Feuille de calcul n°13 — Calcul de limites (I)

Exercice 1. Calculer les limites suivantes

$$\lim_{x \to +\infty} 2024 - x \qquad \lim_{x \to +\infty} \frac{1}{2024 - x} \qquad \lim_{x \to +\infty} 2024 - \frac{1}{x} \qquad \lim_{x \to +\infty} 3x^2 + 2x^3$$

$$\lim_{x \to +\infty} 3x^2 + \frac{1}{x} \qquad \lim_{x \to +\infty} \frac{1}{3x^2 + 1} \qquad \lim_{x \to +\infty} \frac{3}{x^2} - \frac{5}{x} - 2 \qquad \lim_{x \to +\infty} \frac{2}{\sqrt{x}}$$

Exercice 2. Calculer les limites suivantes

$$\lim_{x \to -\infty} 3x^2 \qquad \lim_{x \to -\infty} 2024 - x \qquad \lim_{x \to -\infty} 2024 - \frac{1}{x} \qquad \lim_{x \to -\infty} 3x^2 - 2x^3$$

$$\lim_{x \to -\infty} 3x^2 + \frac{1}{x} \qquad \lim_{x \to -\infty} \frac{1}{3x^2 + 1} \qquad \lim_{x \to -\infty} \frac{3}{x^2} - \frac{5}{x} - 2 \qquad \lim_{x \to -\infty} \frac{2}{\sqrt{x}}$$

Exercice 3. Calculer les limites suivantes

$$\lim_{x \to 2023} \frac{1}{2024 - x} \qquad \lim_{x \to 1} 3x^2 + \frac{1}{x} \qquad \lim_{x \to 0^+} e^x \ln(x) \qquad \lim_{x \to 0} \frac{1}{x^2} + \sqrt{x}$$

$$\lim_{x \to 0} \cos(x) \sin(x) \qquad \lim_{x \to 0} \frac{e^x}{\sqrt{x}} \qquad \lim_{x \to 1} \frac{1}{\ln(x) + 2} \qquad \lim_{x \to 1} \frac{\ln(x)}{e^x}$$

Exercice 4. Calculer les limites suivantes

$$\lim_{x \to 2^+} \frac{1}{4 - 2x} \qquad \lim_{x \to 2^-} \frac{1}{4 - 2x} \qquad \lim_{x \to 2} \frac{1}{(4 - 2x)^2} \qquad \lim_{x \to 0^+} 3x^2 + \frac{1}{\sqrt{x}}$$

$$\lim_{x \to 1^+} \frac{1}{\ln(x)} \qquad \lim_{x \to 1^-} \frac{1}{\ln(x)} \qquad \lim_{x \to 0^+} \frac{1}{1 - e^x} \qquad \lim_{x \to 0^-} \frac{1}{1 - e^x}$$

Exercice 5. Calculer les limites suivantes

$$\lim_{x \to +\infty} \frac{1}{2}x^4 - \frac{1}{4}x^2 \qquad \lim_{x \to +\infty} 3x - \frac{x^3}{3} \qquad \lim_{x \to +\infty} \frac{3x + 1}{x^2 - 1} \qquad \lim_{x \to +\infty} \frac{3x + 1}{x - 1}$$

$$\lim_{x \to +\infty} \frac{-x^3 + 10x^2 + 1}{x^2 + 5} \qquad \lim_{x \to +\infty} \frac{2x^2 + 2024}{(x - 3)^2} \qquad \lim_{x \to +\infty} \frac{e^{2x}}{1 - e^x} \qquad \lim_{x \to 0^+} \frac{\ln(x) - 1}{\ln(x^2) + 2}$$