

GUIDED NOTES – 2.6 OTHER TYPES OF EQUATIONS

LEARNING OBJECTIVES

In this section, you will:

- Solve equations using rational exponents.
- Solve equations using factoring.
- Solve radical equations.
- Solve absolute value equations.
- Solve other types of equations.

SOLVING EQUATIONS INVOLVING RATIONAL EXPONENTS

- Rational exponents are exponents that are fractions, where the numerator is a _____ and the denominator is a _____.
- We can solve equations in which a variable is raised to a rational exponent by raising both sides of the equation to the _____ of the exponent.

Study the box in your textbook section titled “rational exponents.”

- List the 4 ways that you can rewrite $a^{\frac{m}{n}}$ below.

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

Evaluate $64^{\frac{2}{3}}$.

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

Solve the equation $x^{\frac{3}{2}} = 125$.

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

Solve: $(x + 5)^{\frac{3}{2}} = 8$.

SOLVING EQUATIONS USING FACTORING

- We have used factoring to solve quadratic equations, but it is a technique that we can use with many types of polynomial equations. When we are faced with an equation containing polynomials of degree higher than _____, we can often solve them by factoring.

Study the box in your textbook section titled “polynomial equations.”

- Setting a polynomial equal to _____ gives us a polynomial equation. The total number of solutions (real and complex) to a polynomial equation is equal to _____.

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

Solve by factoring: $12x^4 = 3x^2$.

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

Solve by grouping: $x^3 + 3x^2 - 25x - 75 = 0$

SOLVING RADICAL EQUATIONS

- _____ are equations that contain variables in the radicand. We must be careful when solving these equations because you can find _____ which are roots that are not solutions to the equations. Checking your answer in the original equation will confirm the true solutions.
- Write out the 5 step process for solving a radical equation.
 - 1.
 - 2.
 - 3.
 - 4.
 - 5.

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

Solve the radical equation: $\sqrt{x + 3} = 3x - 1$

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

Solve the equation with two radicals: $\sqrt{3x + 7} + \sqrt{x + 2} = 1$.

SOLVING AN ABSOLUTE VALUE EQUATION

Study the box in your textbook section titled “absolute value equations.”

- The absolute value of x is written as $|x|$. Fill in its properties below:

If _____, then $|x| = x$.

If $x < 0$, then $|x| =$ _____.

- Given an absolute value equation in the form $|ax + b| = c$, fill in its properties below:

$|ax + b| = c$ has no solution if _____.

$|ax + b| = c$ has one solution if _____.

$|ax + b| = c$ has two solutions if _____.

- Write out the 2 step process for solving an absolute value equation.

1.

2.

Try It: Read Example 8 in the text, then answer the following.

Solve the absolute value equation: $|1 - 4x| + 8 = 13$.

SOLVING OTHER TYPES OF EQUATIONS

- Write out the 6 step process for solving an equation in quadratic form.

1.

2.

3.

4.

5.

6.

Try It: Read Example 9 in the text, then answer the following.

Solve using substitution: $x^4 - 8x^2 - 9 = 0$.

Try It: Read Example 11 in the text, then answer the following.

Solve $\frac{3x+2}{x-2} + \frac{1}{x} = \frac{-2}{x^2-2x}$.