

Corrigé du test n° 9 (méthodes de dérivation).

$$1) (3x^3 - 7x^2 + 6x - 12)' = 9x^2 - 14x + 6.$$

$$2) (8\sqrt{x})' = 8 \cdot \frac{1}{2\sqrt{x}} = \frac{4}{\sqrt{x}}.$$

$$3) (\sqrt[3]{x^2})' = (x^{2/3})' = \frac{2}{3} \cdot x^{-1/3} = \frac{2}{3 \cdot \sqrt[3]{x}}.$$

$$4) (100 + k \cdot t^{3/2})' = 0 + k \cdot \frac{3}{2} \cdot t^{1/2} = \frac{3k\sqrt{t}}{2}.$$

$$5) [(5x^2 + 3x)^3]' = 3 \cdot (5x^2 + 3x)^2 \cdot (10x + 3).$$

$$6) (\sqrt{8x+4})' = [(8x+4)^{1/2}]' = \frac{1}{2} \cdot (8x+4)^{-1/2} \cdot 8 = \frac{4}{\sqrt{8x+4}}.$$

$$7) \left[ \frac{1}{(1-5x)^2} \right]' = [(1-5x)^{-2}]' = -2 \cdot (1-5x)^{-3} \cdot (-5) \\ = \frac{10}{(1-5x)^3}$$

$$8) [(2x+5)^3 \cdot (x^2+1)]' = 3 \cdot (2x+5)^2 \cdot 2 \cdot (x^2+1) + (2x+5)^3 \cdot 2x \\ = 2 \cdot (2x+5)^2 \cdot [3 \cdot (x^2+1) + (2x+5) \cdot x] \\ = 2 \cdot (2x+5)^2 \cdot (5x^2 + 5x + 3).$$

$$9) \left( \frac{3x^2}{2x-1} \right)' = \frac{6x \cdot (2x-1) - 3x^2 \cdot 2}{(2x-1)^2} \\ = \frac{6x^2 - 6x}{(2x-1)^2} = \frac{6x(2x-1)}{(2x-1)^2}$$

$$10) \left( \frac{1}{\sqrt{2x+1}} \right)' = [(2x+1)^{-1/2}]' = -\frac{1}{2} (2x+1)^{-3/2} \cdot 2 \\ = \frac{-1}{(2x+1)^{3/2}} = \frac{-1}{(2x+1) \cdot \sqrt{2x+1}}$$