

Complete each problem.

1. The quadratic formula is $x = \frac{-b \pm \sqrt{b^2 + 4ac}}{2a}$.

- true
 false

2. For the equation $2x^2 + x = 15$, $a = 2$, $b = 1$, and $c = -15$.

- true
 false

3. What is the discriminant and why is it useful? Explain your reasoning.

4. When solving a quadratic equation, Kaleem set up the quadratic formula as

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(1)}}{2(3)}$$

Which quadratic equation is he solving?

- $3x^2 - 5x + 1 = 0$ $3x^2 + 5x + 1 = 0$
 $3x^2 - 5x = 1$ $3x^2 + 5x = 1$

5. How many real solutions does $2x^2 - 3x + 5 = 0$ have?

- 2
 1
 0

Solve each quadratic equation using the quadratic formula.

6. $x^2 + 7x + 3 = 0$

7. $-3x^2 - 12x - 2 = 0$

8. Identify the coefficients of the quadratic equation.

$$3x^2 + 14x = 5$$

Solve the equation using the quadratic formula.

Solve each quadratic equation using the quadratic formula.

9. $x^2 + 30 = -16x$

10. $9x^2 + 6x = -15$

Find each discriminant and describe the nature of the solutions

11. $8x^2 - 2x - 1 = 0$

12. $25x^2 - 30x + 9 = 0$

Discriminant:

Nature of the solutions

- one real rational solution
- two real rational solutions
- two real irrational solutions
- no real solution

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13. The quadratic equation $h = -4.9t^2 + 23t + 1$ represents the height, h (in meters), of an object kicked after t seconds.

At what times is the height of the object at 15 meters? Express your answers as decimals rounded to the nearest hundredth.

Will the object reach 25 meters? Explain your answer.

How long does it take the object to hit the ground? Express your answer as a decimal rounded to the nearest hundredth.

Hint: What is the height of the ball when it hits the ground?