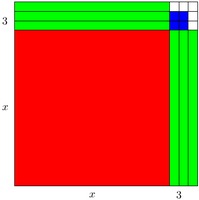
Unit 1: Lesson #8

Completing the square

Discovering the discriminant

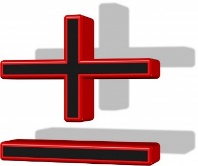


SWUT:

* An equation that contains a perfect square can be solved by finding square roots. The simplest type of this equation has the form 𝑎𝑥2 = 𝑐.
* A perfect square trinomial is in the form, which factors into .
* Completing a perfect square trinomial allows the completed trinomial to be factored as the square of a binomial.
* The real solutions, or roots, of a quadratic equation show the zeros of the related quadratic function and the x-intercepts of its graph.
* The discriminant of the quadratic equation is . The discriminant can be used to describe the solutions of a Quadratic Equation.

**Sure you can factor, but our variable, x, can be isolated in one term…so why not use opposite math?**

1. Solve 2. Solve



There are TWO solutions...Don’t forget the

What do you remember about “Completing the square?”

**Steps:**

1. Move the constant to the right side of the equal sign.
2. **Add to both sides of the equation to complete the square.**
3. Factor the left side, write it as a binomial squared.
4. Take the square root of both sides. Remember to write ±.
5. Solve for the variable.

**More Examples:**

1. 2.

***What happens if there is a coefficient in front of the squared term?***

**Examples:**

1. 2.

**Summary**

|  |  |  |
| --- | --- | --- |
| **Value of the Discriminant** | **Type of Roots** | **Graph of a function with this discriminant** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Practice.** For each of the following, evaluate the discriminant, and determine the type of solutions.

|  |  |  |
| --- | --- | --- |
| Quadratic | Discriminant | Nature of the Roots |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Challenge:**

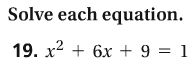
1. For which positive value of m will the equation have roots that are real, equal, and rational?
2. Find all values of c for which the roots of the equation will be real numbers.

HOMEWORK 1-8

















***Solve by completing the square:***

Extra: