

GUIDED NOTES – 1.5 FACTORING POLYNOMIALS

LEARNING OBJECTIVES

In this section, you will:

- Factor the greatest common factor of a polynomial.
- Factor a trinomial.
- Factor by grouping.
- Factor a perfect square trinomial.
- Factor a difference of squares.
- Factor the sum and difference of cubes.

FACTORING THE GREATEST COMMON FACTOR OF A POLYNOMIAL

Study the box in your textbook section titled “greatest common factor.”

- The **greatest common factor** (GCF) of polynomials is the largest polynomial that _____ evenly into the polynomials.

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

Factor $12x^4z^2 - 4x^2z^2 + 24z^2$ by pulling out the GCF.

Homework: *You should now be ready to attempt problems 1-2 in “Homework – Algebra 1.5” on WeBWorK.*

FACTORING A TRINOMIAL WITH LEADING COEFFICIENT 1

Study the box in your textbook section titled “factoring a trinomial with leading coefficient 1.”

- A trinomial in the form $x^2 + bx + c$ can be written in factored form $(x + p)(x + q)$ where $pq = \underline{\hspace{2cm}}$ and $p + q = \underline{\hspace{2cm}}$.
- Write out the 3 step procedure for factoring, given a trinomial in the form $x^2 + bx + c$.
 - 1.
 - 2.
 - 3.

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

Factor $x^2 - 7x + 6$.

Homework: You should now be ready to attempt problems 3-4 in “Homework – Algebra 1.5” on WeBWorK.

FACTORING BY GROUPING

Study the box in your textbook section titled “factor by grouping.”

- To factor a trinomial in the form $ax^2 + bx + c$ by grouping, we find two numbers with a product of _____ and a sum of _____. We use these numbers to divide the x term into the sum of _____ and factor each portion of the expression separately, then factor out the _____ of the entire expression.

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

Factor.

a. $2x^2 + 9x + 9$

b. $6x^2 + x - 1$

Homework: You should now be ready to attempt problems 5-8 in “Homework – Algebra 1.5” on WeBWorK.

FACTORING A PERFECT SQUARE TRINOMIAL

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

- A perfect square trinomial can be written as the square of a binomial.

$$a^2 + 2ab + b^2 = \underline{\hspace{4cm}}$$

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

Factor $49x^2 - 14x + 1$.

FACTORIZING A DIFFERENCE OF SQUARES

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

- A difference of squares can be written as two factors containing the same terms but opposite signs.

$$a^2 - b^2 = \underline{\hspace{2cm}}$$

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

Factor $81y^2 - 100$.

Homework: You should now be ready to attempt problems 9-10 in “Homework – Algebra 1.5” on WeBWork.

FACTORIZING THE SUM AND DIFFERENCE OF CUBES

Study the box in your textbook section titled “sum and difference of cubes.”

- We can factor the sum of two cubes as

$$a^3 + b^3 = \underline{\hspace{2cm}}$$

- We can factor the difference of two cubes as

$$a^3 - b^3 = \underline{\hspace{2cm}}$$

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

Factor the sum of cubes: $a^3 + 64$.

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

Factor the difference of cubes: $8x^3 - y^3$.

Homework: You should now be ready to attempt problem 11 in “Homework – Algebra 1.5” on WeBWork.

