Calcul de limites (suite)

Reprenons la fonction $f(x) = \dfrac{x^2+x-6}{x^2-6x+8}$ et voyons ce qui se passe au voisinage de 4 :

$$f(4,1) = \frac{14,91}{0,21} = 71$$

$$f(4,01) = \quad \ldots \quad = 701$$

$$f(4,001) = \frac{14,009001}{0,002001} = 7001$$

$$f(4,00001) = \frac{14,00009}{0,00002} = 700'001$$

$$\vdots$$

$$= \infty$$

On note $\lim\limits_{x \to 4} f(x) = \text{"}\dfrac{14}{0}\text{"} = \infty$ $\left(\text{"}\dfrac{\text{nbre} \neq 0}{0}\text{"} = \infty \right)$

plus précisément $\lim\limits_{\substack{x \to 4 \\ >}} f(x) = \dfrac{14+}{0+} = +\infty$

$$\lim_{\substack{x \to 4 \\ <}} f(x) = \frac{14-}{0-} = -\infty$$

<u>Exemple</u>

$$f(x) = \frac{x^3+x^2-5x}{\underbrace{x^4-5x^3}_{x^3(x-5)}} \Rightarrow ED(f) = \mathbb{R}^* - \{5\}$$

$$\lim_{x\to 5} f(x) = \text{"}\frac{125+25-25}{0}\text{"} = \text{"}\frac{125}{0}\text{"} = \infty$$

$$\lim_{x\to 0} f(x) = \text{"}\frac{0}{0}\text{"} = \lim_{x\to 0} \frac{\cancel{x}(x^2+x-5)}{\cancel{x^3}(x-5)} = \text{"}\frac{-5}{0}\text{"} = \infty$$

$$x^2$$

$$\left(\lim_{x\to 1} f(x) = f(1) = \frac{1+1-5}{1-5} = \frac{-3}{-4} = \frac{3}{4}\right)$$

ex 2.5.14