

GUIDED NOTES – 1.4 POLYNOMIALS

LEARNING OBJECTIVES

In this section, you will:

- Identify the degree and leading coefficient of polynomials.
- Add and subtract polynomials.
- Multiply polynomials.
- Use FOIL to multiply binomials.
- Perform operations with polynomials of several variables.

IDENTIFYING THE DEGREE AND LEADING COEFFICIENT OF POLYNOMIALS

Study the box in your textbook section titled “polynomials.”

- A polynomial is an expression that can be written in the form

$$a_n x^n + \cdots + a_2 x^2 + a_1 x + a_0$$

In this general form of a polynomial, identify the following:

- Leading term: _____
- Degree: _____
- Leading coefficient: _____
- Constant: _____

Try It: Read Example 1 in the text, then answer the following.

Identify the degree, leading term, leading coefficient, and constant of the polynomial

$$4x^2 - x^6 + 2x - 6.$$

Homework: You should now be ready to attempt problem 1 in “Homework – Algebra 1.4” on WeBWorK.

ADDING AND SUBTRACTING POLYNOMIALS

Try It: Read Example 2 in the text, then answer the following.

Find the sum. $(2x^3 + 5x^2 - x + 1) + (2x^2 - 3x - 4)$

Try It: Read Example 3 in the text, then answer the following.

Find the difference. $(-7x^3 - 7x^2 + 6x - 2) - (4x^3 - 6x^2 - x + 7)$

Homework: You should now be ready to attempt problems 2-3 in “Homework – Algebra 1.4” on WeBWorK.

MULTIPLYING POLYNOMIALS

Try It: Read Example 4 in the text, then answer the following.

Find the product. $(3x + 2)(x^3 - 4x^2 + 7)$

Try It: Read Example 5 in the text, then answer the following.

Use FOIL to find the product. $(x + 7)(3x - 5)$

Homework: You should now be ready to attempt problems 4-5 in “Homework – Algebra 1.4” on WeBWorK.

Study the box in your textbook section titled “perfect square trinomials.”

$$(x + a)^2 = (x + a)(x + a) = \underline{\hspace{4cm}}$$

Try It: Read Example 6 in the text, then answer the following.

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

Homework: You should now be ready to attempt problem 6 in “Homework – Algebra 1.4” on WeBWorK.

Study the box in your textbook section titled “difference of squares.”

$$(a + b)(a - b) = \underline{\hspace{4cm}}$$

Try It: Read Example 7 in the text, then answer the following.

Multiply $(2x + 7)(2x - 7)$.

Homework: You should now be ready to attempt problem 7 in “Homework – Algebra 1.4” on WeBWorK.

REVIEW QUESTIONS

Answer the following questions in your own words.

1. Evaluate the following statement: The degree of a polynomial in standard form is the exponent of the leading term. Explain why the statement is true or false.

2. Many times, multiplying two binomials results in a trinomial. This is not the case when there is a difference of two squares. Explain why the product in this case is also a binomial.

3. State whether the following statement is true or false, and explain: A trinomial always has higher degree than a monomial.