

L3 Multiplying Polynomials

Tuesday, September 6, 2022 6:53 PM



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Lesson 3 Multiplying Polynomials

Distributive property: Multiply each term of the first polynomial by each term in the second polynomial.

$$2(x-3)$$
$$2x-6$$

Recall:

Polynomial: an algebraic expression containing one or more terms

Multiplying Two Binomials

Binomial: a polynomial containing two terms

Steps:

- 1.) Multiply each term of the first binomial with each term of the second binomial.
- 2.) Combine like terms.

Example 1

Multiply.

$$(2x + 3)(3x - 4)$$

$$6x^2 - 8x + 9x - 12$$

$$6x^2 + x - 12$$

Multiply, using distributive property

Combine like terms

Example 2

Binomial Squared

Multiply. $(3x - 5y)^2$

$$(3x - 5y)(3x - 5y)$$

$$9x^2 - 15xy - 15xy + 25y^2$$

$$9x^2 - 30xy + 25y^2$$

F irst
O utside
I nside
L ast

Multiplying Binomial by Trinomial

Trinomial: a polynomial containing three terms

Steps:

- 1.) Multiply each term of the binomial with each term of the trinomial
- 2.) Combine like terms.

Example 3
Multiply:
 $(3x^2 - 2y)(x^2 - xy - 6y^2)$

$$3x^4 - 3x^3y - 18x^2y^2 - 2x^2y + 2xy^2 + 12y^3$$

Multiplying Trinomial by Trinomial

Example 4

Multiply:
 $(2x^2 - 3x + 2)(x^2 - 3x + 2)$

$$\cancel{2x^4} - \cancel{6x^3} + \cancel{4x^2} - \cancel{3x^3} + \cancel{9x^2} - \cancel{6x} + \cancel{2x^2} - \cancel{6x} + 4$$

$$2x^4 - 9x^3 + 15x^2 - 12x + 4$$

Factors and Products

Example 5 Simplifying Sums and Differences of Polynomial Products

Follow order of operations.

BEDMAS

Follow order of operations.

Expand and simplify.

BEDMAS
or
PEDMAS

a) $(2x - 7)(3x + 5) - (2x - 1)^2$

$$(2x-7)(3x+5) - (2x-1)(2x-1)$$

$$6x^2 + 10x - 21x - 35 - (4x^2 - 2x - 2x + 1)$$

$$6x^2 - 11x - 35 - 1(4x^2 - 4x + 1)$$

$$6x^2 - 11x - 35 - 4x^2 + 4x - 1$$

$$2x^2 - 7x - 36$$

b) $(4m + 1)^3 - 2(2m - 1)(-3m + 4)$

$$(4m+1)(4m+1)(4m+1) - 2(2m-1)(-3m+4)$$

$$(4m+1)(16m^2 + 4m + 4m + 1) - 2(-6m^2 + 8m + 3m - 4)$$

$$(4m+1)(16m^2 + 8m + 1) - 2(-6m^2 + 11m - 4)$$

$$64m^3 + 32m^2 + 4m + 16m^2 + 8m + 1 + 12m^2 - 22m + 8$$

$$64m^3 + 60m^2 - 10m + 9$$

simplify
inside
brackets

Finish maze
Pg 128
1, i, j, n
2, f, g, h
3, g, 6, b, d