarrow \lvert f(x) - l\rvert < \varepsilon$ $\forall\, \varepsilon > 0\ \exists\, I_{(-\infty)} : \forall x \in I_{(-\infty)} \cap D \Rightarrow \lvert f(x) - l\rvert < \varepsilon$
$\lim_{x\to -\infty} f(x) = +\infty$		$\forall\, I_{(+\infty)}\ \exists I_{(-\infty)}: \forall x \in I_{(-\infty)} \cap D \Rightarrow f(x) \in I_{(+\infty)}$ $\forall\, M > 0\ \exists\, N > 0 : \forall x \in D: x < -N \Rightarrow f(x) > M$ $\forall\, M > 0\ \exists\, I_{(-\infty)} : \forall x \in I_{(-\infty)} \cap D \Rightarrow f(x) > M$
$\lim_{x\to -\infty} f(x) = -\infty$		$\forall\, I_{(-\infty)}\ \exists I_{(-\infty)}: \forall x \in I_{(-\infty)} \cap D \Rightarrow f(x) \in I_{(-\infty)}$ $\forall\, M > 0\ \exists\, N > 0 : \forall x \in D: x < -N \Rightarrow f(x) < -M$ $\forall\, M > 0\ \exists\, I_{(-\infty)} : \forall x \in I_{(-\infty)} \cap D \Rightarrow f(x) < -M$