

Calculs de dérivées

$$* f(x) = -2x^3$$

$$f'(x) = -2 \times 3x^2 = \underline{-6x^2}$$

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

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

$$* f(x) = \frac{1}{4}x^4 - \frac{1}{3}x^3$$

$$f'(x) = \frac{1}{4} \times 4x^3 - \frac{1}{3} \times 3x^2 = \underline{x^3 - x^2}$$

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

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

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

$$* f(x) = 4x^3 + x^2 - 3x + 2$$

$$f'(x) = 4 \times 3x^2 + 2x - 3$$

$$f'(x) = \underline{12x^2 + 2x - 3}$$

$$* f(x) = (3x^2 - x + 1)^2$$

$$f'(x) = 2(3x^2 - x + 1)^1 \times (6x - 1)$$

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

$$* f(x) = \frac{\sqrt{x}}{x+1}$$

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

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

$$f'(x) = \left[\frac{\sqrt{x}}{2x}(x+1) - \frac{2x\sqrt{x}}{2x} \right] \times \frac{1}{(x+1)^2}$$

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

$$f'(x) = \underline{\frac{\sqrt{x}(-x+1)}{2x(x+1)^2}}$$

$$* g(x) = 2x^2 - x + 3$$

$$g'(x) = 2 \times 2x - 1 = \underline{4x - 1}$$

$$* g(x) = -x^2 + 3x - 1$$

$$g'(x) = \underline{-2x + 3}$$

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

$$g'(x) = -\frac{1}{3} \times 3x^2 + \frac{1}{2} \times 2x + 5$$

$$g'(x) = \underline{-x^2 + x + 5}$$

$$* g(x) = \frac{4}{5}x^5 - \frac{3}{2}x^2 - 7x + 2$$

$$g'(x) = \frac{4}{5} \times 5x^4 - \frac{3}{2} \times 2x - 7$$

$$g'(x) = \underline{4x^4 - 3x - 7}$$

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

$$g'(x) = \frac{(2x-3)'(1-x) - (2x-3)(1-x)'}{(1-x)^2}$$

$$g'(x) = \frac{2(1-x) - (2x-3)(-1)}{(1-x)^2}$$

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

$$g'(x) = \underline{\frac{-1}{(1-x)^2}}$$

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

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

$$g'(x) = \frac{2}{3} - \frac{3 \times 2}{(2x-1)^2}$$

$$g'(x) = \frac{2}{3} - \frac{6}{(2x-1)^2} = 2 \left(\frac{1}{3} - \frac{3}{(2x-1)^2} \right)$$

$$g'(x) = 2 \left(\frac{(2x-1)^2 - 9}{3(2x-1)^2} \right) = \frac{2(4x^2 - 4x + 1 - 9)}{3(2x-1)^2}$$

$$g'(x) = \underline{\frac{2(4x^2 - 4x - 8)}{3(2x-1)^2}}$$

Calcul de dérivées

$$* f(x) = 3x - 4 - \frac{5}{3x-1}$$

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

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

$$f'(x) = \frac{3(3x-1)^2 + 15}{(3x-1)^2}$$

$$f'(x) = \frac{3(9x^2 - 6x + 1 + 5)}{(3x-1)^2}$$

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

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

$$f'(x) = 2 \left(\frac{2x-1}{x-1}\right)^2 \times \left(\frac{2x-1}{x-1}\right)'$$

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

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

$$f'(x) = 2 \left(\frac{2x-1}{x-1}\right) \left(\frac{2x-2-2x+1}{(x-1)^2}\right)$$

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

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

$$* f(x) = \left(\frac{x-2}{x+1}\right) \sqrt{x}$$

$$f'(x) = \left(\frac{x-2}{x+1}\right)' \sqrt{x} + \left(\frac{x-2}{x+1}\right) (\sqrt{x})' = \left[\frac{(x-2)'(x+1) - (x-2)(x+1)'}{(x+1)^2}\right] \sqrt{x} + \left(\frac{x-2}{x+1}\right) \times \frac{(x)'}{2\sqrt{x}}$$

$$f'(x) = \frac{[x+1 - (x-2)] \sqrt{x} + \frac{x-2}{x+1} \times \frac{1}{2\sqrt{x}}}{(x+1)^2} = \frac{(x+1-x+2) \sqrt{x} + \frac{x-2}{(x+1)^2} \sqrt{x}}{(x+1)^2}$$

$$f'(x) = \frac{3\sqrt{x} \times 2\sqrt{x} + (x-2)(x+1)}{2\sqrt{x}(x+1)^2} = \frac{6x + x^2 + x - 2x - 2}{2\sqrt{x}(x+1)^2} = \frac{x^2 + 5x - 2}{2\sqrt{x}(x+1)^2}$$

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

$$* g(x) = \frac{-3x^2 + 5x + 2}{x^2 + 3x + 2}$$

$$g'(x) = \frac{(-3x^2 + 5x + 2)'(x^2 + 3x + 2) - (-3x^2 + 5x + 2)(x^2 + 3x + 2)'}{(x^2 + 3x + 2)^2}$$

$$g'(x) = \frac{(-6x + 5)(x^2 + 3x + 2) - (-3x^2 + 5x + 2)(2x + 3)}{(x^2 + 3x + 2)^2}$$

$$g'(x) = \frac{-6x^3 - 18x^2 - 11x + 5x^2 + 15x + 10 - (-6x^3 - 9x^2 + 10x^2 + 15x + 4x + 6)}{(x^2 + 3x + 2)^2}$$

$$g'(x) = \frac{-14x^2 - 16x + 4}{(x^2 + 3x + 2)^2}$$

$$* g(x) = \frac{1}{\sqrt{x}} - \frac{1}{2x}$$

$$g'(x) = -\left(\frac{1}{\sqrt{x}}\right)' + \left(\frac{1}{2x}\right)'$$

$$g'(x) = \frac{-\left(\frac{1}{\sqrt{x}}\right)'}{x} + \frac{2}{4x^2}$$

$$g'(x) = \frac{-\frac{1}{2\sqrt{x}}}{x} + \frac{1}{2x^2}$$

$$g'(x) = \frac{-\frac{1}{2\sqrt{x}} \times \frac{1}{x} + \frac{1}{2x^2}}{x}$$

$$g'(x) = -\frac{1 \times \sqrt{x} + 1}{2x^2}$$

$$g'(x) = -\frac{\sqrt{x} + 1}{2x^2}$$