

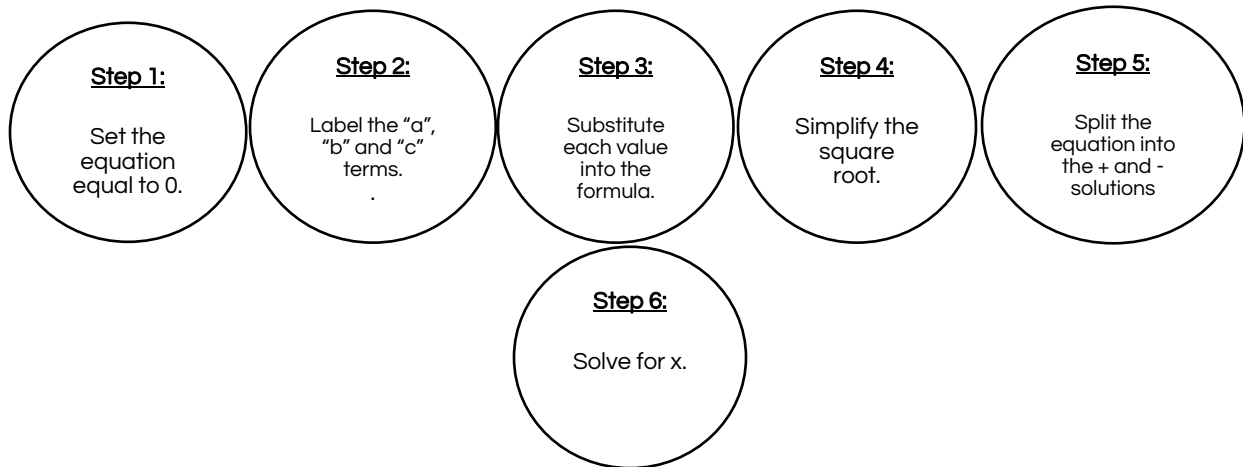
The Quadratic Formula

SWBAT solve quadratic equations using the quadratic formula.

The solutions of a quadratic equation of the form $ax^2 + bx + c = 0$ are given by the following formula:

The Quadratic Formula

Example:



Example 1: Using the Quadratic Formula

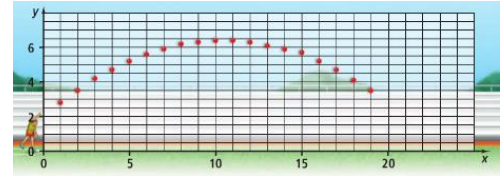
What are the roots of the equation $x^2 - 8 = 2x$? Use the quadratic formula to solve.

What are the solutions of $2x^2 + 3x = 5$? Use the quadratic formula to solve.

What are the roots of the equation $x^2 - 4x = -4$? Use the quadratic formula to solve.

Example 2:

Sports In the shot put, an athlete throws a heavy metal ball through the air. The arc of the ball can be modeled by the equation $y = -0.04x^2 + 0.84x + 2$, where x is the horizontal distance, in meters, from the athlete and y is the height, in meters, of the ball. How far from the athlete will the ball land?



Practice

. A batter strikes a baseball. The equation $y = -0.005x^2 + 0.7x + 3.5$ models its path, where x is the horizontal distance, in feet, the ball travels and y is the height, in feet, of the ball. How far from the batter will the ball land? Round to the nearest tenth of a foot.

Example 3: Choose a Method

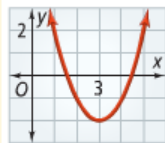
Example 4: Discriminant

The discriminant is an expression _____ in a _____

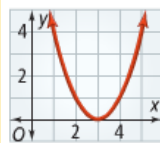
Discriminant

Example

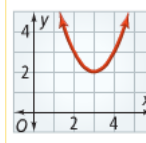
$x^2 - 6x + 7 = 0$
The discriminant is $(-6)^2 - 4(1)(7) = 8$, which is positive.



$x^2 - 6x + 9 = 0$
The discriminant is $(-6)^2 - 4(1)(9) = 0$.



$x^2 - 6x + 11 = 0$
The discriminant is $(-6)^2 - 4(1)(11) = -8$, which is negative.



Number of solutions.

How many solutions does $2x^2 - 3x = -5$ have?