

CORRECTION

EXERCICE n°4 :

Déterminons les limites des fonctions suivantes :

$$1. \lim_{\substack{x \rightarrow 2 \\ x < 2}} \left(\frac{x^2 + x - 1}{2 - x} \right) :$$

$$\left. \begin{array}{l} \lim_{\substack{x \rightarrow 2 \\ x < 2}} (x^2 + x - 1) = 5 \\ \lim_{\substack{x \rightarrow 2 \\ x < 2}} (2 - x) = 0^+ \end{array} \right\} \Rightarrow \lim_{\substack{x \rightarrow 2 \\ x < 2}} \left(\frac{x^2 + x - 1}{2 - x} \right) = +\infty.$$

$$2. \lim_{\substack{x \rightarrow 3 \\ x < 3}} \left(2x + 1 - \frac{x^2 - 1}{x - 3} \right) :$$

$$\left. \begin{array}{l} \lim_{\substack{x \rightarrow 3 \\ x < 3}} (2x + 1) = 7 \\ \lim_{\substack{x \rightarrow 3 \\ x < 3}} (x^2 - 1) = 8 \\ \lim_{\substack{x \rightarrow 3 \\ x < 3}} (x - 3) = 0^- \end{array} \right\} \Rightarrow \lim_{\substack{x \rightarrow 3 \\ x < 3}} \left(-\frac{x^2 - 1}{x - 3} \right) = +\infty \Rightarrow \lim_{\substack{x \rightarrow 3 \\ x < 3}} \left(2x + 1 - \frac{x^2 - 1}{x - 3} \right) = +\infty.$$

$$3. \lim_{\substack{x \rightarrow -2 \\ x > -2}} \left(\frac{2x - 1}{x^2 + 1} - \frac{x - 1}{x + 2} \right) :$$

$$\left. \begin{array}{l} \lim_{\substack{x \rightarrow -2 \\ x > -2}} \left(\frac{2x - 1}{x^2 + 1} \right) = -1 \\ \lim_{\substack{x \rightarrow -2 \\ x > -2}} (x - 1) = -3 \\ \lim_{\substack{x \rightarrow -2 \\ x > -2}} (x + 2) = 0^+ \end{array} \right\} \Rightarrow \lim_{\substack{x \rightarrow -2 \\ x > -2}} \left(-\frac{x - 1}{x + 2} \right) = +\infty \Rightarrow \lim_{\substack{x \rightarrow -2 \\ x > -2}} \left(\frac{2x - 1}{x^2 + 1} - \frac{x - 1}{x + 2} \right) = +\infty.$$

$$4. \lim_{\substack{x \rightarrow -1 \\ x < -1}} \left(\frac{x - 1}{x^2 + 2x + 1} \right) :$$

$$\left. \begin{array}{l} \lim_{\substack{x \rightarrow -1 \\ x < -1}} (x - 1) = -2 \\ \lim_{\substack{x \rightarrow -1 \\ x < -1}} (x^2 + 2x + 1) = 0^+ \end{array} \right\} \Rightarrow \lim_{\substack{x \rightarrow -1 \\ x < -1}} \left(\frac{x - 1}{x^2 + 2x + 1} \right) = -\infty.$$