

# CORRECTION

## EXERCICE n°32 :

a. On a :

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

b. On a :

$$\left. \begin{array}{l} \lim_{x \rightarrow -\infty} [(2x^2 - 3)e^{3x-1}] = \lim_{x \rightarrow -\infty} (2x^2 e^{3x-1}) \\ \lim_{x \rightarrow -\infty} (2x^2) = +\infty \\ \lim_{x \rightarrow -\infty} (3x-1) = \lim_{x \rightarrow -\infty} (3x) = -\infty \\ \lim_{X \rightarrow -\infty} (e^X) = 0 \end{array} \right\} \Rightarrow \lim_{x \rightarrow -\infty} (e^{3x-1}) = 0 \Rightarrow \lim_{x \rightarrow -\infty} [(2x^2 - 3)e^{3x-1}] = 0.$$

c. On a :

$$\left. \begin{array}{l} \lim_{x \rightarrow +\infty} (x^2 - 5x + 1 - e^{x+3}) = \lim_{x \rightarrow +\infty} (-e^{x+3}) \\ \lim_{x \rightarrow +\infty} (x+3) = \lim_{x \rightarrow +\infty} (x) = +\infty \\ \lim_{X \rightarrow +\infty} (e^X) = +\infty \end{array} \right\} \Rightarrow \lim_{x \rightarrow +\infty} (-e^{x+3}) = -\infty \Rightarrow \lim_{x \rightarrow +\infty} (x^2 - 5x + 1 - e^{x+3}) = -\infty.$$

d. On a :

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