Groupe des Instituts Excel

Corrections

Corrigé de l'exercice 1

Factoriser chacune des expressions littérales suivantes :

$A = 9x^2 - 81$
$A = \left(\sqrt{9}\,x\right)^2 - \left(\sqrt{81}\right)^2$
$A = \left(\sqrt{9}\,x\sqrt{81}\right) \times \left(\sqrt{9}\,x - \left(\sqrt{81}\right)\right)$
$\boxed{A = (3x+9) \times (3x-9)}$

$B = (6x-6) \times (2x-2) + (-2x-10) \times (2x-2)$
$B = (2x-2) \times (6x-6-2x-10)$
$B = (2x-2) \times (6x-2x-6-10)$
$\boxed{B = (2x-2) \times (4x-16)}$

$C = 100x^2 + 100x + 25$
$C = (10x)^2 + 2 \times 10x \times 5 + 5^2$
$\boxed{C = (10x+5)^2}$

$D = -100 + (-5x-7)^2$
$D = -10^2 + (-5x-7)^2$
$D = (-5x-7+10) \times (-5x-7-10)$
$\boxed{D = (-5x+3) \times (-5x-17)}$

$E = (5x+1)^2 + (5x+1) \times (9x+10)$
$E = (5x+1) \times (5x+1) + (5x+1) \times (9x+10)$
$E = (5x+1) \times (5x+1+9x+10)$
$E = (5x+1) \times (5x+9x+1+10)$
$\boxed{E = (5x+1) \times (14x+11)}$

$F = (5x-2) \times (7x-5) - (5x-2)$
$F = (5x-2) \times (7x-5) - (5x-2) \times 1$
$F = (5x-2) \times (7x-5-1)$
$\boxed{F = (5x-2) \times (7x-6)}$

Corrigé de l'exercice 2

Factoriser chacune des expressions littérales suivantes :

$A = 36x^2 - 1$
$A = \left(\sqrt{36}\,x\right)^2 - \left(\sqrt{1}\right)^2$
$A = \left(\sqrt{36}\,x\sqrt{1}\right) \times \left(\sqrt{36}\,x - \left(\sqrt{1}\right)\right)$
$\boxed{A = (6x+1) \times (6x-1)}$

$B = (9x+4)^2 - 49x^2$
$B = (9x+4)^2 - (7x)^2$
$B = (9x+4+7x) \times (9x+4-7x)$
$B = (9x+7x+4) \times (9x-7x+4)$
$\boxed{B = (16x+4) \times (2x+4)}$

$C = -(8x-6) \times (5x+10) + (4x-9) \times (5x+10)$
$C = (5x+10) \times (-(8x-6) + 4x - 9)$
$C = (5x+10) \times (-8x+6+4x-9)$
$C = (5x+10) \times (-8x+4x+6-9)$
$\boxed{C = (5x+10) \times (-4x-3)}$

$D = 9x^2 + 18x + 9$
$D = (3x)^2 + 2 \times 3x \times 3 + 3^2$
$\boxed{D = (3x+3)^2}$

$E = 5x + 10 + (5x+10) \times (9x-4)$
$E = (5x+10) \times 1 + (5x+10) \times (9x-4)$
$E = (5x+10) \times (1+9x-4)$
$E = (5x+10) \times (9x+1-4)$
$\boxed{E = (5x+10) \times (9x-3)}$

$F = (7x+5) \times (-4x+5) + (7x+5)^2$
$F = (7x+5) \times (-4x+5) + (7x+5) \times (7x+5)$
$F = (7x+5) \times (-4x+5+7x+5)$
$F = (7x+5) \times (-4x+7x+5+5)$
$\boxed{F = (7x+5) \times (3x+10)}$

Corrigé de l'exercice 3

Factoriser chacune des expressions littérales suivantes :

$A = -(-10x+9)^2 + x^2$
$A = (x - 10x + 9) \times (x - (-10x + 9))$
$A = (-9x + 9) \times (x + 10x - 9)$
$\boxed{A = (-9x+9) \times (11x - 9)}$

$B = 25x^2 - 36$
$B = \left(\sqrt{25}\,x\right)^2 - \left(\sqrt{36}\right)^2$
$B = \left(\sqrt{25}\,x\sqrt{36}\right) \times \left(\sqrt{25}\,x - \left(\sqrt{36}\right)\right)$
$\boxed{B = (5x+6) \times (5x - 6)}$

$C = (4x-7) \times (2x+4) + (4x-7) \times (2x-7)$
$C = (4x-7) \times (2x + 4 + 2x - 7)$
$C = (4x-7) \times (2x + 2x + 4 - 7)$
$\boxed{C = (4x-7) \times (4x - 3)}$

$D = 100x^2 + 140x + 49$
$D = (10x)^2 + 2 \times 10x \times 7 + 7^2$
$\boxed{D = (10x+7)^2}$

$E = -(6x-7) \times (x-5) + x - 5$
$E = -(6x-7) \times (x-5) + (x-5) \times 1$
$E = (x-5) \times (-(6x-7) + 1)$
$E = (x-5) \times (-6x + 7 + 1)$
$\boxed{E = (x-5) \times (-6x+8)}$

$F = (4x+7) \times (-3x+5) + (4x+7)^2$
$F = (4x+7) \times (-3x+5) + (4x+7) \times (4x+7)$
$F = (4x+7) \times (-3x + 5 + 4x + 7)$
$F = (4x+7) \times (-3x + 4x + 5 + 7)$
$\boxed{F = (4x+7) \times (x+12)}$

Corrigé de l'exercice 4

Factoriser chacune des expressions littérales suivantes :

$A = 81x^2 - 9$
$A = \left(\sqrt{81}\,x\right)^2 - \left(\sqrt{9}\right)^2$
$A = \left(\sqrt{81}\,x\sqrt{9}\right) \times \left(\sqrt{81}\,x - \left(\sqrt{9}\right)\right)$
$\boxed{A = (9x+3) \times (9x - 3)}$

$B = 81x^2 + 126x + 49$
$B = (9x)^2 + 2 \times 9x \times 7 + 7^2$
$\boxed{B = (9x+7)^2}$

$C = -(9x-6)^2 + 1$
$C = -(9x-6)^2 + 1^2$
$C = (1 + 9x - 6) \times (1 - (9x - 6))$
$C = (9x + 1 - 6) \times (1 - 9x + 6)$
$C = (9x + 1 - 6) \times (-9x + 1 + 6)$
$\boxed{C = (9x-5) \times (-9x+7)}$

$D = (9x+6) \times (9x+9) + (5x+5) \times (9x+6)$
$D = (9x+6) \times (9x + 9 + 5x + 5)$
$D = (9x+6) \times (9x + 5x + 9 + 5)$
$\boxed{D = (9x+6) \times (14x+14)}$

$E = (3x+10) \times (5x-6) + 3x + 10$
$E = (3x+10) \times (5x-6) + (3x+10) \times 1$
$E = (3x+10) \times (5x - 6 + 1)$
$\boxed{E = (3x+10) \times (5x-5)}$

$F = (-10x+3) \times (-10x+8) - (-10x+3)^2$
$F = (-10x+3) \times (-10x+8) - (-10x+3) \times (-10x+3)$
$F = (-10x+3) \times (-10x + 8 - (-10x+3))$
$F = (-10x+3) \times (-10x + 8 + 10x - 3)$
$F = (-10x+3) \times (-10x + 10x + 8 - 3)$
$\boxed{F = (-10x+3) \times 5}$

Corrigé de l'exercice 5

Factoriser chacune des expressions littérales suivantes :

$A = 16\,x^2 + 8\,x + 1$
$A = (4\,x)^2 + 2 \times 4\,x \times 1 + 1^2$
$\boxed{A = (4\,x + 1)^2}$

$B = -36\,x^2 + (-4\,x + 7)^2$
$B = -(6\,x)^2 + (-4\,x + 7)^2$
$B = (-4\,x + 7 + 6\,x) \times (-4\,x + 7 - 6\,x)$
$B = (-4\,x + 6\,x + 7) \times (-4\,x - 6\,x + 7)$
$\boxed{B = (2\,x + 7) \times (-10\,x + 7)}$

$C = -(6\,x + 7) \times (9\,x + 5) + (9\,x + 5) \times (-4\,x + 10)$
$C = (9\,x + 5) \times (-(6\,x + 7) - 4\,x + 10)$
$C = (9\,x + 5) \times (-6\,x - 7 - 4\,x + 10)$
$C = (9\,x + 5) \times (-6\,x - 4\,x - 7 + 10)$
$\boxed{C = (9\,x + 5) \times (-10\,x + 3)}$

$D = -49\,x^2 + 1$
$D = \left(\sqrt{1}\right)^2 - \left(\sqrt{49}\,x\right)^2$
$D = \left(\sqrt{1}\sqrt{49}\,x\right) \times \left(\sqrt{1} - \left(\sqrt{49}\,x\right)\right)$
$D = \left(\sqrt{49}\,x + \sqrt{1}\right) \times (1 - 7\,x)$
$D = \left(\sqrt{49}\,x + \sqrt{1}\right) \times (-7\,x + 1)$
$\boxed{D = (7\,x + 1) \times (-7\,x + 1)}$

$E = 9\,x + 2 + (9\,x + 2) \times (6\,x + 2)$
$E = (9\,x + 2) \times 1 + (9\,x + 2) \times (6\,x + 2)$
$E = (9\,x + 2) \times (1 + 6\,x + 2)$
$E = (9\,x + 2) \times (6\,x + 1 + 2)$
$\boxed{E = (9\,x + 2) \times (6\,x + 3)}$

$F = (-10\,x - 6)^2 + (-4\,x + 3) \times (-10\,x - 6)$
$F = (-10\,x - 6) \times (-10\,x - 6) + (-4\,x + 3) \times (-10\,x - 6)$
$F = (-10\,x - 6) \times (-10\,x - 6 - 4\,x + 3)$
$F = (-10\,x - 6) \times (-10\,x - 4\,x - 6 + 3)$
$\boxed{F = (-10\,x - 6) \times (-14\,x - 3)}$

Corrigé de l'exercice 6

Factoriser chacune des expressions littérales suivantes :

$A = -64\,x^2 + 36$
$A = \left(\sqrt{36}\right)^2 - \left(\sqrt{64}\,x\right)^2$
$A = \left(\sqrt{36}\sqrt{64}\,x\right) \times \left(\sqrt{36} - \left(\sqrt{64}\,x\right)\right)$
$A = \left(\sqrt{64}\,x + \sqrt{36}\right) \times (6 - 8\,x)$
$A = \left(\sqrt{64}\,x + \sqrt{36}\right) \times (-8\,x + 6)$
$\boxed{A = (8\,x + 6) \times (-8\,x + 6)}$

$B = (-9\,x + 4)^2 - 64\,x^2$
$B = (-9\,x + 4)^2 - (8\,x)^2$
$B = (-9\,x + 4 + 8\,x) \times (-9\,x + 4 - 8\,x)$
$B = (-9\,x + 8\,x + 4) \times (-9\,x - 8\,x + 4)$
$\boxed{B = (-x + 4) \times (-17\,x + 4)}$

$C = 25\,x^2 + 20\,x + 4$
$C = (5\,x)^2 + 2 \times 5\,x \times 2 + 2^2$
$\boxed{C = (5\,x + 2)^2}$

$D = (-3\,x + 2) \times (8\,x + 10) + (-3\,x + 2) \times (8\,x - 6)$
$D = (-3\,x + 2) \times (8\,x + 10 + 8\,x - 6)$
$D = (-3\,x + 2) \times (8\,x + 8\,x + 10 - 6)$
$\boxed{D = (-3\,x + 2) \times (16\,x + 4)}$

$E = 4\,x - 4 + (6\,x + 2) \times (4\,x - 4)$
$E = (4\,x - 4) \times 1 + (6\,x + 2) \times (4\,x - 4)$
$E = (4\,x - 4) \times (1 + 6\,x + 2)$
$E = (4\,x - 4) \times (6\,x + 1 + 2)$
$\boxed{E = (4\,x - 4) \times (6\,x + 3)}$

$F = (-4\,x + 9)^2 - (-10\,x + 7) \times (-4\,x + 9)$
$F = (-4\,x + 9) \times (-4\,x + 9) - (-10\,x + 7) \times (-4\,x + 9)$
$F = (-4\,x + 9) \times (-4\,x + 9 - (-10\,x + 7))$
$F = (-4\,x + 9) \times (-4\,x + 9 + 10\,x - 7)$
$F = (-4\,x + 9) \times (-4\,x + 10\,x + 9 - 7)$
$\boxed{F = (-4\,x + 9) \times (6\,x + 2)}$