CALCUL LITTERAL - IDENTITES REMARQUABLES (Feuille 3)

EXERCICE 1 - Retrouver l'expression dont on connaît le carré :

a. $4x^2 = (\ \mathbf{2x}\ )^2$ **b.** $9x^2 = (\ \ldots\ldots\ )^2$ **c.** $36x^2 = (\ \ldots\ldots\ )^2$ **d.** $25x^2 = (\ \ldots\ldots\ )^2$ **e.** $49x^2 = (\ \ldots\ldots\ )^2$

f. $81x^2 = (\ \ldots\ldots\ )^2$ **g.** $100t^2 = (\ \ldots\ldots\ )^2$ **h.** $400a^2 = (\ \ldots\ldots\ )^2$ **i.** $144b^2 = (\ \ldots\ldots\ )^2$ **j.** $16y^2 = (\ \ldots\ldots\ )^2$

EXERCICE 2 - Factoriser en utilisant l'identité remarquable : $\mathbf{a^2 + 2ab + b^2 = (a + b)^2}$

$Z = 25x^2 + 30x + 9$ **$Z = (5x)^2 + 2 \times 5x \times 3 + 3^2$** **$Z = (5x + 3)^2$**	$A = x^2 + 10x + 25$	$B = x^2 + 6x + 9$
$C = 36 + 12x + x^2$	$D = 4x^2 + 12x + 9$	$E = 16x^2 + 40x + 25$

EXERCICE 3 - Factoriser en utilisant l'identité remarquable : $\mathbf{a^2 - 2ab + b^2 = (a - b)^2}$

$Z = 9x^2 - 30x + 25$ **$Z = (3x)^2 - 2 \times 3x \times 5 + 5^2$** **$Z = (3x - 5)^2$**	$A = x^2 - 2x + 1$	$B = 4x^2 - 20x + 25$
$C = 9 - 6x + x^2$	$D = 36x^2 - 12x + 1$	$E = 100 - 40x + 4x^2$

EXERCICE 4

a. Factoriser en utilisant l'identité remarquable : $\mathbf{a^2 - b^2 = (a + b)(a - b)}$

$Z = x^2 - 81$ **$Z = x^2 - 9^2$** **$Z = (x + 9)(x - 9)$**	$A = x^2 - 4$	$B = 9 - x^2$
$C = x^2 - 16$	$D = x^2 - 49$	$E = 25 - x^2$

b. Même consigne que l'exercice précédent :

$Z = 4x^2 - 81$ **$Z = (2x)^2 - 9^2$** **$Z = (2x + 9)(2x - 9)$**	$A = 4x^2 - 9$	$B = 16 - 9x^2$
$C = 16x^2 - 25$	$D = 49x^2 - 36$	$E = 4 - 64x^2$

CALCUL LITTERAL - IDENTITES REMARQUABLES

CORRIGE

EXERCICE 1 - Retrouver l'expression dont on connaît le carré :

a. $4x^2 = (\ \mathbf{2x}\ )^2$ **b.** $9x^2 = (\ \mathbf{3x}\ )^2$ **c.** $36x^2 = (\ \mathbf{6x}\ )^2$ **d.** $25x^2 = (\ \mathbf{5x}\ )^2$ **e.** $49x^2 = (\ \mathbf{7x}\ )^2$

f. $81x^2 = (\ \mathbf{9x}\ )^2$ **g.** $100t^2 = (\ \mathbf{10t}\ )^2$ **h.** $400a^2 = (\ \mathbf{20a}\ )^2$ **i.** $144b^2 = (\ \mathbf{12b}\ )^2$ **j.** $16y^2 = (\ \mathbf{4y}\ )^2$

EXERCICE 2 - Factoriser en utilisant l'identité remarquable : $\mathbf{a^2 + 2ab + b^2 = (a + b)^2}$

$\mathbf{Z = 25x^2 + 30x + 9}$ $\mathbf{Z = (5x)^2 + 2 \times 5x \times 3 + 3^2}$ $\mathbf{Z = (5x + 3)^2}$	$A = x^2 + 10x + 25$ $\mathbf{A = x^2 + 2 \times x \times 5 + 5^2}$ $\mathbf{A = (x + 5)^2}$	$B = x^2 + 6x + 9$ $\mathbf{B = x^2 + 2 \times x \times 3 + 3^2}$ $\mathbf{B = (x + 3)^2}$
$C = 36 + 12x + x^2$ $\mathbf{C = 6^2 + 2 \times 6 \times x + x^2}$ $\mathbf{C = (6 + x)^2}$	$D = 4x^2 + 12x + 9$ $\mathbf{D = (2x)^2 + 2 \times 2x \times 3 + 3^2}$ $\mathbf{D = (2x + 3)^2}$	$E = 16x^2 + 40x + 25$ $\mathbf{B = (4x)^2 + 2 \times 4x \times 5 + 5^2}$ $\mathbf{B = (4x + 5)^2}$

EXERCICE 3 - Factoriser en utilisant l'identité remarquable : $\mathbf{a^2 - 2ab + b^2 = (a - b)^2}$

$\mathbf{Z = 9x^2 - 30x + 25}$ $\mathbf{Z = (3x)^2 - 2 \times 3x \times 5 + 5^2}$ $\mathbf{Z = (3x - 5)^2}$	$A = x^2 - 2x + 1$ $\mathbf{A = x^2 - 2 \times x \times 1 + 1^2}$ $\mathbf{A = (x - 1)^2}$	$B = 4x^2 - 20x + 25$ $\mathbf{B = (2x)^2 - 2 \times 2x \times 5 + 5^2}$ $\mathbf{B = (2x - 5)^2}$
$C = 9 - 6x + x^2$ $\mathbf{C = 3^2 - 2 \times 3 \times x + x^2}$ $\mathbf{C = (3 - x)^2}$	$D = 36x^2 - 12x + 1$ $\mathbf{D = (6x)^2 - 2 \times 6x \times 1 + 1^2}$ $\mathbf{D = (6x - 1)^2}$	$E = 100 - 40x + 4x^2$ $\mathbf{E = 10^2 - 2 \times 10 \times 2x + (2x)^2}$ $\mathbf{E = (10 - 2x)^2}$

EXERCICE 4

a. Factoriser en utilisant l'identité remarquable : $\mathbf{a^2 - b^2 = (a + b)(a - b)}$

$\mathbf{Z = x^2 - 81}$ $\mathbf{Z = x^2 - 9^2}$ $\mathbf{Z = (x + 9)(x - 9)}$	$A = x^2 - 4$ $\mathbf{A = x^2 - 2^2}$ $\mathbf{A = (x + 2)(x - 2)}$	$B = 9 - x^2$ $\mathbf{B = 3^2 - x^2}$ $\mathbf{B = (3 + x)(3 - x)}$
$C = x^2 - 16$ $\mathbf{C = x^2 - 4^2}$ $\mathbf{C = (x + 4)(x - 4)}$	$D = x^2 - 49$ $\mathbf{D = x^2 - 7^2}$ $\mathbf{D = (x + 7)(x - 7)}$	$E = 25 - x^2$ $\mathbf{E = 5^2 - x^2}$ $\mathbf{E = (5 + x)(5 - x)}$

b. Même consigne que l'exercice précédent :

$\mathbf{Z = 4x^2 - 81}$ $\mathbf{Z = (2x)^2 - 9^2}$ $\mathbf{Z = (2x + 9)(2x - 9)}$	$A = 4x^2 - 9$ $\mathbf{A = (2x)^2 - 3^2}$ $\mathbf{A = (2x + 3)(2x - 3)}$	$B = 16 - 9x^2$ $\mathbf{B = 4^2 - (3x)^2}$ $\mathbf{B = (4 + 2x)(4 - 2x)}$
$C = 16x^2 - 25$ $\mathbf{C = (4x)^2 - 5^2}$ $\mathbf{C = (4x + 5)(4x - 5)}$	$D = 49x^2 - 36$ $\mathbf{D = (7x)^2 - 6^2}$ $\mathbf{D = (7x + 6)(7x - 6)}$	$E = 4 - 64x^2$ $\mathbf{E = 2^2 - (8x)^2}$ $\mathbf{E = (2 + 8x)(2 - 8x)}$