

Special products

№1. Show that the following equality holds:

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

№2. Simplify an expression:

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|---|---|
| 1. $(a + 2)(a - 2) - 3a(1 + a);$ | 3. $(2x - y)(2x + y) + (3x + y)(y - 3x);$ |
| 2. $(3a + 1)(3a - 1) + (a - 5)(a + 5);$ | 4. $(z - 2)(5 - z) - (3 - z)(z + 3).$ |

№3. Factor the expressions:

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|------------------------------|---------------------------------------|
| 1. $(50 - 1)^2 - 49;$ | 3. $a^2 - (a + 4)^2;$ |
| 2. $(3x + 2)^2 - (x - 5)^2;$ | 4. $(2a + b - c)^2 - (2a + b + c)^2.$ |

№4. Show that the following equality holds:

$$(a \pm b)^2 = a^2 \pm 2ab + b^2.$$

№5. Simplify an expression:

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| 1. $8a + (a - 2)^2;$ | 3. $x(3x + 2)^2 - 2x(9 + x)^2;$ |
| 2. $(6a - b)^2 - (4a + b)^2;$ | 4. $(x - 1)^2 - (x + 4)(x - 4).$ |

№6. Write the trinomial as a square of a binomial:

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|----------------------------|-------------------------------|
| 1. $x^2 + 12x + 36;$ | 4. $36a^2 + 60ab + 25b^2;$ |
| 2. $16a^2 - 40a + 25;$ | 5. $36x^2 + 49y^2 + 84xy;$ |
| 3. $49m^2 + 56mn + 16n^2;$ | 6. $100x^4 + 25x^2y^2 + y^4.$ |