Quadratic Formula

Objectives

1. Solve quadratic equations using the quadratic formula

2. Use the discriminant to determine the types of solutions to a quadratic equation

The Quadratic Formula

The quadratic formula can be used to solve any quadratic equation that is equal to 0.

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$$\text{For } ax^2 + bx + c = 0$$

Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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Solve each of the following using the quadratic formula. Exact answers only.

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$$x = 2 \qquad x = -\frac{14}{3}$$

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$$10x^2 + 10x - 7$$

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$$x = \frac{-10 \pm \sqrt{10^2 - 4(10)(-7)}}{2(10)}$$

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- **Discriminant is negative:** No real values of x make the original equation true.
- **Discriminant is 0:** There is one value of x (called a *double root*).
- **Discriminant is positive:** There are 2 unique answers for x.

The Discriminant

In addition, if $\sqrt{b^2 - 4ac}$ equals a rational number, then the quadratic equation is factorable over the integers (only use integers in your factoring).