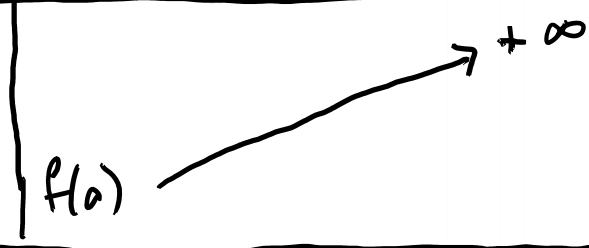


$$4) \quad f'(x) = 4x + 4e^{-x}$$

Sur $I = [0; +\infty[$ $f'(x)$ est positif.

car $4x \geq 0$ et $4e^{-x} > 0$

Donc

x	0	$+\infty$
f'	+	
f		

$$f(0) = 2 \times 0 - 4e^0 = -4$$

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

$$5) \quad f'(x) = 1 - \frac{1}{x^2} = \frac{x^2 - 1}{x^2}$$

Num: $x^2 - 1$ $a = 1 \cup b = 0 \quad c = -1$

$$\Delta = 0^2 - 4 \times 1 \times (-1) = 4 \quad + \quad \begin{array}{c} | \quad - \quad | \\ \hline \quad \cup \quad \end{array} +$$

$$x_1 = \frac{0-2}{2} = -1 \quad x_2 = \frac{0+2}{2} = 1$$

Den: x^2 est positif sur $I =]0; +\infty[$

x	0	1	$+\infty$
f'	<div style="background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); width: 10px; height: 20px; display: inline-block;"></div>	-	+
f	<div style="background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); width: 10px; height: 20px; display: inline-block;"></div>	$f(1)$	$+\infty$

$$\lim_{\substack{x \rightarrow 0 \\ x > 0}} f(x) = +\infty$$

$$f(1) = 2$$

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