

Monomials and Factoring
§8.1

Factored Form – a monomial expressed as the product of prime numbers and variables (exponent ≤ 1).

Example 1

$$18x^2y^3$$

Example 2

$$24x^3y^5$$

Greatest Common Factor (GCF) – the greatest number that is a factor of all original monomials.

Example 3

Find the GCF of $18x^2y^5$ and $27x^3y^4$.

Example 4

Find the GCF of $15xy^4$, $25x^3y^2$ and $30x^2y^3$.

Pg 472, 1-22, 39,40,45,46



Using the Distributive Property
§8.2

Factoring – to express a polynomial as the product of monomials and polynomials.

opposite of distributive property

Use the distributive property (GCF) to factor each polynomial.

Example 1

$$15x + 25x^2$$

Example 2

$$12xy + 24xy^2 - 30x^2y^4$$

Factoring by Grouping – using the distributive property to factor polynomials with 4 or more terms.

Example 3

$$3x^2 + 12x + 4x + 16$$

Example 4

$$15x - 3xy + 4y - 20$$

Example 5

$$12xy - 24x - 8y + 16$$

Zero Product Property – used to solve quadratic equations.

Solve each equation and check your solutions.

Example 6

$$(x + 3)(x - 5) = 0$$

Example 7

$$2x + 12 = 0$$

Example 8

$$x^2 = 7x$$

Pg 480,15-43,61,71 odds



Quadratic Equations
§8.3

Factoring Steps

1. Determine the signs by looking at second sign in polynomial.
 - a. +: signs are the same (take sum)
 - b. -: signs are different (take difference)
2. Determine the factor whose sum or difference equals the coefficient of the middle term.

Determine if the signs are the same or different.

Example 1

$$x^2 - 7x + 10$$

Example 2

$$x^2 + 5x - 12$$

Example 3

$$x^2 - 6x - 13$$

Example 4

$$x^2 + 8x + 20$$

Answer each.

Example 5

Find two factors of 20 that:

- a. add up to 9
- b. differ by 8

Example 6

Find two factors of 24 that:

- a. add up to 14
- b. differ by 5

Factor

Example 7

$$x^2 - 8x + 12$$

Example 8

$$x^2 + 7x - 18$$

Example 9

$$x^2 + 11x + 28$$

Example 10

$$x^2 - 2x - 24$$

Example 11

$$16 - 10x + x^2$$

Example 12

$$x^2 + x - 20$$

Solve each equation. Check your solutions.

Example 13

$$x^2 + 8x + 15 = 0$$

Example 14

$$x^2 + 4x = 12$$

Pg 489, 1-9,13-29,55-59 odds



Quadratic Equations
§8.4

Same as 8.3, however the leading coefficient $\neq 1$.

Remember to look for GCF first.

Factor.

Example 1

$$5x^2 + 27x + 10$$

Example 2

$$4x^2 + 24x + 32$$

Example 3

$$7x^2 + 29x + 4$$

Example 4

$$3x^2 - 17x + 20$$

Prime Polynomial – a polynomial that cannot be written as a product of two polynomials (not factorable).

Factor if possible.

Example 5

$$3x^2 - 14x - 15$$

Example 6

$$2x^2 + 3x - 5$$

Solve.

Example 7

$$5x^2 - 18x - 8 = 0$$

Pg 496, 1-27,49-57 odds



Quadratic Equations: Differences of Squares
§8.5

Difference of Two Squares – two perfect squares separated by a “-“ sign.

Perfect Squares

Factor if possible.

Example 1

$$x^2 - 64$$

Example 2

$$x^2 - 25$$

Example 3

$$4x^2 - 121$$

Example 4

$$x^4 - 16$$

Example 5

$$2x^5 - 72x$$

Example 6

$$6x^3 + 30x^2 - 24x - 120$$

Example 7

In the equation, $y = q^2 - \frac{4}{25}$, what is the value of q when $y = 0$?

Pg 501, 1-11,15-39,49,69,71 odds



Quadratic Equations: Perfect Square Trinomials
§8.6

Perfect Square Trinomial – a trinomial that is a square of a binomial.

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

Steps for PST

1. Check if first term is a perfect square. Of What?
2. Check if last term is a perfect square. Of What?
3. Check if second term is two times the square of first and last.

First term x **Last** term x **2** = **Second** term?????

Factor if possible

Example 1

$$25x^2 - 30x + 9$$

Example 2

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

Example 3

$$6x^2 - 96$$

Example 4

$$16x^2 + 8x - 15$$

Example 5

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

Solve.

Example 6

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

Solve.

Example 7

$$(x - 7)^2 = 36$$

Example 8

$$(x + 9)^2 = 25$$

Pg 509,1-9,13-35,65,69 odds

