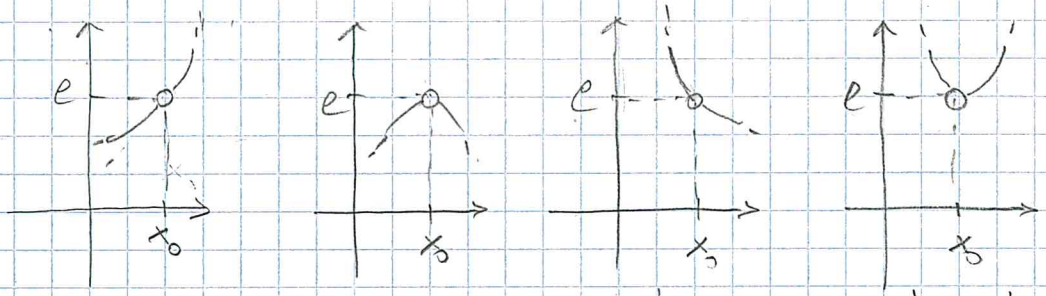
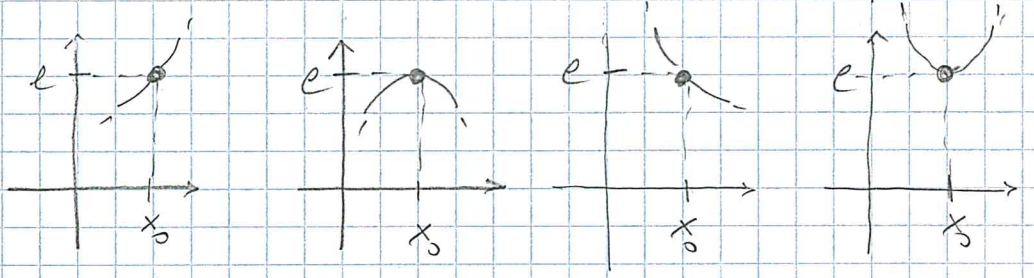
Rappresentazione grafica dei limiti
(tutte le possibili rappresentazioni grafiche)

1) $\lim_{x \to x_0} f(x) = l$

$x_0 \notin D$

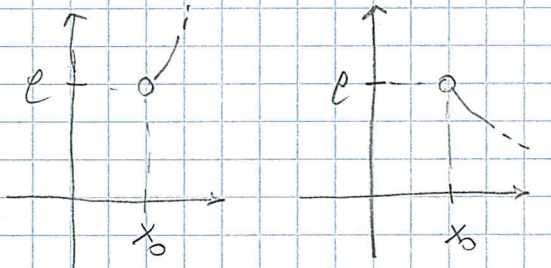


$x_0 \in D$

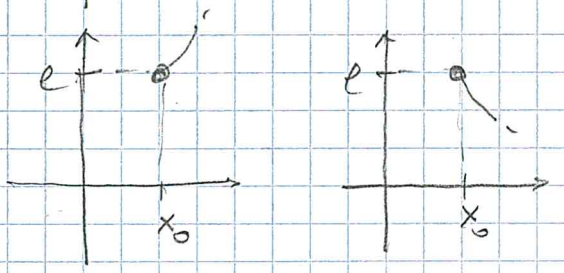


$\lim_{x \to x_0^+} f(x) = l$

$x_0 \notin D$

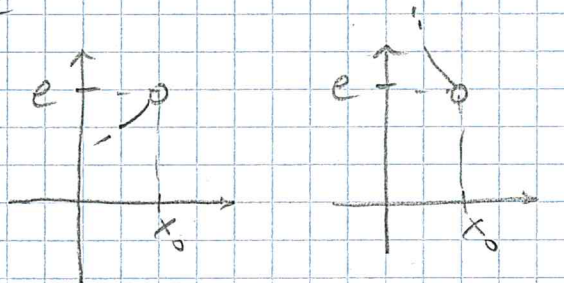


$x_0 \in D$

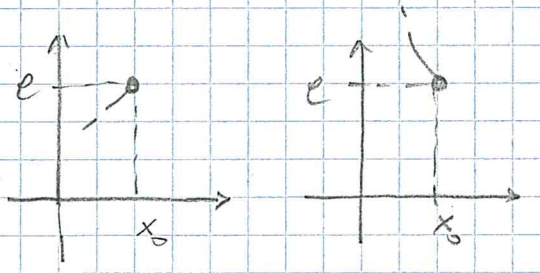


$\lim_{x \to x_0^-} f(x) = l$

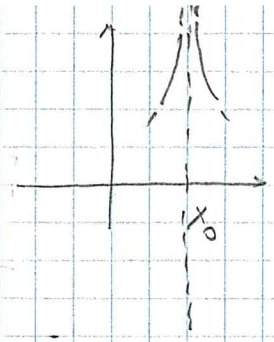
$x_0 \notin D$



$x_0 \in D$

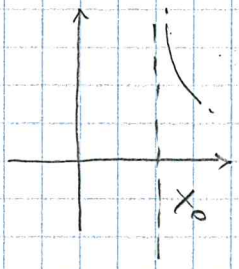


2) $\lim_{x \to x_0} f(x) = +\infty$



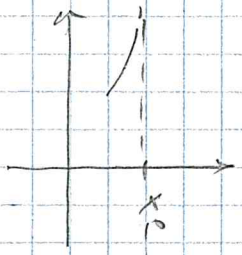
$x = x_0$ è asintoto verticale

$\lim_{x \to x_0^+} f(x) = +\infty$



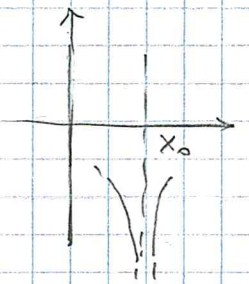
$x = x_0$ è asintoto verticale

$\lim_{x \to x_0^-} f(x) = +\infty$



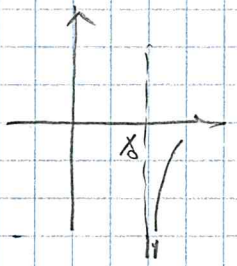
$x = x_0$ è asintoto verticale

3) $\lim_{x \to x_0} f(x) = -\infty$



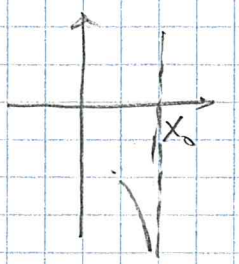
$x = x_0$ è asintoto verticale

$\lim_{x \to x_0^+} f(x) = -\infty$



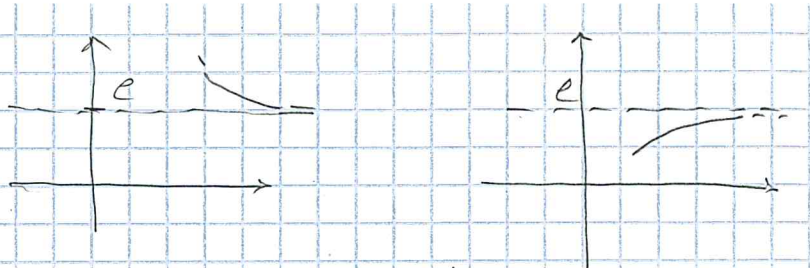
$x = x_0$ è asintoto verticale

$\lim_{x \to x_0^-} f(x) = -\infty$



$x = x_0$ è asintoto verticale

4) $\lim_{x \to +\infty} f(x) = \ell$

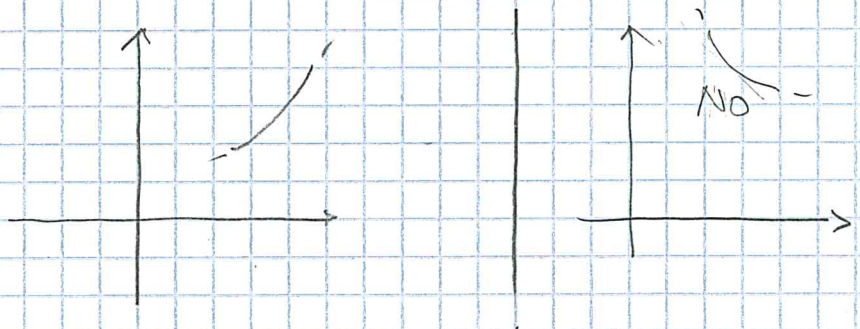


$y = \ell$ è asintoto orizzontale

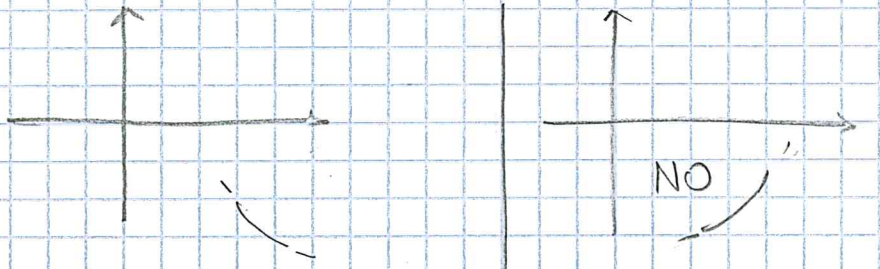
5) $\lim_{x \to -\infty} f(x) = \ell$

$y = \ell$ è asintoto orizzontale

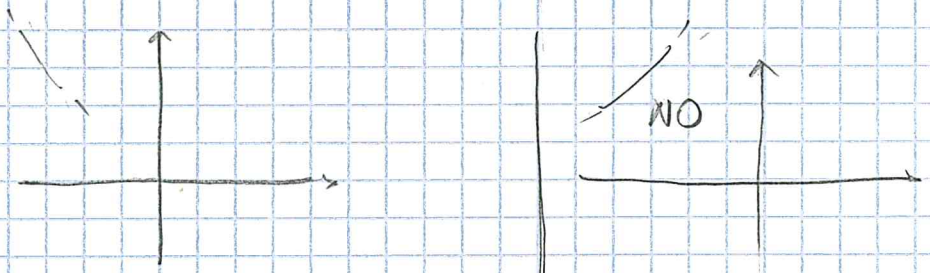
6) $\lim_{x \to +\infty} f(x) = +\infty$



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



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



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

ESERCIZI

Rappresentare graficamente i seguenti limiti

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

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

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

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

3) $\lim_{x \to 0} f(x) = -2$ $\lim_{x \to 0^+} f(x) = -2^+$ $\lim_{x \to 0^+} f(x) = -2^-$

$\lim_{x \to 0^-} f(x) = -2^+$ $\lim_{x \to 0^-} f(x) = -2^-$

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

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

6) $\lim_{x \to 0} f(x) = +\infty$ $\lim_{x \to 0^+} f(x) = +\infty$ $\lim_{x \to 0^-} f(x) = +\infty$

7) $\lim_{x \to 0} f(x) = -\infty$ $\lim_{x \to 0^+} f(x) = -\infty$ $\lim_{x \to 0^-} f(x) = -\infty$

8) $\lim_{x \to 0} f(x) = 0$ $\lim_{x \to 0^+} f(x) = 0^+$ $\lim_{x \to 0^+} f(x) = 0^-$

$\lim_{x \to 0^-} f(x) = 0^+$ $\lim_{x \to 0^-} f(x) = 0^-$

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

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

11) $\lim_{x \to +\infty} f(x) = 0$ $\lim_{x \to +\infty} f(x) = 0^+$ $\lim_{x \to -\infty} f(x) = 0^-$

12) $\lim_{x \to -\infty} f(x) = 0$ $\lim_{x \to -\infty} f(x) = 0^+$ $\lim_{x \to -\infty} f(x) = 0^-$