

EXERCICE 1 Calculer les dérivées des fonctions suivantes.

$$f_0(x) = 3x + 2$$

$$f_0(x) = 2 \sin(3x)$$

$$f_0(x) = \ln(5x - 1)$$

$$f_0(x) = \frac{3x + 1}{2x + 1}$$

$$f_0(x) = e^{5x}$$

$$f_0(x) = 3 \cos(5x)$$

$$f_0(x) = x \sin(x)$$

$$f_0(x) = 3e^{2x}$$

$$f_0(x) = 5 \sin\left(x + \frac{\pi}{3}\right)$$

$$f_0(x) = e^{x/2}$$

$$f_0(x) = \ln(4x + 1)$$

$$f_0(x) = (2x + 1)e^{-3x}$$

EXERCICE 2 Calculer les dérivées des fonctions suivantes :

a) $f(x) = \ln(x + 1)$ donc $f'(x) =$

d) $f(x) = \ln(x^2 + 1)$

b) $f(x) = \ln(2x + 1)$

c) $f(x) = \ln(3x - 1)$

e) $f(x) = \ln\left(\frac{1}{x + 2}\right)$

EXERCICE 3 Calculer la fonction dérivée des fonctions suivantes :

a) $f(x) = x - 2 - \ln(x)$

f) $f(x) = \ln\left(\frac{x + 3}{2 - x}\right)$

j) $f(x) = \left(\ln(x)\right)^5$

b) $f(x) = x \ln(x)$

g) $f(x) = 0,2x + 3 - 2,6 \ln(x + 2)$

k) $f(x) = \frac{\ln(x)}{x + 1}$

c) $f(x) = \frac{\ln(x)}{x}$

h) $f(x) = \frac{1}{2}x^2 + 1 - \ln(x)$

l) $f(x) = \frac{3 \ln(x) + 1}{\ln(x)}$

d) $f(x) = \left(\ln(x)\right)^2$

e) $f(x) = (x + 1) \ln(x) - x$

i) $f(x) = \frac{1}{x} + \frac{\ln(x)}{x}$

EXERCICE 4 On donne les dérivées, retrouver les primitives.

$$f'_1(x) = 2x$$

$$f'_5(x) = 6x^2 + 4x - 1$$

$$f'_9(x) = e^{-2x}$$

$$f'_{13}(x) = \frac{2}{2x + 1}$$

$$f'_2(x) = x$$

$$f'_6(x) = \sin(x)$$

$$f'_{10}(x) = 4e^{4x}$$

$$f'_{14}(x) = \frac{3}{5x + 1}$$

$$f'_3(x) = 5x$$

$$f'_7(x) = \cos(x)$$

$$f'_{11}(x) = \sin(3x)$$

$$f'_4(x) = x^2$$

$$f'_8(x) = e^{3x}$$

$$f'_{12}(x) = 5 \cos(2x)$$

$$f'_{15}(x) = \frac{x}{x^2 + 1}$$

EXERCICE 5 Déterminer les primitives des fonctions suivantes

$$f_{16}(x) = 3x + 1$$

$$f_{20}(x) = 2 \cos(4x)$$

$$f_{24}(x) = \frac{-5x}{3x^2 + 1}$$

$$f_{17}(x) = 5x^2 - x + 4$$

$$f_{21}(x) = \frac{2}{x}$$

$$f_{25}(x) = \frac{1}{x(x + 1)}$$

$$f_{18}(x) = \sin(30x)$$

$$f_{22}(x) = \frac{2}{5x}$$

$$f_{19}(x) = \cos(15x)$$

$$f_{23}(x) = \frac{1}{2x + 1}$$

$$f_{26}(x) = \frac{1}{x^2 + 1}$$

EXERCICE 6 Donner l'expression d'une primitive F des fonctions définies par les expressions suivantes :

a) $f(x) = \frac{6x}{3x^2 + 3}$

e) $f(x) = \frac{2x - 1}{x^2 - x + 2}$

b) $f(x) = \frac{2}{2x - 3}$

f) $f(x) = 3x + 4 + \frac{1}{2x + 4}$

c) $f(x) = \frac{1}{2x - 3}$

g) $f(x) = 1 + \frac{1}{x - 3} + \frac{2}{x + 2}$

d) $f(x) = \frac{24x^2}{-4x^3 + 2}$

h) $f(x) = -\frac{5}{x} + \frac{3x^2 + 2}{x^3 + 2x} - \frac{2x}{(x^2 + 3)^2}$