

Calcul littéral - Solutions

2nd – septembre 2022

Exercice 4

1.

$$\begin{aligned}A &= 3x - 7 + 10x - 6 \\&= 3x - 7 + 10x - 6 \\&= 3x + 10x - 7 - 6 \\&= (3 + 10) \times x - 13 \\&= 13x - 13\end{aligned}$$

2.

$$\begin{aligned}B &= -7t - 3 - 10t - 4t \\&= -7t - 3 + (-10 - 4) \times t \\&= -7t - 3 - 14t \\&= -7t - 14t - 3 \\&= (-7 - 14) \times t - 3 \\&= -21t - 3\end{aligned}$$

3.

$$\begin{aligned}C &= 8t - 4 - 3t - 8t \\&= 8t - 4 + (-3 - 8) \times t \\&= 8t - 4 - 11t \\&= 8t - 11t - 4 \\&= (8 - 11) \times t - 4 \\&= -3t - 4\end{aligned}$$

4.

$$\begin{aligned}D &= -9x + 2 + 9x - 4 \\&= -9x + 2 + 9x - 4 \\&= -9x + 9x + 2 - 4 \\&= (-9 + 9) \times x - 2 \\&= 0x - 2 \\&= -2\end{aligned}$$

Solution

5.

$$\begin{aligned}E &= 6t - 4 + 4t + 4 + 6t \\&= 6t - 4 + (4 + 6) \times t + 4 \\&= 6t - 4 + 4 + 10t \\&= (6 + 10) \times t + 0 \\&= 16t\end{aligned}$$

6.

$$\begin{aligned}F &= \frac{-3}{3} + 4a - 7a - 2 \\&= 4a + \frac{-3}{3} - 7a - 2 \\&= 4a - 7a + \frac{-3}{3} - 2 \\&= (4 - 7) \times a + \frac{-3}{3} + \frac{-2}{1} \\&= -3a + \frac{-3}{3} + \frac{-2 \times 3}{1 \times 3} \\&= -3a + \frac{-3}{3} + \frac{-6}{3} \\&= -3a + \frac{-3}{3} + \frac{-6}{3} \\&= -3a + \frac{-3 - 6}{3} \\&= -3a + \frac{-9}{3}\end{aligned}$$

7.

$$\begin{aligned}G &= 8x^2 + 10 + 9x^2 - 3 - 6x^2 \\&= 8x^2 + 10 + (9 - 6) \times x^2 - 3 \\&= 8x^2 + 10 - 3 + 3x^2 \\&= (8 + 3) \times x^2 + 7 \\&= 11x^2 + 7\end{aligned}$$

8.

$$\begin{aligned}H &= -8x + 10 - 4x^2 - 5 + 4x^2 \\&= -4x^2 - 8x + 10 - 5 + 4x^2 \\&= -4x^2 + 4x^2 - 8x + 10 - 5 \\&= (-4 + 4) \times x^2 - 8x + 5 \\&= -8x + 5\end{aligned}$$

9.

$$\begin{aligned}I &= 5x - 3 + 3x^2 - 5x - 7x^2 \\&= 3x^2 + 5x - 3 - 5x - 7x^2 \\&= 3x^2 - 7x^2 + 5x - 5x - 3 \\&= (3 - 7) \times x^2 + (5 - 5) \times x - 3 \\&= -4x^2 - 3\end{aligned}$$

Exercice 5

1.

$$\begin{aligned}A &= 10(-8x + 8) \\&= 10 \times -8x + 10 \times 8 \\&= 10(-8) \times x + 80 \\&= -80x + 80\end{aligned}$$

2.

$$\begin{aligned}B &= 7(-4 + 8t) \\&= 7 \times 8t + 7(-4) \\&= 7 \times 8 \times t - 28 \\&= 56t - 28\end{aligned}$$

3.

$$\begin{aligned}C &= t(3 + 7t) \\&= t \times 7t + t \times 3 \\&= 7t^2 + 3t\end{aligned}$$

Solution

4.

$$\begin{aligned}D &= -9x(7x - 3) \\&= -9x \times 7x - 9x(-3) \\&= -9 \times 7 \times x^{1+1} - 3(-9) \times x \\&= -63x^2 + 27x\end{aligned}$$

5.

$$\begin{aligned}E &= 5x(10x - 5) \\&= 5x \times 10x + 5x(-5) \\&= 5 \times 10 \times x^{1+1} - 5 \times 5 \times x \\&= 50x^2 - 25x\end{aligned}$$

6.

$$\begin{aligned}F &= \frac{9}{4} \times x(2x + 8) \\&= \frac{9}{4} \times x \times 2x + \frac{9}{4} \times x \times 8 \\&= \frac{9}{4} \times 2 \times x^{1+1} + 8 \times \frac{9}{4} \times x \\&= \frac{9 \times 2}{4} \times x^2 + \frac{8 \times 9}{4} \times x \\&= \frac{18}{4} \times x^2 + \frac{72}{4} \times x\end{aligned}$$

Exercice 6

Solution

Développer 2 - technique

1.

$$\begin{aligned}
A &= (-8x - 3)(-7x - 10) \\
&= -8x \times -7x - 8x(-10) - 3 \times -7x - 3(-10) \\
&= -8(-7) \times x^{1+1} - 10(-8) \times x - 3(-7) \times x + 30 \\
&= 80x + 21x + 56x^2 + 30 \\
&= (80 + 21) \times x + 56x^2 + 30 \\
&= 56x^2 + 101x + 30
\end{aligned}$$

2.

$$\begin{aligned}
B &= (-2t + 10)(2t + 6) \\
&= -2t \times 2t - 2t \times 6 + 10 \times 2t + 10 \times 6 \\
&= -2 \times 2 \times t^{1+1} + 6(-2) \times t + 10 \times 2 \times t + 60 \\
&= -12t + 20t - 4t^2 + 60 \\
&= (-12 + 20) \times t - 4t^2 + 60 \\
&= -4t^2 + 8t + 60
\end{aligned}$$

3.

$$\begin{aligned}
C &= (-9x - 5)(3x + 4) \\
&= -9x \times 3x - 9x \times 4 - 5 \times 3x - 5 \times 4 \\
&= -9 \times 3 \times x^{1+1} + 4(-9) \times x - 5 \times 3 \times x - 20 \\
&= -36x - 15x - 27x^2 - 20 \\
&= (-36 - 15) \times x - 27x^2 - 20 \\
&= -27x^2 - 51x - 20
\end{aligned}$$

4.

$$\begin{aligned}
D &= (6x - 2)(9x + 10) \\
&= 6x \times 9x + 6x \times 10 - 2 \times 9x - 2 \times 10 \\
&= 6 \times 9 \times x^{1+1} + 10 \times 6 \times x - 2 \times 9 \times x - 20 \\
&= 60x - 18x + 54x^2 - 20 \\
&= (60 - 18) \times x + 54x^2 - 20 \\
&= 54x^2 + 42x - 20
\end{aligned}$$

5.

$$\begin{aligned}
E &= (-8x - 4)^2 \\
&= (-8x - 4)(-8x - 4) \\
&= -8x \times -8x - 8x(-4) - 4 \times -8x - 4(-4) \\
&= -8(-8) \times x^{1+1} - 4(-8) \times x - 4(-8) \times x + 16 \\
&= 32x + 32x + 64x^2 + 16 \\
&= (32 + 32) \times x + 64x^2 + 16 \\
&= 64x^2 + 64x + 16
\end{aligned}$$

6.

$$\begin{aligned}
F &= (-8x - 10)^2 \\
&= (-8x - 10)(-8x - 10) \\
&= -8x \times -8x - 8x(-10) - 10 \times -8x - 10(-10) \\
&= -8(-8) \times x^{1+1} - 10(-8) \times x - 10(-8) \times x + 100 \\
&= 80x + 80x + 64x^2 + 100 \\
&= (80 + 80) \times x + 64x^2 + 100 \\
&= 64x^2 + 160x + 100
\end{aligned}$$

7.

$$\begin{aligned}
G &= (-10x + 6)^2 \\
&= (-10x + 6)(-10x + 6) \\
&= -10x \times -10x - 10x \times 6 + 6 \times -10x + 6 \times 6 \\
&= -10(-10) \times x^{1+1} + 6(-10) \times x + 6(-10) \times x + 36 \\
&= -60x - 60x + 100x^2 + 36 \\
&= (-60 - 60) \times x + 100x^2 + 36 \\
&= 100x^2 - 120x + 36
\end{aligned}$$

8.

$$\begin{aligned}
H &= \left(\frac{-6}{4} \times x - 7\right)^2 \\
&= \left(\frac{-6}{4} \times x - 7\right)\left(\frac{-6}{4} \times x - 7\right) \\
&= \frac{-6}{4} \times x \times \frac{-6}{4} \times x + \frac{-6}{4} \times x(-7) - 7 \times \frac{-6}{4} \times x - 7(-7) \\
&= \frac{-6}{4} \times \frac{-6}{4} \times x^{1+1} - 7 \times \frac{-6}{4} \times x - 7 \times \frac{-6}{4} \times x + 49 \\
&= \frac{-7(-6)}{4} \times x + \frac{-7(-6)}{4} \times x + \frac{-6(-6)}{4 \times 4} \times x^2 + 49 \\
&= \frac{42}{4} \times x + \frac{36}{16} \times x^2 + \frac{42}{4} \times x + 49 \\
&= 49 + \frac{36}{16} \times x^2 + \frac{42}{4} \times x + \frac{42}{4} \times x \\
&= 49 + \frac{36}{16} \times x^2 + \left(\frac{42}{4} + \frac{42}{4}\right) \times x \\
&= 49 + \frac{36}{16} \times x^2 + \frac{42+42}{4} \times x \\
&= \frac{36}{16} \times x^2 + \frac{84}{4} \times x + 49
\end{aligned}$$