1 Solutions de l'exercice 1

Notations : **On notera** $f'(x) = \dfrac{d}{dx} f(x)$ *(notation différentielle de Leibniz)*

1. $\dfrac{d}{dx}\left(1 - 2x + x^2\right) = 2x - 2$
2. $\dfrac{d}{dx}(2x+1)(x-3) = 4x - 5$
3. $\dfrac{d}{dx}\dfrac{1}{x^2+1} = -2\dfrac{x}{\left(x^2+1\right)^2}$
4. $\dfrac{d}{dx}\dfrac{2}{x+3} = -\dfrac{2}{(x+3)^2}$
5. $\dfrac{d}{dx}\left(x^2+1\right)^3 = 6x\left(x^2+1\right)^2$
6. $\dfrac{d}{dx}(2x+1)^2(x-3)^3 = (2x+1)(10x-9)(x-3)^2$
7. $\dfrac{d}{dx}\dfrac{2x+1}{x-2} = \dfrac{-5}{(x-2)^2}$
8. $\dfrac{d}{dx}\dfrac{x^2+2x-3}{x^2+x+1} = \dfrac{-x^2+8x+5}{\left(x+x^2+1\right)^2}$
9. $\dfrac{d}{dx}\dfrac{(x+1)^3}{x^2+1} = \dfrac{(x+1)^2\left(x^2-2x+3\right)}{\left(x^2+1\right)^2}$
10. $\dfrac{d}{dx}\left(x^2 + x + \sqrt{x} + \dfrac{1}{x} + \sqrt{2}\right) = 2x + 1 + \dfrac{1}{2\sqrt{x}} - \dfrac{1}{x^2}$

2 Solutions de l'exercice 2

1. $\dfrac{d}{dx}\left(2 - x + 3x^2\right) = 6x - 1$
2. $\dfrac{d}{dx}(2x-3)(x+1) = 4x - 1$
3. $\dfrac{d}{dx}\dfrac{1}{1-x^2} = \dfrac{2x}{\left(1-x^2\right)^2}$
4. $\dfrac{d}{dx}\dfrac{3}{x+2} = -\dfrac{3}{(x+2)^2}$
5. $\dfrac{d}{dx}\left(1-x^2\right)^4 = -8x\left(1-x^2\right)^3$
6. $\dfrac{d}{dx}(2x-3)^2(x+1)^3 = 5(2x-1)(2x-3)(x+1)^2$
7. $\dfrac{d}{dx}\dfrac{x-2}{2x+1} = \dfrac{5}{(2x+1)^2}$
8. $\dfrac{d}{dx}\dfrac{x^2-2x-3}{x^2-x+1} = \dfrac{x^2+8x-5}{\left(x^2-x+1\right)^2}$
9. $\dfrac{d}{dx}\dfrac{(1-x)^3}{1+x^3} = \dfrac{-3(x-1)^2\left(x^2+1\right)}{\left(x^3+1\right)^2}$
10. $\dfrac{d}{dx}\left(x^3 - x - \sqrt{x} - \dfrac{1}{x} + \sqrt{3}\right) = 3x^2 - 1 - \dfrac{1}{2\sqrt{x}} + \dfrac{1}{x^2}$