Entraînement au calcul algébrique : solutions.

Exercice 2. **1°)** $(a+b)^2 = a^2 + b^2 + 2ab$ $(a-b)^2 = a^2 + b^2 - 2ab$

$(a+b)(a-b) = a^2 - b^2$

2°) $(a+b+c)^2 = a^2 + b^2 + c^2 + 2(ab + ac + bc)$

Exercice 3. 1) $a^3 - b^3$ 2)$(a+b)(a^2 - ab + b^2)$ 3)$(3x+2)\left(9x^2 - 6x + 4\right)$

Exercice 4.

$A = x^2(x-1)(x+1)$ $B = (1-x)(x+4)$ $C = (4x+1)(2x+3)$ $D = (x+1)(x^2+1)$
$E = (3x+7)(5x-4)$

Exercice 5. $-\dfrac{1}{24}$ $-\dfrac{1}{n(n+1)^2}$

Exercice 6.

$$x = \frac{ad}{bc} \qquad y = \frac{ac}{bd} \qquad z = \frac{ac}{bd} \qquad t = \frac{a}{bcd}$$

$$A = \frac{2a}{c} \qquad B = \frac{2}{3} \qquad C = \frac{13}{84}$$

Exercice 7. $A = \dfrac{-2}{x+1}$ et $B = 0$

Exercice 8. $A = 3 + \sqrt{5}$ $B = \dfrac{\sqrt{\sqrt{2}+2}}{2}$ $C = 4\sqrt{6}$

Exercice 9. $A = \dfrac{1}{\sqrt{1-x^2}}$.

Exercice 10. $\dfrac{28}{3}$

Exercice 11. $x = 2^{-3}$ $y = 3.2^{100}$ $z = 2^{100}$ $t = 2.3^{15}$ $u = 3^{26}2^{38}$

Exercice 12.

$$A = 2x^2y^3 \qquad B = -\frac{3y}{x^3} \qquad C = a^2b^3c^8$$

Exercice 13. $A = \dfrac{9}{5}$ $B = \dfrac{6-a}{2-3a}$

Exercice 14. $A = ab$ et $B = 0$.

Exercice 15. $2^5 \times 5 \times 7^2$

Exercice 16. $A = -\dfrac{725}{74}$

Exercice 17.

$a = 36$, $n = 3$.

$a = 15$, $n = 6$. $\qquad$ $a = 75$, $n = 3$.

$7^2 \times 2^3$ ne peut pas s'écrire sous la forme voulue.

Exercice 19. $A = 7(9-x)(23x-7)$ $\qquad$ $B = (3x+1)(3x-1)(2x+1)$ $\qquad$ $C = (2x+5)(x+2)^2$

Exercice 23. $A = -2\sqrt{3}$

Exercice 26. $5\ln(2) - \ln(3)$
$-\dfrac{1}{2}\ln(2)$

Exercice 27. $\dfrac{e^x}{x+1}$