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Multiplying Special Cases

Unit 8 Lesson 4

Multiplying Special Cases

Students will be able to:

Perform multiplication on Special Cases of Polynomials using
Special product formula

Key Vocabulary:

- Multiplication
- Square of Binomial
- Sum and Difference of Same Two Terms
- Special Cases
- Special Product

Multiplying Special Cases

Special Product:

Square of Binomial

$$(x + y)^2 = x^2 + 2xy + y^2$$

$$(x - y)^2 = x^2 - 2xy + y^2$$

Multiplying Special Cases

Special Product:

Sum and Difference of The Same Two Terms

$$(x + y)(x - y) = x^2 - y^2$$

Multiplying Special Cases

Sample Problem 1: Find the product of the following Square of binomials.

1. $(a^3 - 5)^2$

2. $(3x + 7)^2$

3. $(5x^3 - 9y^4)^2$

4. $(x^4 + 3a^5)^2$

Multiplying Special Cases

Sample Problem 1: Find the product of the following Square of binomials.

$$1.(a^3 - 5)^2$$

Special product formula: $(x - y)^2 = x^2 - 2xy + y^2$

$$(a^3)^2 - 2(a^3)(5) + (5)^2$$

$$a^6 - 10a^3 + 25$$

Multiplying Special Cases

Sample Problem 1: Find the product of the following Square of binomials.

$$2.(3x + 7)^2$$

Special product formula: $(x + y)^2 = x^2 + 2xy + y^2$

$$(3x)^2 + 2(3x)(7) + (7)^2$$

$$9x^2 + 42x + 49$$

Multiplying Special Cases

Sample Problem 1: Find the product of the following Square of binomials.

$$3.(5x^3 - 9y^4)^2$$

Special product formula: $(x - y)^2 = x^2 - 2xy + y^2$

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

$$25x^6 - 90x^3y^4 + 81y^8$$

Multiplying Special Cases

Sample Problem 1: Find the product of the following Square of binomials.

$$4.(x^4 + 3a^5)^2$$

Special product formula: $(x + y)^2 = x^2 + 2xy + y^2$

$$(x^4)^2 + 2(x^4)(3a^5) + (3a^5)^2$$

$$x^8 + 6x^4a^5 + 9a^{10}$$

Multiplying Special Cases

Sample Problem 2: Find the product of the Sum and Difference of same two terms.

$$5.(4x + 5y)(4x - 5y)$$

$$6.(3x - 7)(3x + 7)$$

$$7.(6x^{11} - 11y^4)(6x^{11} + 11y^4)$$

$$8.(x^{11} - y^{21})(x^{11} + y^{21})$$

Multiplying Special Cases

Sample Problem 2: Find the product of the Sum and Difference of same two terms.

$$5.(4x + 5y)(4x - 5y)$$

Special product formula: $(x + y)(x - y) = x^2 - y^2$

$$(4x)^2 - (5y)^2$$

$$16x^2 - 25y^2$$

Multiplying Special Cases

Sample Problem 2: Find the product of the Sum and Difference of same two terms.

$$6.(3x - 7)(3x + 7)$$

Special product formula: $(x + y)(x - y) = x^2 - y^2$

$$(3x)^2 - (7)^2$$

$$9x^2 - 49$$

Multiplying Special Cases

Sample Problem 2: Find the product of the Sum and Difference of same two terms.

$$7.(6x^{11} - 11y^4)(6x^{11} + 11y^4)$$

Special product formula: $(x + y)(x - y) = x^2 - y^2$

$$(6x^{11})^2 - (11y^4)^2$$

$$36x^{22} - 121y^8$$

Multiplying Special Cases

Sample Problem 2: Find the product of the Sum and Difference of same two terms.

$$8.(x^{11} - y^{21})(x^{11} + y^{21})$$

Special product formula: $(x + y)(x - y) = x^2 - y^2$

$$(x^{11})^2 - (y^{21})^2$$

$$x^{22} - y^{42}$$