ST. JEAN DE BREBEUF
MATHEMATICS

CHAPTER 5.1

EXPANDING BINOMIALS

CHAPTER 5.1 EXPANDING BINOMIALS

KEY CONCEPTS

To find the **product** of <u>two binomials</u>, each term in one binomial is **multiplied** by each term in the other binomial

RECALL *Distributive Property*

Expand and simplify the following:

(a) $2(x + 7)$

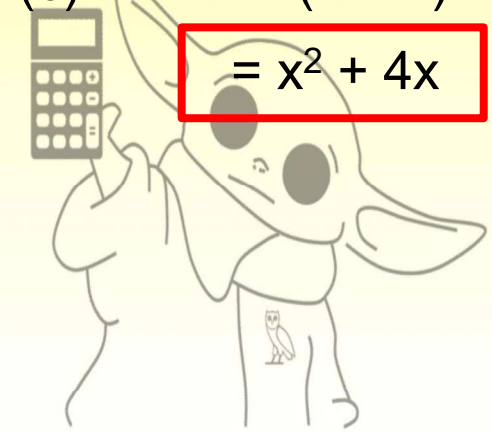
$= 2x + 14$

(b) $-3(x - 5)$

$= -3x + 15$

(c) $x(x + 4)$

$= x^2 + 4x$



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CHAPTER 5.1 EXPANDING BINOMIALS

EXAMPLE 1 *Multiplying/Finding the Product of Two Binomials*

Find the product and simplify the following:

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

$= x^2 - 2x + 5x - 10$

$= x^2 + 3x - 10$

1. Multiply the first term from the first bracket to the two terms in the second bracket

2. Multiply the second term from the first bracket to the two terms in the second brackets

3. Gather like terms and simplify

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CHAPTER 5.1 EXPANDING BINOMIALS

EXAMPLE 1 *Multiplying/Finding the Product of Two Binomials*

Find the product and simplify the following:

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

$= 2x^2 + 14x + 3x + 21$

$= 2x^2 + 17x + 21$

(c) $(2x - 7)(4x + 9)$

$= 8x^2 + 18x - 28x - 63$

$= 8x^2 - 10x - 63$

(d) $(3x - 5)(3x + 5)$

$= 9x^2 + 15x - 15x - 25$

$= 9x^2 - 25$

1. Multiply the first term from the first bracket to the two terms in the second bracket

2. Multiply the second term from the first bracket to the two terms in the second brackets

3. Gather like terms and simplify

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EXAMPLE 2 *Squaring a Binomial*

Expand and simplify the following:

(a) $(x + 7)^2$ ← We need to write the terms inside the brackets twice

$= (x + 7)(x + 7)$

$= x^2 + 7x + 7x + 49$

$= x^2 + 14x + 49$

1. Multiply the first term from the first bracket to the two terms in the second bracket

2. Multiply the second term from the first bracket to the two terms in the second brackets

3. Gather like terms and simplify

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EXAMPLE 2 *Squaring a Binomial*

Expand and simplify the following:

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

$= (2x + 7)(2x + 7)$

$= 4x^2 + 14x + 14x + 49$

$= 4x^2 + 28x + 49$

(c) $(3x - 1)^2$

$= (3x - 1)(3x - 1)$

$= 9x^2 - 3x - 3x + 1$

$= 9x^2 - 6x + 1$

1. Multiply the first term from the first bracket to the two terms in the second bracket

2. Multiply the second term from the first bracket to the two terms in the second brackets

3. Gather like terms and simplify

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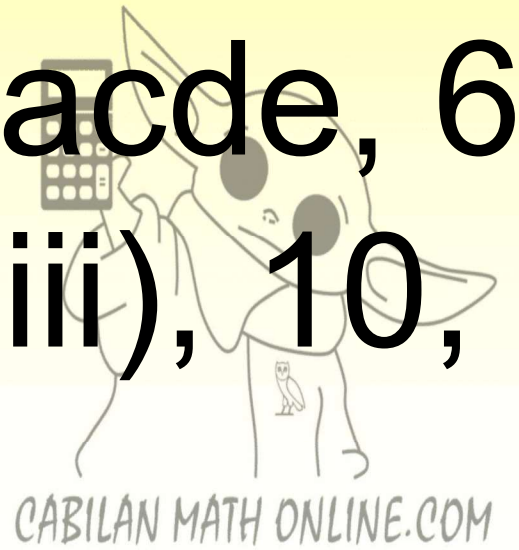
Homework:

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