# Quadratic Equations

A quadratic equation is an equation that can be written in the form .

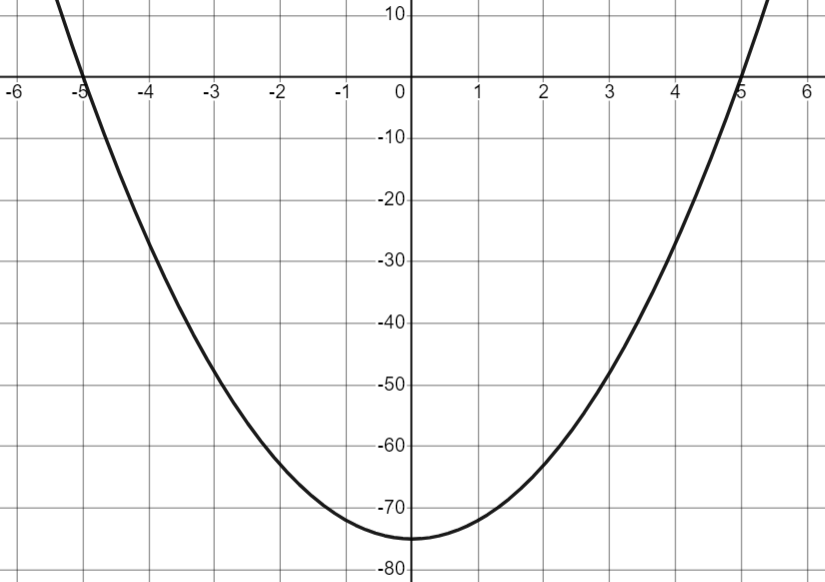
## The Square Root Property

If , then . This allows us to solve quadratic equations with no term.

**Example:** Solve .

**Solution:** . Therefore . Using the square root property, .

The solutions are the -intercepts in a graph. <https://www.desmos.com/calculator/5vz7f1aidd>



## The Zero Product Property

If , then either or or both. This allows us to solve by factoring:

1. Write the equation with on one side.
2. Factor the other side (the side with the variable) as much as possible.
3. Set each factor equal to zero, then solve each resulting equation.

**Example:** Solve .

**Solution:**

* If , then , so .
* If , then .

## The Quadratic Formula

In general, the equation has solutions .

**Example:** Solve .

**Solution:** , , .