Série N°8 : 2nde

Développement sans utiliser les identités remarquables

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Exercice N°1 :

Développer, réduire et ordonner les expressions suivantes :

$A = 3(5 - 3x)$

$B = -(3x + 2)$

$C = 2(4x + 5)$

$D = -3(3 - 2x)$

Exercice N°2 :

Développer, réduire et ordonner les expressions suivantes :

$A = (x + 1)(x + 3)$

$B = (2x + 8)(x + 5)$

$C = (4x - 1)(x + 2)$

$D = (5x + 4)(4x + 7)$

$E = (4x + 3)(3x - 2)$

$F = (7x - 4)(2x - 1)$

Exercice N°3 :

Développer, réduire et ordonner les expressions suivantes :

$A = (x + 1)(x + 3)$

$B = (2x + 8)(x + 5)$

$C = (4x - 1)(x + 2)$

$D = (5x + 4)(4x + 7)$

$E = (4x + 3)(3x - 2)$

$F = (7x - 4)(2x - 1)$

Exercice N°4 :

Développer, réduire et ordonner les expressions suivantes.

$A = (3x + 1)(4x + 2) - 5(2x - 3)$

$B = (4x - 1)(5x - 3) + 7(3x - 1)$

$C = (5x - 4)(3x + 7) + (4x - 2)(5x + 9)$

$D = (x - 2)(x + 2) - (2x + 1)(3x - 2)$

$E = 4(3x + 1)^2 - (2x + 3)(2x - 3)$

Exercice N°5 :

Développer, réduire et ordonner les expressions suivantes.

$A = (5x - 3)(2x - 7) - (2x + 1)(5 - 3x)$

$B = (2 - 3x)(5 - 2x) - 4(3x - 1)(x + 2)$

$C = (3x + 1)(x + 4) - (2x + 5)(x - 4)$

$D = (x + 3)(x - 2) - (x - 3)(x + 2)$

$E = (2x - 1)(2x + 4) - (3 - x)(5 - 2x)$

Corrigé : Développement sans utiliser les identités remarquables

Exercice N°1 :

$A = 3(5-3x) = 3\times 5 + 3\times(-3x) = 15 - 9x$

$B = -(3x+2) = -3x - 2$

$C = 2(4x+5) = 2\times 4x + 2\times 5 = 8x + 10$

$D = -3(3-2x) = -3\times 3 - 3\times(2x) = -9 + 6x$

Exercice N°2 :

$$\begin{aligned} A &= (x+1)(x+3) \\ &= x(x+3) + 1(x+3) \\ &= x^2 + 3x + x + 3 \\ &= x^2 + 4x + 3 \end{aligned}$$

$$\begin{aligned} B &= (2x+8)(x+5) \\ &= 2x(x+5) + 8(x+5) \\ &= 2x^2 + 10x + 8x + 40 \\ &= 2x^2 + 18x + 40 \end{aligned}$$

$$\begin{aligned} C &= (4x-1)(x+2) \\ &= 4x(x+2) - (x+2) \\ &= 4x^2 + 8x - x - 2 \\ &= 4x^2 + 7x - 2 \end{aligned}$$

$$\begin{aligned} D &= (5x+4)(4x+7) \\ &= 5x(4x+7) + 4(4x+7) \\ &= 20x^2 + 35x + 16x + 28 \\ &= 20x^2 + 51x + 28 \end{aligned}$$

$$\begin{aligned} E &= (4x+3)(3x-2) \\ &= 4x(3x-2) + 3(3x-2) \\ &= 12x^2 - 8x + 9x - 6 \\ &= 12x^2 + x - 6 \end{aligned}$$

$$\begin{aligned} F &= (7x-4)(2x-1) \\ &= 7x(2x-1) - 4(2x-1) \\ &= 14x^2 - 7x - 8x + 4 \\ &= 14x^2 - 15x + 4 \end{aligned}$$

Exercice N°3 :

$$\begin{aligned} A &= (x+1)(x+3) \\ &= x(x+3) + (x+3) \\ &= x^2 + 3x + x + 3 \\ &= x^2 + 4x + 3 \end{aligned}$$

$$\begin{aligned} B &= (2x+8)(x+5) \\ &= 2x(x+5) + 8(x+5) \\ &= 2x^2 + 10x + 8x + 40 \\ &= 2x^2 + 18x + 40 \end{aligned}$$

$$\begin{aligned} C &= (4x-1)(x+2) \\ &= 4x(x+2) - (x+2) \\ &= 4x^2 + 8x - x - 2 \\ &= 4x^2 + 7x - 2 \end{aligned}$$

$$\begin{aligned} D &= (5x+4)(4x+7) \\ &= 5x(4x+7) + 4(4x+7) \\ &= 20x^2 + 35x + 16x + 28 \\ &= 20x^2 + 51x + 28 \end{aligned}$$

$$\begin{aligned} E &= (4x+3)(3x-2) \\ &= 4x(3x-2) + 3(3x-2) \\ &= 12x^2 - 8x + 9x - 6 \\ &= 12x^2 + x - 6 \end{aligned}$$

$$\begin{aligned} F &= (7x-4)(2x-1) \\ &= 7x(2x-1) - 4(2x-1) \\ &= 14x^2 - 7x - 8x + 4 \\ &= 14x^2 - 15x + 4 \end{aligned}$$

Exercice N°4 :

$$\begin{aligned} A &= (3x+1)(4x+2) - 5(2x-3) \\ &= 3x(4x+2) + (4x+2) - (10x-15) \\ &= 12x^2 + 6x + 4x + 2 - 10x + 15 \\ &= 12x^2 + 10x + 2 - 10x + 15 \\ &= 12x^2 + 17 \end{aligned}$$

$$\begin{aligned} B &= (4x-1)(5x-3) + 7(3x-1) \\ &= 4x(5x-3) - (5x-3) + 21x - 7 \\ &= 20x^2 - 12x - 5x + 3 + 21x - 7 \\ &= 20x^2 + 4x - 4 \end{aligned}$$

$$
\begin{aligned}
C &= (5x-4)(3x+7)+(4x-2)(5x+9)\\
&= 5x(3x+7)-4(3x+7)+4x(5x+9)-2(5x+9)\\
&= 15x^2+35x-12x-28+20x^2+36x-10x-18\\
&= 35x^2+49x-46
\end{aligned}
$$

$$
\begin{aligned}
D &= (x-2)(x+2)-(2x+1)(3x-2)\\
&= x(x+2)-2(x+2)-[2x(3x-2)+3x-2]\\
&= x^2+2x-2x-4-\left(6x^2-4x+3x-2\right)\\
&= x^2-4-4x^2+x+2\\
&= -5x^2+x-2
\end{aligned}
$$

$$
\begin{aligned}
E &= 4(3x+1)^2-(2x+3)(2x-3)\\
&= 4(3x+1)(3x+1)-[2x(2x-3)+3(2x-3)]\\
&= 4\left[3x(3x+1)+(3x+1)\right]-\left(4x^2-6x+6x-9\right)\\
&= 4\left(9x^2+3x+3x+1\right)-\left(4x^2-9\right)\\
&= 36x^2+24x+4-4x^2+9\\
&= 32x^2+24x+13
\end{aligned}
$$

Exercice N°5 :

$$
\begin{aligned}
A &= (5x-3)(2x-7)-(2x+1)(5-3x)\\
&= 5x(2x-7)-3(2x-7)-[2x(5-3x)+(5-3x)]\\
&= 10x^2-35x-6x+21-\left(10x-6x^2+5-3x\right)\\
&= 10x^2-41x+21-\left(-6x^2+7x+5\right)\\
&= 10x^2-41x+21+6x^2-7x-5\\
&= 16x^2-48x+16
\end{aligned}
$$

$$
\begin{aligned}
B &= (2-3x)(5-2x)-4(3x-1)(x+2)\\
&= 2(5-2x)-3x(5-2x)-4\left[3x(x+2)-(x+2)\right]\\
&= 10-4x-15x+6x^2-4\left(3x^2+6x-x-2\right)\\
&= 6x^2-19x+10-4\left(3x^2+5x-2\right)\\
&= 6x^2-19x+10-12x^2-20x+8\\
&= -6x^2-39x+18
\end{aligned}
$$

$$
\begin{aligned}
C &= (3x+1)(x+4)-(2x+5)(x-4)\\
&= 3x(x+4)+(x+4)-[2x(x-4)+5(x-4)]\\
&= 3x^2+12x+x+4-\left(2x^2-8x+5x-20\right)\\
&= 3x^2+13x+4-\left(2x^2-3x-20\right)\\
&= 3x^2+13x+4-2x^2+3x+20\\
&= x^2+16x+24
\end{aligned}
$$

$$
\begin{aligned}
D &= (x+3)(x-2)-(x-3)(x+2)\\
&= x(x-2)+3(x-2)-[x(x+2)-3(x+2)]\\
&= x^2-2x+3x-6-\left(x^2+2x-3x-6\right)\\
&= x^2+x-6-\left(x^2-x-6\right)\\
&= x^2+x-6-x^2+x+6\\
&= 2x
\end{aligned}
$$

$$
\begin{aligned}
E &= (2x-1)(2x+4)-(3-x)(5-2x)\\
&= 2x(2x+4)-(2x+4)-[3(5-2x)-x(5-2x)]\\
&= 4x^2+8x-2x-4-\left(15-6x-5x+2x^2\right)\\
&= 4x^2+6x-4-\left(2x^2-11x+15\right)\\
&= 4x^2+6x-4-2x^2+11x-15\\
&= 2x^2+17x-19
\end{aligned}
$$