L7 Multiplying Polynomials

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Lesson 7 Multiplying Polynomials_____

Example 1 – Using Distributive Property

Expand and simplify:

a) $(2x - y)(x + 2y - 5)$

$2x^2 + 4xy - 10x - xy - 2y^2 + 5y$

$2x^2 + 3xy - 10x + 5y - 2y^2$

b) $(3x^2 - 2y)(x^2 - xy - 6y^2)$

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

* no like terms

c) $(2x^2 - 3x + 2)(x^2 - 3x + 2)$

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

trinomial × trinomial

3×3

9 terms

$2x^4 - 6x^3 + 4x^2 - 3x^3 + 9x^2 - 6x + 2x^2 - 6x + 4$

* then combine any like terms

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

Example 2

Expand and simplify:
$(3t + 4)^3$

$(3t + 4)(3t + 4)(3t + 4)$

$(3t + 4)(9t^2 + 12t + 12t + 16)$

$(3t + 4)(9t^2 + 24t + 16)$

$27t^3 + 72t^2 + 48t + 36t^2 + 96t + 64$

$27t^3 + 108t^2 + 144t + 64$

Example 3 – Simplifying Sums and Differences of Polynomial Products

Expand and simplify

a) $(2c - 3)(c + 5) + (c - 3)(-3c + 1)$
        product   +   product

$2c^2 + 10c - 3c - 15 + (-3c^2 + c + 9c - 3)$

$2c^2 + 7c - 15 - 3c^2 + 10c - 3$

$-c^2 + 17c - 18$

b) $(4m + 1)(3m - 2) - 2(2m - 1)(-3m + 4)$
       product   −   product

$12m^2 - 8m + 3m - 2 - 2(-6m^2 + 8m + 3m - 4)$

$12m^2 - 5m - 2 - 2(-6m^2 + 11m - 4)$

$12m^2 - 5m - 2 + 12m^2 - 22m + 8$

$24m^2 - 27m + 6$

Assign maze and pg 186 #15 a, c, e, f

Exercise 7 Multiplying Polynomials

1.) Expand and simplify: (follow example 1)
   a.) $(2x - 4)(3x^2 + x - 2)$
   b.) $(x - 2y)(x^2 + xy - 4y^2)$
   c.) $(x + 3)(x^2 - 3x + 9)$
   d.) $(2y^2 + 3y - 1)(y^2 + 4y + 5)$
2.) Expand and simplify: (follow example 2)
   a.) $(2x - 5)^2$
   b.) $(4x + 1)^3$
3.) Expand and simplify: (follow example 3)
   a.) $(x - 2)(5x - 3) + (x + 1)(4x + 1)$
   b.) $(4x - 2)(3x - 5) - 2(7x + 5)(2x - 6)$
4.) Expand and simplify: (follow example 2, then 3)
   $(x + 7)(2x - 4) - (3x + 1)^2$
5.) Determine the cube root of 5832, using prime factorization. (follow L2, ex 2)
6.) Factor: (follow L3, ex 3)
   $8x^2y - 24xy + 16xy^2$

Textbook: Pg 186 #4c, d, 5b, e, 8d, 10c, 11, 12, 14, 15b, d, f