

Square Root Property

If $x^2 = k$, then $x = \sqrt{k}$ or $x = -\sqrt{k}$

1. Solve each equation using the square root property

a. $48 - x^2 = 0$

b. $(-2x + 5)^2 = -8$

Steps to **Completing the Square**

$$ax^2 + bx + c = 0, a \neq 0$$

- I. If $a \neq 1$ divide each side of the equation by a
- II. Rewrite the equation so that the constant term is alone on one side of the equality symbol
- III. Square half the coefficient of x
 - A. Add this square to each side of the equation
- IV. Factor the resulting trinomial as a perfect square
- V. Use the square root property to complete the solution

2. Solve each equation using completing the square.

a. $x^2 - 7x + 12 = 0$

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b. $4x^2 - 3x - 10 = 0$

Quadratic Formula:

5. Solve each cubic using factoring and the quadratic formula. Provide all answers, real and imaginary.

a. $x^3 - 27 = 0$

b. $x^3 = -64$

6. Solve each equation for the specified variable.

a. $E = \frac{e^2 k}{2r}$, for e

Discriminant:

Solutions of Quadratic Equations when a , b , and c are integers

Discriminant	Number of Solutions	Type of Solutions
Positive, perfect square		
Positive, but not a perfect square		
Zero		
Negative		

7. Evaluate the discriminant for each equation. Then use it to determine the number of distinct solutions, and tell whether they are rational, irrational, or nonreal complex numbers. (Do not solve the equation).

a. $x^2 + 4x + 4 = 0$

b. $8x^2 = -14x - 3$

c. $2x^2 + 4x + 1 = 0$

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