Semestre 1 Corrigé type des Rattrapage MATHS I.

Exo 1 08 points

① $D_f = \{ x \in \mathbb{R} \} = \boxed{\mathbb{R}}$ car f est une fonction polynomiale de degré 3. (0,25) (0,25)

② $D_g = D_{g_1} \cap D_{g_2}$

$D_{g_1} = \{ x \in \mathbb{R} / \; x - 4 \geq 0 \}$ (0,25)

$D_{g_2} = \{ x \in \mathbb{R} / \; x - 5 \neq 0 \}$ (0,25)

• $x - 4 \geqslant 0 \Rightarrow x \geqslant 4$ (0,25)

$D_{g_1} = [4; +\infty[$ (0,25)

• $x - 5 \neq 0 \Rightarrow x \neq 5$ (0,25)

$D_{g_2} = \mathbb{R} - \{5\} =]-\infty; 5[\cup]5; +\infty[$ (0,25)

donc $D_g = [4, +\infty[\cap]-\infty; 5[\cup]5; +\infty[$

$\boxed{D_g = [4, 5[\cup]5; +\infty[}$ (0,5)

② Calcul des limites (0,25)

① $\lim\limits_{x \to -\infty} f(x) = \lim\limits_{x \to -\infty} (-2x^3) = \boxed{+\infty}$ (0,25)

② $\lim\limits_{x \to +\infty} f(x) = \lim\limits_{x \to +\infty} (-2x^3) = \boxed{-\infty}$ (0,25)

③ $\lim\limits_{x \to +\infty} g(x) = \lim\limits_{x \to +\infty} \left(\frac{x^{\frac{1}{2}}}{x} \right) = \boxed{0}$ (0,25)

④ $\lim\limits_{x \to 5^+} g(x) = \frac{1}{0^+} = \boxed{+\infty}$ (0,25)

⑤ $\lim\limits_{x \to 5^-} g(x) = \frac{1}{0^-} = \boxed{-\infty}$ (0,25)

⑥ $\lim\limits_{x \to 4} g(x) = \boxed{0}$ 0,5