

Section P.3 Polynomials and Factoring

Objective: In this lesson you learned how to add, subtract, and multiply polynomials and how to factor expressions completely.

Course Number

Instructor

Date

Important Vocabulary

Define each term or concept.

Polynomial

FOIL Method

Factoring

Factoring by grouping

I. Polynomials (Page 24)

For a polynomial in x , the degree of a term is . . .

For a polynomial in x , the degree of the polynomial is . . .

Polynomials with one term are called _____.

Polynomials with two terms are called _____.

Polynomials with three terms are called _____.

In **standard form**, a polynomial in x is written with . . .

For polynomials in more than one variable, the degree of a term is . . .

For polynomials in more than one variable, the degree of the polynomial is . . .

Example 1: Write the polynomial $1 - 6y - 5y^3 + 4y^2$ in standard form.

What you should learn

How to write polynomials in standard form

II. Operations with Polynomials (Pages 25–26)

Like terms are terms that have . . .

What you should learn

How to add, subtract, and multiply polynomials

To add or subtract polynomials, . . .

To find the product of two polynomials, . . .

Example 2: (a) Subtract: $(5x^3 - 9x + 4) - (2x^3 + 5x^2 - 12x + 4)$
 (b) Multiply: $(3x - 2)(x^2 + 2x - 1)$

III. Special Products (Page 26)

Complete each of the special products below.

Sum and Difference of Same Terms

$(u + v)(u - v)$ a _____

Square of a Binomial

$(u + v)^2$ a _____

$(u - v)^2$ a _____

Cube of a Binomial

$(u + v)^3$ a _____

$(u - v)^3$ a _____

Example 3: Find $(3x - 4)^2$

IV. Factoring (Page 27)

If a polynomial cannot be factored using integer coefficients,
 then it is _____ or _____.

The simplest type of factoring involves a polynomial that can be
 written as the product of a monomial and another polynomial.

The technique used here is the Distributive Property in reverse:

$ab + ac =$ _____

Example 4: Factor $3w^3 - 12w^2 + 15w$.

What you should learn
 How to use special
 products to multiply
 polynomials

What you should learn
 How to remove common
 factors from polynomials

V. Factoring Special Polynomial Forms (Pages 28–29)

Complete each of the special factoring forms below.

Difference of Two Squares

$$u^2 - v^2 \underline{\hspace{10em}}$$

Perfect Square Trinomial

$$u^2 + 2uv + v^2 \underline{\hspace{10em}}$$

$$u^2 - 2uv + v^2 \underline{\hspace{10em}}$$

Sum of Difference of Two Cubes

$$u^3 + v^3 \underline{\hspace{10em}}$$

$$u^3 - v^3 \underline{\hspace{10em}}$$

To recognize perfect square terms, . . .

To recognize a perfect square trinomial, note that . . .

Example 5: Factor:

(a) $64 - 25y^2$

(b) $9x^2 + 12xy + 4y^2$

VI. Trinomials with Binomial Factors (Page 30)

To factor a trinomial of the form $ax^2 + bx + c =$

$(\square x + \square)(\square x + \square)$, the goal is to . . .

Example 6: Explain how to factor $x^2 + 3x - 18$.

What you should learn

How to factor special polynomial forms

What you should learn

How to factor trinomials as the product of two binomials

VII. Factoring by Grouping (Page 31)

To factor a polynomial with more than three terms by the grouping method, . . .

What you should learn
How to factor by
grouping

Example 6: Factor $2x^3 + 6x^2 - 3x - 9$ by grouping.

List four guidelines for factoring polynomials:

- 1)
- 2)
- 3)
- 4)

Additional notes

Homework Assignment

Page(s)

Exercises