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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A= $7x+1+7x+8$
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Exercice 2 — Simple développement

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Exercice 3 — Double développement

Développer puis réduire les expressions suivantes

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

Solution 1

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

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

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

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

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

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

Solution 2

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

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

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

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

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

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

Solution 3

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

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

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

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

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

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

Solution 4

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

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

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