

Solving Quadratic Equations

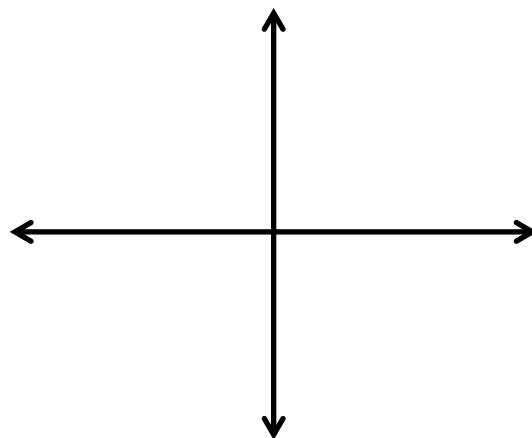
To solve a quadratic equation means to:

There are three possible types of answers.

A. _____

B. _____

C. _____



Today we will focus on three strategies for solving quadratic equations in vertex form.

1.

2.

3.

Before solving a quadratic equation by factoring or with the quadratic formula, ensure it is in standard form, $ax^2 + bx + c = 0$. You may have to simplify or rearrange the equation first.

To solve a quadratic equation including fractions, eliminate the fractions by multiplying each term of the equation by the lowest common denominator. Then rearrange the equation and solve.

1. Solve each of the quadratic equations below.

a. $4x^2 = 20x$

b. $9x^2 - 36 = 0$

c. $2x^2 + 7 = -15x$

2. Simplify and then solve the quadratic equations below.

$$\frac{9x^2}{4} + 3x - \frac{7}{2} = 0$$

Solving Quadratic Equations - Homework Worksheet

1. Solve each of the following quadratic equations by factoring.

- a. $x^2 + 3x = 0$
- b. $x^2 - 22 = -9x$
- c. $4x^2 - 12x = -9$
- d. $6x^2 + 9 = -15x$
- e. $-x^2 - 10x - 16 = 0$

2. Solve each of the following quadratic equations by the quadratic formula.

- a. $7x^2 - 12x = 9$
- b. $4x^2 = 2.8x + 4.8$
- c. $10x^2 - 7 = 45x$

3. Simplify and solve each of the following equations.

- a. $\frac{x^2}{2} + x + \frac{1}{2} = 0$
- b. $\frac{x^2}{4} - \frac{x}{3} = \frac{1}{3}$
- c. $\frac{x^2 + 11}{10} = 2$
- d. $3x^2 - 7 = 30 - 12x^2$

Answer Key

- | | | | | |
|---|---------------------------------------|---|---|------------------------------|
| 1a) $x_1 = 0$
$x_2 = -3$ | 1b) $x_1 = -11$
$x_2 = 2$ | 1c) $x = \frac{3}{2}$ | 1d) $x_1 = -\frac{3}{2}$
$x_2 = -1$ | 1e) $x_1 = -8$
$x_2 = -2$ |
| 2a) $x_1 \approx 2.28$
$x_2 \approx -0.56$ | 2b) $x_1 = 1.5$
$x_2 = -0.8$ | 2c) $x_1 \approx 4.65$
$x_2 \approx -0.15$ | | |
| 3a) $x = -1$ | 3b) $x_1 = -\frac{2}{3}$
$x_2 = 2$ | 3c) $x_1 = 3$
$x_2 = -3$ | 3d) $x_1 \approx 1.57$
$x_2 \approx -1.57$ | |