Lesson 17: Equations Involving Factored Expressions

Classwork

Exercise 1

1. Solve each equation for .
   1. Demanding Dwight insists that you give him two solutions to the following equation:

Can you provide him with two solutions?

* 1. Demanding Dwight now wants FIVE solutions to the following equation:

Can you provide him with five solutions?

Do you think there might be a sixth solution?

Consider the equation .

* 1. Rewrite the equation as a compound statement.

* 1. Find the two solutions to the equation.

**Example 1**

Solve , for .

**Example 2**

Solve for .

Exercises 2–7

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**Example 3**

Consider the equation Lulu chooses to multiply through by and gets the   
answer . But Poindexter points out that is also an answer, which Lulu missed.

* 1. What’s the problem with Lulu’s approach?
  2. Use factoring to solve the original equation for .

Exercises 8–11

1. Use factoring to solve the equation for : .
2. Solve each of the following for :

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| --- | --- |
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| --- | --- |
| * 1. Verify: . | * 1. Verify: . |
| * 1. Verify: . |  |
| * 1. Solve for : . | * 1. Solve for : . |

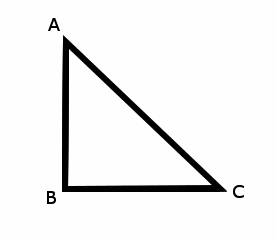
1. A string inches long is to be laid out on a tabletop to make a rectangle of perimeter inches. Write the width of the rectangle as inches. What is an expression for its length? What is an expression for its area? What value for gives an area of the largest possible value? Describe the shape of the rectangle for this special value of .

Lesson Summary

The *zero-product property* says that if , then either or or

Problem Set

1. Find the solution set of each equation:
2. Solve , for .
3. Solve , for . What solution do you lose if you simply divide by to get ?
4. The square of a number plus times the number is equal to. What is the number?
5. In the right triangle shown below, the length of side AB is , the length of side BC is , and the length of the hypotenuse AC is . Use this information to find the length of each side. (Use the Pythagorean theorem to get an equation, and solve for .)



1. Using what you learned in this lesson, create an equation that has and as its only solutions.