

Exercice 1 (commun aux deux sujets)

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

Exercice 2

1) $(x+4)^2 = x^2 + 2 \times 4 \times x + 4^2 = x^2 + 8x + 16$

2) $(3x+5)^2 = (3x)^2 + 2 \times 5 \times 3x + 5^2 = 9x^2 + 30x + 25$

3) $(7x-3)^2 = (7x)^2 - 2 \times 3 \times 7x + 3^2 = 49x^2 - 42x + 9$

4) $(2x-8)^2 = (2x)^2 - 2 \times 8 \times 2x + 8^2 = 4x^2 - 32x + 64$

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

6) $(7-2x)(7+2x) = 7^2 - (2x)^2 = 49 - 4x^2$

7) $(5-2x)(8+x) = 5 \times 8 + 5 \times x - 2x \times 8 - 2x \times x = 40 + 5x - 16x - 2x^2$

Donc $(5-2x)(8+x) = 40 - 11x - 2x^2$

Exercice 3

1) $106^2 = (100+6)^2 = 100^2 + 2 \times 100 \times 6 + 6^2 = 10\,000 + 1\,200 + 36 = 11\,236$

2) $98^2 = (100-2)^2 = 100^2 - 2 \times 100 \times 2 + 2^2 = 10\,000 - 400 + 4 = 9\,604$

3) $999 \times 1001 = (1\,000-1) \times (1\,000+1) = 1\,000^2 - 1^2 = 1\,000\,000 - 1 = 999\,999$

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

Exercice 2

1) $(x+6)^2 = x^2 + 2 \times 6 \times x + 6^2 = x^2 + 12x + 36$

2) $(5x+3)^2 = (5x)^2 + 2 \times 3 \times 5x + 3^2 = 25x^2 + 30x + 9$

3) $(3x-7)^2 = (3x)^2 - 2 \times 7 \times 3x + 7^2 = 9x^2 - 42x + 49$

4) $(8x-2)^2 = (8x)^2 - 2 \times 2 \times 8x + 2^2 = 64x^2 - 32x + 4$

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

6) $(2-7x)(2+7x) = 2^2 - (7x)^2 = 4 - 49x^2$

7) $(8-2x)(5+x) = 8 \times 5 + 8 \times x - 2x \times 5 - 2x \times x = 40 + 8x - 10x - 2x^2$

Donc $(8-2x)(5+x) = 40 - 2x - 2x^2$

Exercice 3

1) $104^2 = (100+4)^2 = 100^2 + 2 \times 100 \times 4 + 4^2 = 10\,000 + 800 + 16 = 10\,816$

2) $97^2 = (100-3)^2 = 100^2 - 2 \times 100 \times 3 + 3^2 = 10\,000 - 600 + 9 = 9\,409$

3) $99 \times 101 = (100-1) \times (100+1) = 100^2 - 1^2 = 10\,000 - 1 = 9\,999$