

Exercice 1

Réductions

Réduire les expressions suivantes

$$A = 7x + 1 + 7x + 8$$

$$B = 3x - 6 + 4x - 2$$

$$C = -4x^2 - 6 - 6x^2 + 6 + 6x + 8$$

$$D = -1x + 3 - 8x + 1 - 9x - 2x$$

$$E = 18x + 19 + 12x + 4x + 18$$

$$F = -3x - 7 + 3x + 9$$

Exercice 2

Simple développement

Développer puis réduire les expressions suivantes

$$A = 10(x + 3)$$

$$B = -3(-5x - 6)$$

$$C = 10(6x + 4)$$

$$D = 5x(8x + 10)$$

$$E = -10x(-6x - 9) - 9$$

$$F = 8x - 3x(-6x - 7)$$

Exercice 3

Double développement

Développer puis réduire les expressions suivantes

$$A = (x + 4)(x - 4)$$

$$B = (6x + 2)(8x - 9)$$

$$C = (-8x + 8)(-2x + 2)$$

$$D = (6x + 9)(10x + 10)$$

$$E = (7x - 8)^2$$

$$F = (10x - 7)^2$$

Exercice 4

Double développement

Développer puis réduire les expressions suivantes

$$A = 2x + \frac{-8}{7} - 8x + \frac{-5}{7}$$

$$B = 8\left(-4x + \frac{3}{5}\right)$$

$$C = \left(\frac{-5}{-4}x - 4\right)\left(3x + \frac{8}{10}\right)$$

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Exercice 4

Double développement

Développer puis réduire les expressions suivantes

$$A = 2x + \frac{-8}{7} - 8x + \frac{-5}{7}$$

$$B = 8\left(-4x + \frac{3}{5}\right)$$

$$C = \left(\frac{-5}{-4}x - 4\right)\left(3x + \frac{8}{10}\right)$$

Solutions des exercices

Exercice 1

Solution

Réductions

$$\begin{aligned}A &= 7x + 1 + 7x + 8 \\ &= 7x + 1 + 7x + 8 \\ &= 7x + 7x + 1 + 8 \\ &= (7 + 7) \times x + 9 \\ &= 14x + 9\end{aligned}$$

$$\begin{aligned}B &= 3x - 6 + 4x - 2 \\ &= 3x - 6 + 4x - 2 \\ &= 3x + 4x - 6 - 2 \\ &= (3 + 4) \times x - 8 \\ &= 7x - 8\end{aligned}$$

$$\begin{aligned}C &= -4x^2 - 6 - 6x^2 + 6 + 6x + 8 \\ &= -4x^2 - 6x^2 - 6 + 14 + 6x \\ &= (-4 - 6) \times x^2 + 6x - 6 + 14 \\ &= -10x^2 + 6x + 8\end{aligned}$$

$$\begin{aligned}D &= -1x + 3 - 8x + 1 - 9x - 2x \\ &= -x + 3 + 1 - 8x + (-9 - 2) \times x \\ &= (-1 - 8) \times x + 4 - 11x \\ &= -9x + 4 - 11x \\ &= -9x - 11x + 4 \\ &= (-9 - 11) \times x + 4 \\ &= -20x + 4\end{aligned}$$

$$\begin{aligned}E &= 18x + 19 + 12x + 4x + 18 \\ &= 18x + 19 + (12 + 4) \times x + 18 \\ &= 18x + 19 + 18 + 16x \\ &= (18 + 16) \times x + 37 \\ &= 34x + 37\end{aligned}$$

$$\begin{aligned}F &= -3x - 7 + 3x + 9 \\ &= -3x - 7 + 3x + 9 \\ &= -3x + 3x - 7 + 9 \\ &= (-3 + 3) \times x + 2 \\ &= 0x + 2 \\ &= 2\end{aligned}$$

Exercice 2

Solution

Simple développement

$$\begin{aligned}A &= 10(x + 3) \\ &= 10x + 10 \times 3 \\ &= 10x + 30\end{aligned}$$

$$\begin{aligned}B &= -3(-5x - 6) \\ &= -3 \times -5x - 3(-6) \\ &= -3(-5) \times x + 18 \\ &= 15x + 18\end{aligned}$$

$$\begin{aligned}C &= 10(6x + 4) \\ &= 10 \times 6x + 10 \times 4 \\ &= 10 \times 6 \times x + 40 \\ &= 60x + 40\end{aligned}$$

$$\begin{aligned}D &= 5x(8x + 10) \\ &= 5x \times 8x + 5x \times 10 \\ &= 5 \times 8 \times x^{1+1} + 10 \times 5 \times x \\ &= 40x^2 + 50x\end{aligned}$$

$$\begin{aligned}E &= -10x(-6x - 9) - 9 \\ &= -10x \times -6x - 10x(-9) - 9 \\ &= -10(-6) \times x^{1+1} - 9(-10) \times x - 9 \\ &= 60x^2 + 90x - 9\end{aligned}$$

$$\begin{aligned}F &= 8x - 3x(-6x - 7) \\ &= 8x - 3x \times -6x - 3x(-7) \\ &= 8x - 3(-6) \times x^{1+1} - 7(-3) \times x \\ &= 8x + 21x + 18x^2 \\ &= (8 + 21) \times x + 18x^2 \\ &= 18x^2 + 29x\end{aligned}$$

Exercice 3

Solution

Double développement

$$\begin{aligned}A &= (x + 4)(x - 4) \\ &= x \times x + x(-4) + 4x + 4(-4) \\ &= x^2 - 16 + (-4 + 4) \times x \\ &= x^2 - 16\end{aligned}$$

$$\begin{aligned}B &= (6x + 2)(8x - 9) \\ &= 6x \times 8x + 6x(-9) + 2 \times 8x + 2(-9) \\ &= 6 \times 8 \times x^{1+1} - 9 \times 6 \times x + 2 \times 8 \times x - 18 \\ &= -54x + 16x + 48x^2 - 18 \\ &= (-54 + 16) \times x + 48x^2 - 18 \\ &= 48x^2 - 38x - 18\end{aligned}$$

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

$$\begin{aligned}D &= (6x + 9)(10x + 10) \\ &= 6x \times 10x + 6x \times 10 + 9 \times 10x + 9 \times 10 \\ &= 6 \times 10 \times x^{1+1} + 10 \times 6 \times x + 9 \times 10 \times x + 90 \\ &= 60x + 90x + 60x^2 + 90 \\ &= (60 + 90) \times x + 60x^2 + 90 \\ &= 60x^2 + 150x + 90\end{aligned}$$

$$\begin{aligned}E &= (7x - 8)^2 \\ &= (7x - 8)(7x - 8) \\ &= 7x \times 7x + 7x(-8) - 8 \times 7x - 8(-8) \\ &= 7 \times 7 \times x^{1+1} - 8 \times 7 \times x - 8 \times 7 \times x + 64 \\ &= -56x - 56x + 49x^2 + 64 \\ &= (-56 - 56) \times x + 49x^2 + 64 \\ &= 49x^2 - 112x + 64\end{aligned}$$

$$\begin{aligned}
F &= (10x - 7)^2 \\
&= (10x - 7)(10x - 7) \\
&= 10x \times 10x + 10x(-7) - 7 \times 10x - 7(-7) \\
&= 10 \times 10 \times x^{1+1} - 7 \times 10 \times x - 7 \times 10 \times x + 49 \\
&= -70x - 70x + 100x^2 + 49 \\
&= (-70 - 70) \times x + 100x^2 + 49 \\
&= 100x^2 - 140x + 49
\end{aligned}$$

Exercice 4

$$\begin{aligned}
A &= 2x + \frac{-8}{7} - 8x + \frac{-5}{7} \\
&= 2x + \frac{-8}{7} + \frac{-5}{7} - 8x \\
&= (2 - 8) \times x + \frac{-8 - 5}{7} \\
&= -6x + \frac{-13}{7}
\end{aligned}$$

$$\begin{aligned}
B &= 8(-4x + \frac{3}{5}) \\
&= 8 \times -4x + 8 \times \frac{3}{5} \\
&= 8(-4) \times x + \frac{8 \times 3}{5} \\
&= -32x + \frac{24}{5}
\end{aligned}$$

Solution

Double développement

$$\begin{aligned}
C &= \left(\frac{-5}{-4} \times x - 4 \right) \left(3x + \frac{8}{10} \right) \\
&= \frac{-5}{-4} \times x \times 3x + \frac{-5}{-4} \times x \times \frac{8}{10} - 4 \times 3x - 4 \times \frac{8}{10} \\
&= \frac{-5}{-4} \times 3 \times x^{1+1} + \frac{8}{10} \times \frac{-5}{-4} \times x - 4 \times 3 \times x + \frac{-4 \times 8}{10} \\
&= \frac{-5 \times 3}{-4} \times x^2 + \frac{8(-5)}{10(-4)} \times x - 12x + \frac{-32}{10} \\
&= \frac{-40}{-40} \times x + \frac{-15}{-4} \times x^2 - 12x + \frac{-32}{10} \\
&= \frac{-15}{-4} \times x^2 + \frac{-40}{-40} \times x - 12x + \frac{-32}{10} \\
&= \frac{-15}{-4} \times x^2 + \left(\frac{-40}{-40} - 12 \right) \times x + \frac{-32}{10} \\
&= \frac{-15}{-4} \times x^2 + \frac{-32}{10} + \left(\frac{-40}{-40} + \frac{-12}{1} \right) \times x \\
&= \frac{-15}{-4} \times x^2 + \frac{-32}{10} + \left(\frac{-40}{-40} + \frac{-12(-40)}{1(-40)} \right) \times x \\
&= \frac{-15}{-4} \times x^2 + \frac{-32}{10} + \left(\frac{-40}{-40} + \frac{480}{-40} \right) \times x \\
&= \frac{-15}{-4} \times x^2 + \frac{-32}{10} + \frac{-40 + 480}{-40} \times x \\
&= \frac{-15}{-4} \times x^2 + \frac{440}{-40} \times x + \frac{-32}{10}
\end{aligned}$$