

Name: KEY Hour: _____ Date: _____

NOTES: Section 10.2 – Multiplying Polynomials

Goals: #1 - I can multiply polynomials.



Homework: Section 10.2 Worksheet

Warm Up: Add or subtract the following polynomials.

1. $(\underline{5x^2} - \underline{4x} - \underline{3}) + (\underline{-3x^2} + \underline{5x} + \underline{7})$

$$5x^2 - 3x^2 - 4x + 5x - 3 + 7$$

$$\boxed{2x^2 + x + 4}$$

2. $(\underline{7y^3} + \underline{4y^2} - \underline{5y} + \underline{3}) + (\underline{-8y^3} + \underline{4y^2} + \underline{2y} + \underline{-2})$

$$7y^3 - 8y^3 + 4y^2 + 4y^2 - 5y + 2y + 3 - 2$$

$$\boxed{-y^3 + 8y^2 - 3y + 1}$$

Notes:

To multiply polynomials, simply distribute!

Example #1: Find the product.

1. $3x^2(\underline{7x} - \underline{x^3} - \underline{3})$

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

$$21x^3 - 3x^5 - 9x^2$$

$$\boxed{-3x^5 + 21x^3 - 9x^2}$$

2. $-4x(\underline{2x} - \underline{5})$

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

$$\boxed{-8x^2 + 20x}$$

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Notes:

How do we multiply two binomials together? Again, we distribute!

Example #2: Find the product.

1. $(x+2)(x-3)$

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

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

$$\boxed{x^2 - x - 6}$$

2. $(2x+3)(2x+1)$

$$2x(2x) + 2x(1) + 3(2x) + 3(1)$$

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

$$\boxed{4x^2 + 8x + 3}$$

You practice: Find the product.

1. $4x^2(3x^3 - 2x^2 - x)$

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

$$\boxed{12x^5 - 8x^4 - 4x^3}$$

2. $(x-2)(2x+1)$

$$x(2x) + x(1) - 2(2x) - 2(1)$$

$$2x^2 + x - 4x - 2$$

$$\boxed{2x^2 - 3x - 2}$$

3. $(2x-3)(3x-1)$

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

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

$$\boxed{6x^2 - 11x + 3}$$

4. $(x+8)(x+5)$

$$x(x) + x(5) + 8(x) + 8(5)$$

$$x^2 + 5x + 8x + 40$$

$$\boxed{x^2 + 13x + 40}$$

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Notes:

What about multiplying a binomial by a trinomial?

WE STILL DISTRIBUTE!

Example #3: Find the product.

1. $(x-2)(5+3x-x^2)$

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

$$\underline{5x} + \underline{3x^2} - \underline{x^3} - \underline{10} - \underline{6x} + \underline{2x^2}$$

$$\boxed{-x^3 + 5x^2 - x - 10}$$

2. $(4x^2-3x-1)(2x-5)$

$$2x(4x^2) + 2x(-3x) + 2x(-1)$$

$$-5(4x^2) - 5(-3x) - 5(-1)$$

$$\underline{8x^3} - \underline{6x^2} - \underline{2x} - \underline{20x^2} + \underline{15x} + \underline{5}$$

$$\boxed{8x^3 - 26x^2 + 13x + 5}$$

You practice: Find the product.

1. $(2x-3)(3x^2+x-4)$

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

$$\underline{6x^3} + \underline{2x^2} - \underline{8x} - \underline{9x^2} - \underline{3x} + \underline{12}$$

$$\boxed{6x^3 - 7x^2 - 11x + 12}$$

2. $(x^2-x-3)(x+5)$

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

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

$$\underline{x^3} - \underline{x^2} - \underline{3x} + \underline{5x^2} - \underline{5x} - \underline{15}$$

$$\boxed{x^3 + 4x^2 - 8x - 15}$$