Exercices de dérivation

■ Dériver les fonctions suivantes

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

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

3) $f(x) = \frac{2x+1}{\sqrt{x^2+5}}$

4) $f(x) = (x-5)\sqrt{5x-2}$

5) $f(x) = \frac{4\sqrt{x}-5}{\sqrt{x}+4}$

6) $f(x) = \sqrt[3]{2x^2+4}$

7) $f(x) = \sqrt{\frac{2x+3}{4x-4}}$

8) $f(x) = \frac{4\sin(x)}{5\cos(x)+2\sin(x)}$

9) $f(x) = \sin\left(\frac{3-4x}{5x-1}\right)$

10) $f(x) = -\cos(5x) - 2\sin(2x)$

■ Solutions :

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

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

3) $f'(x) = 5\sin(5x) - 4\cos(2x)$

4) $f'(x) = \frac{15x - 29}{2\sqrt{5x-2}}$

5) $f'(x) = \frac{21}{2\left(\sqrt{x}+4\right)^2\sqrt{x}}$

6) $f'(x) = \frac{4x}{3(2x^2+4)^{2/3}}$

7) $f'(x) = -\frac{5}{4(x-1)^2\sqrt{\frac{2x+3}{x-1}}}$

8) $f'(x) = \frac{20}{(5\cos(x) + 2\sin(x))^2}$

9) $f'(x) = -\frac{11\cos\left(\frac{3-4x}{5x-1}\right)}{(1-5x)^2}$

10) $f'(x) = 5\sin(5x) - 4\cos(2x)$