NAME

Module 13 Solving Quadratic Equations of One Variable
Lesson 5 Solving Quadratic Equations by the Quadratic Formula

guided notes

Lesson Objectives

- Solve quadratic equations in one variable using the quadratic formula.
- Use the discriminant to determine the number of solutions of a quadratic equation in one variable.

The standard form of a quadratic equation is $ax^2 + bx + c = 0$, where $a \neq 0$.

The quadratic formula is $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$. This formula is used to find the solution(s) to a quadratic equation.

1. Solve by using the quadratic formula. $3x^2 + 6x + 3 = 0$

   $\{-1\}$

The discriminant of a quadratic equation is used to determine how many real-number solutions the quadratic equation has. The discriminant is the radicand, $b^2 - 4ac$ of the quadratic formula.

Discriminant	
$b^2 - 4ac > 0$	2 real solutions
$b^2 - 4ac = 0$	1 real solution
$b^2 - 4ac < 0$	no real solution

2. Use the discriminant to determine the number of solutions to $x^2 - 7x - 10 = 0$. The discriminant is 89. There are two real solutions.

3. Solve by using the quadratic formula. $x^2 - 7x - 10 = 0$

   $\left\{\frac{7 + \sqrt{89}}{2}, \frac{7 - \sqrt{89}}{2}\right\}$