ALGEBRA I

LEARNING OUTCOMES

- I can factor a quadratic equation in order to reveal its zeros.

Name _____

Lesson 5: The Zero Product Property

Opening Exercise

Consider the equation $a \cdot b \cdot c \cdot d = 0$. What values of a, b, c, and d would make the equation true?

Exercises 1–4

Find values of c and d that satisfy each of the following equations. (There may be more than one correct answer.)

1. $cd = 0$

2. $(c - 5)d = 2$

3. $(c-5)d=0$

4. $(c-5)(d+3)=0$

Example 1

For each of the related questions below use what you know about the Zero-Product Property to find the answers.

a. The area of a rectangle can be represented by the expression, $x^2 + 2x - 3$. Write each dimension of this rectangle as a binomial, and then write the area in terms of the product of the two binomials.

b. Suppose the area of the rectangle is 21 square units. Rewrite the equation so that it is equal to zero and solve.

c. What are the actual dimensions of the rectangle?

d. If a smaller rectangle, which can fit inside the first rectangle, has an area that can be expressed by the equation $x^2 - 4x - 5$. What are the dimensions of the smaller rectangle?

e. What value for x would make the smaller rectangle have an area of $\frac{1}{3}$ that of the larger?

Exercises 5–8

Solve. Show your work:

5. $x^2 - 11x + 19 = -5$

6. $7x^2 + x = 0$

7. $7r^2 - 14r = -7$

8. $2d^2 + 5d - 12 = 0$

Zero Product Property

If $ab = 0$, then $a = 0$ or $b = 0$ or $a = b = 0$

Name _____ CW/Homework

Lesson 5: The Zero Product Property

Solve the following quadratic equations.

1. $x^2 - 11x + 19 = -5$

2. $7x^2 + 2x = 0$

3. $b^2 + 5b - 35 = 3b$

4. $5x^2 + 19x - 4$