Section 1.1 Guided Notebook

Section 1.1 Linear Equations

- ☐ Work through Section 1.1 TTK #1
- ☐ Work through Section 1.1 TTK #2
- ☐ Work through Section 1.1 TTK #3
- ☐ Work through Objective 1
- ☐ Work through Objective 2
- ☐ Work through Objective 3
- ☐ Work through Objective 4
- ☐ Work through Objective 5

Section 1.1 Linear Equations

1.1 Things To Know

1. Factoring Trinomials with a Leading Coefficient Equal to 1

Can you factor the polynomial $x^2 - 2x - 24$? Try working through a "You Try It" problem or refer to section R.6 or watch the video.

2. Factoring Trinomials with a Leading Coefficient Not Equal to 1.

Can you factor the polynomial $4x^2 + 17x + 15$? Try working through a "You Try It" problem or refer to section R.6 or watch the video.

3. Simplifying Rational Expressions

Can you simplify the rational expression $\frac{x^2 + x - 12}{x^2 + 9x + 20}$? Try working through a "You Try It" problem or refer to section R.7 or watch the video.

Section 1.1 Objective 1 Recognizing Linear Equations

What is the definition of an **algebraic expression**?

What is the definition of a **linear equation in one variable**?

In the Interactive Video following the definition of a linear equation in one variable, which equation is not linear? Explain why it is not linear.

Section 1.1 Objective 2 Solving Linear Equations with Integer Coefficients

What does the term **integer coefficient** mean?

Work through Example 1 and take notes here.
Solve $5(x-6)-2x=3-(x+1)$.

Work through Example 2 and take notes here. Watch the video to check your solution.
Solve $6-4(x+4)=8x-2(3x+5)$.

Section 1.1 Objective 3 Solving Linear Equations Involving Fractions

What is the definition of a **least common denominator (LCD**)?

What is the first thing to do when solving linear equations involving fractions?

Work through the video that accompanies Example 3 and write your notes here: Solve $\frac{1}{3}(1-x)-\frac{x+1}{2}=-2$

Section 1.1 Objective 4 Solving Linear Equations Involving Decimals

When encountering a linear equation involving decimals, how do you eliminate the decimals?

Work through the video that accompanies Example 4 and write your notes here:
Solve $0.1(y - 2) + 0.03(y - 4) = 0.02(10)$.

Section 1.1 Objective 5 Recognizing Rational Equations

What is a **rational number**?

What is a **rational expression**?

Write down the definition of a **rational equation** and write down at least one example of a rational equation.

Work through Example 5. Determine which of the following equations are rational equations. (Watch the video to check to see if you are correct.)

a. $\frac{2-x}{x+5}+3=\frac{4}{x+2}$ b. $x^2-2x-24=\frac{1}{2}$ c. $\frac{12}{x^2+x-2}-\frac{x+3}{x-1}=\frac{1-x}{x+2}$

Section 1.1 Objective 6 Solving Ratinal Equations that Lead to Linear Equations

Fill in the blanks below:
The process of solving a rational equation is very similar to the process of solving linear equations containing fractions. That is, we first determine the

_____
and then we _____ both sides of the equation by the _____.

We have to be extra cautious when solving rational equations because we have to be aware of _____.

What is a **restricted value?**

Work through Example 6 and take notes here: $\frac{2-x}{x+2}+3=\frac{4}{x+2}$

What is the definition of an **extraneous solution**?

Explain why there was an extraneous solution to Example 6.

Write down the five steps for **Solving Rational Equations.**

Step 1

Step 2

Step 3

Step 4

Step 5

Work through Example 7 by following the five steps above and take notes here. Watch the video to check your solution.

Solve $\frac{2}{x+4}+\frac{1}{x-5}=\frac{5}{x^2-x-20}$.

Work through Example 8 by following the five steps for solving rational equations and take notes here. Watch the video to check your solution.

Solve $\frac{12}{x^2 + x - 2} - \frac{x + 3}{x - 1} = \frac{1 - x}{x + 2}$.