

Révision Dérivées Première - Correction

1. $f(x) = x^3 - x^2$ donc $\boxed{f'(x) = 3x^2 - 2x}$

2. $f(x) = 2x^2 + 2x - 4$ donc $\boxed{f'(x) = 4x + 2}$

3. $f(x) = \frac{3}{x^2 + 4} = 3 \times \frac{1}{x^2 + 4}$ Formules : $(ku)' = k \times u'$ et $\left(\frac{1}{u}\right)' = \frac{-u'}{u^2}$

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

4. $f(x) = \sqrt{x}(2x + 7)$ Formule : $(uv)' = u'v + uv'$

$$f'(x) = \frac{1}{2\sqrt{x}} \times (2x + 7) + \sqrt{x} \times 2 = \frac{2x + 7}{2\sqrt{x}} + 2\sqrt{x} = \frac{2x + 7}{2\sqrt{x}} + \frac{2\sqrt{x} \times 2\sqrt{x}}{2\sqrt{x}} = \boxed{\frac{6x + 7}{2\sqrt{x}}}$$

5. $f(x) = \frac{5 - 9x}{3x + 7}$ Formule : $\left(\frac{u}{v}\right)' = \frac{u'v - uv'}{v^2}$

$$f'(x) = \frac{-9(3x + 7) - (5 - 9x) \times 3}{(3x + 7)^2} = \frac{-27x - 63 - 15 + 27x}{(3x + 7)^2} = \boxed{\frac{-78}{(3x + 7)^2}}$$

6. $f(x) = \frac{1}{-5x - 6}$ Formule : $\left(\frac{1}{u}\right)' = \frac{-u'}{u^2}$

$$f'(x) = \frac{-(-5)}{(-5x - 6)^2} \text{ donc } \boxed{f'(x) = \frac{5}{(-5x - 6)^2}}$$

7. $f(x) = \frac{2 - 3x}{5x - 1}$ Formule : $\left(\frac{u}{v}\right)' = \frac{u'v - uv'}{v^2}$

$$f'(x) = \frac{-3(5x - 1) - (2 - 3x) \times 5}{(5x - 1)^2} = \frac{-15x + 3 - 10 + 15x}{(5x - 1)^2} = \boxed{\frac{-7}{(5x - 1)^2}}$$

8. $f(x) = \frac{2}{9x + 3} = 2 \times \frac{1}{9x + 3}$ Formules : $(ku)' = k \times u'$ et $\left(\frac{1}{u}\right)' = \frac{-u'}{u^2}$

$$f'(x) = 2 \times \frac{-9}{(9x + 3)^2} = \boxed{\frac{-18}{(9x + 3)^2}}$$

$$\text{Remarque : } \frac{-18}{(9x + 3)^2} = \frac{-18}{[3(3x + 1)]^2} = \frac{-18}{9(3x + 1)^2} = \boxed{\frac{-2}{(3x + 1)^2}}$$

9. $f(x) = \frac{3x^2 + x}{4} = \frac{1}{4} \times (3x^2 + x)$ Formule : $(ku)' = k \times u'$

$$\boxed{f'(x) = \frac{1}{4}(6x + 1)}$$