

DS_n^e4

Ex: P = "roman Policier"; F = "antenn Francais".

$$\textcircled{1} \quad p(P) = \frac{150}{200} = \frac{3}{4} = 0,75 \rightarrow \textcircled{b}$$

$$\textcircled{2} \quad P_p(F) = 0,4 \rightarrow \textcircled{2}$$

$$\textcircled{2} \quad p(P \cap F) = p_p(F) \times p(P) = 0,4 \times 0,75 = 0,3 \rightarrow \textcircled{c}$$

$$\textcircled{4} \quad P(F) = p_p(F)p(P) + p_{\bar{P}}(F)p(\bar{P}) = 0,4 \times 0,75 + 0,7 \times 0,25 = 0,475 \rightarrow \textcircled{4}$$

$$\textcircled{5} \quad P_F(P) = P_P(F) \times \frac{P(P)}{P(F)} = 0,4 \times \frac{0,75}{0,475} = \frac{12}{19} \rightarrow \textcircled{b}$$

⑦ Il y a 10 listes possibles et équiprobables : $\{SPP\bar{P}\bar{P}, P\bar{P}P\bar{P}\bar{P}, \bar{P}\bar{P}\bar{P}P, P\bar{P}\bar{P}\bar{P}P, \bar{P}P\bar{P}\bar{P}P, \bar{P}\bar{P}\bar{P}P, P\bar{P}\bar{P}\bar{P}P, \bar{P}\bar{P}P\bar{P}, \bar{P}\bar{P}\bar{P}P, \bar{P}\bar{P}\bar{P}P\}$
 $P(P\bar{P}\bar{P}\bar{P}) = 0,75^2 \times 0,25^3$ donc la probabilité demandée est $10 \times 0,75^2 \times 0,25^3 \approx 0,0874$.

Ex2. (3,0)

$$1. \lim_{x \rightarrow +\infty} \frac{x^3 + 5x^2 + 7x + 3}{x^2 - 9} = \lim_{x \rightarrow +\infty} \frac{x^3}{x^2} = \lim_{x \rightarrow +\infty} x = +\infty$$

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

$$x^3 + 5x^2 + 7x + 3 = (x+3)(x^2+2x+1) \quad ①$$

$$\lim_{x \rightarrow -3} f = \lim_{x \rightarrow -3} \frac{(x+3)(x^2+2x+1)}{(x+3)(x-3)} = \lim_{x \rightarrow -3} \frac{x^2+2x+1}{x-3} = \frac{4}{-6} = -\frac{2}{3} \quad (0,1)$$

$$\lim_{x \rightarrow 3} x^3 + 5x^2 + 7x - 3 = 96$$

$$\lim_{\substack{x \rightarrow 3^+}} x^2 - 9 = 0^- \quad \text{done} \quad \lim_{\substack{x \rightarrow 3^-}} f = -\infty \quad (0,)$$

$$\lim_{x \rightarrow 3^+} x^2 - 9 = 0^+ \quad \text{dove} \quad \lim_{x \rightarrow 3^+} f = +\infty \quad (0)$$

$$2. f(x) = \frac{x+h - x+2}{\sqrt{x+h} + \sqrt{x+2}} = \frac{6}{\sqrt{x+h} + \sqrt{x+2}} \quad (0,5)$$

$$\lim_{x \rightarrow +\infty} \sqrt{x+4} + \sqrt{x+2} = +\infty \quad \text{done} \quad \lim_{x \rightarrow +\infty} f = 0. \quad (0,5)$$

$$3. f(x) = \frac{2\sqrt{x} + 2}{x-3} = \frac{\sqrt{x}}{x} \cdot \frac{2 + \frac{2}{\sqrt{x}}}{1 - \frac{3}{x}} = \frac{1}{\sqrt{x}} \cdot \frac{2 + \frac{2}{\sqrt{x}}}{1 - \frac{3}{x}} \quad (1)$$

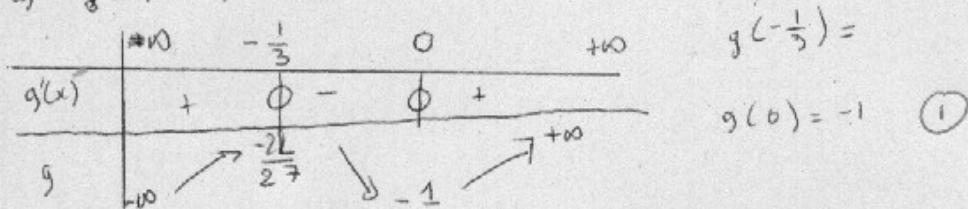
$$\left. \begin{array}{l} \lim_{x \rightarrow +\infty} \frac{2 + \frac{2}{\sqrt{x}}}{\sqrt{x}} = 2 \\ \lim_{x \rightarrow +\infty} 1 - \frac{3}{x} = 1 \\ \lim_{x \rightarrow +\infty} \frac{1}{\sqrt{x}} = 0 \end{array} \right\} \lim_{+\infty} f = 0 \times \frac{2}{1} = 0 \quad (0,3)$$

(4) Soit $u(x) = \cos(x)$. u est dérivable sur \mathbb{R} et $u'(x) = -\sin(x)$.

$$f(x) = \frac{3}{2} \frac{\cos x + 1}{x - \pi} = \frac{3}{2} \frac{u(x) - u(\pi)}{x - \pi} \text{ donc } \lim_{\pi} f = u'(\pi) = -\sin(\pi) = 0 \quad (1,5)$$

Ex3 :

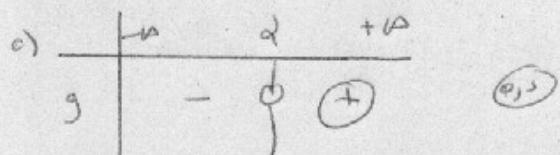
1. a) $g'(x) = 6x^2 + 2x = 2x(3x+1) \quad (0,2)$



b) $\lim_{-\infty} [-\infty; 0], g(x) < 0$ donc $g(x) = 0$ n'a aucune solution. $(0,1)$

* sur $[0; +\infty[$, g est continue et strictement croissante $\} \text{ d'après le Th des racines intermédiaires, il existe un unique}$
 (1,5) $g(0) = -1, \lim_{+\infty} g = +\infty$ et $0 \in]-1; +\infty[\quad \} \text{ de }]-1; +\infty[\text{ tq } g(x) = 0$

(0,3) $\left. \begin{array}{l} g(0,65) < 0 \\ g(0,65) > 0 \end{array} \right\} \exists t \in [0,657; 0,658[\text{ donc } d \approx 0,66 \text{ à } 10^{-2} \text{ près.}$



2. a) $f(x) = \frac{1}{3} \left(2x + 1 - \frac{1}{x^2} \right) = \frac{2x^3 + x^2 - 1}{3x^2} \quad (0,5)$

