

Section 8-4 Multiplying Special Cases

Students will be able to
-find the square of a binomial
-find the product of a sum and difference

There are special rules that you can use when simplifying the square of a binomial or the product of a sum or difference.

Simplify the product:

$$(a + b)^2 = (a+b)(a+b)$$

$$a^2 + ab + ab + b^2$$

$$a^2 + 2ab + b^2$$

The Square of a Binomial:

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(a - b)^2 = a^2 - 2ab + b^2$$

Example:

$$(x - 3)^2$$

$$a = x$$

$$b = 3$$

$$x^2 - 2 \cdot x \cdot 3 + 3^2$$

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

OR $(x-3)(x-3)$ and FOIL

You cannot just square each piece because you miss the OI part

Simplify:

$$(2x + 9)^2 \quad a = 2x$$

$$b = 9$$

$$(2x)^2 + 2 \cdot 2x \cdot 9 + 9^2$$

$$4x^2 + 36x + 81$$

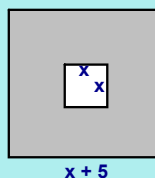
$$(3x - 4)^2 \quad a = 3x$$

$$b = 4$$

$$(3x)^2 + 2 \cdot 3x \cdot 4 + 4^2$$

$$9x^2 + 24x + 16$$

What is the area of the shaded region?



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

$$x^2 + 2 \cdot x \cdot 5 + 5^2 - x^2$$

$$x^2 + 10x + 25 - x^2$$

$$10x + 25 \text{ units}$$

Use mental math:

$$85^2 = (80 + 5)^2$$

$$6400 + 2 \cdot 80 \cdot 5 + 25$$

$$6400 + 800 + 25$$

$$7225$$

Product of a Sum and Difference:

$$(a + b)(a - b)$$

$$a^2 - \cancel{ab} + \cancel{ab} - b^2$$
$$a^2 - b^2$$

Simplify:

$$(6 + m^2)(6 - m^2) =$$

$$36 - m^4$$

#19. A square green rug has a blue square in the center. The side length of the blue square is x inches. The width of the green band that surrounds the blue square is 6 in. What is the area of the green band?

A square deck has a side length of $x + 5$. You are expanding the deck so that each side is four times the as long as the original deck. What is the area of the new deck?

Hwk:

pg. 507 - 508

#10 - 34(4th), 36 - 48 (4th),

50, 52, 55, 58