Énoncés

Exercice 1

Calculer la fonction dérivée de chacune des fonctions suivantes sans tenir compte de l'intervalle de définition.

a] $f(x) = \sqrt{x}(5x^2-3)$

b] $f(x) = \dfrac{2x+1}{x^3+3}$

c] $f(x) = (7x+8)^4$

d] $f(x) = x^3(\sqrt{x}-1)$

e] $f(x) = \dfrac{9x-1}{1-x^2}$

f] $f(x) = \sqrt{4x+3}$

g] $f(x) = (2+x^3)\sqrt{2x-1}$

h] $f(x) = \dfrac{5}{2(4x+1)^3}$

Corrigés

Exercice 1

a] $f(x) = \sqrt{x}(5x^2-3)$

$f'(x) = \dfrac{5x^2-3}{2\sqrt{x}} + 10x\sqrt{x}$

$\boldsymbol{f'(x) = \dfrac{25x^2-3}{2\sqrt{x}}}$

b] $f(x) = \dfrac{2x+1}{x^3+3}$

$f'(x) = \dfrac{2(x^3+3)-3x^2(2x+1)}{(x^3+3)^2}$

$\boldsymbol{f'(x) = \dfrac{-4x^3-3x^2+6}{(x^3+3)^2}}$

c] $f(x) = (7x+8)^4$

$f'(x) = 4\times(7x+8)^3\times 7$

$\boldsymbol{f'(x) = 28(7x+8)^3}$

d] $f(x) = x^3(\sqrt{x}-1)$

$f'(x) = 3x^2(\sqrt{x}-1) + \dfrac{1}{2\sqrt{x}}\times x^3$

$\boldsymbol{f'(x) = \dfrac{7}{2}x^2\sqrt{x}-3x^2}$

e] $f(x) = \dfrac{9x-1}{1-x^2}$

$f'(x) = \dfrac{9(1-x^2)-(-2x)(9x-1)}{(1-x^2)^2}$

$\boldsymbol{f'(x) = \dfrac{9x^2-2x+9}{(1-x^2)^2}}$

f] $f(x) = \sqrt{4x+3}$

$f'(x) = \dfrac{1}{2\sqrt{4x+3}}\times 4$

$\boldsymbol{f'(x) = \dfrac{2}{\sqrt{4x+3}}}$

g] $f(x) = (2+x^3)\sqrt{2x-1}$

$f'(x) = 3x^2\sqrt{2x-1} + \dfrac{1}{\sqrt{2x-1}}\times 2\times 3x^2$

$\boldsymbol{f'(x) = \dfrac{6x^3+3x^2}{\sqrt{2x-1}}}$

h] $f(x) = \dfrac{5}{2}(4x+1)^{-3}$

$f'(x) = \dfrac{5}{2}\times(-3)\times(4x+1)^{-4}\times 4$

$\boldsymbol{f'(x) = -\dfrac{30}{(4x+1)^4}}$