

Solving Quadratics by Square Roots

Algebra 1 • Section 9.6

Name: _____

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Quick Review and Helpful Hints

Quadratic functions can be read through their zeros, vertex, axis of symmetry, and opening direction. Choose factoring, square roots, completing the square, or the quadratic formula based on the form you see.

Q Example: Solve $x^2 - 5x + 6 = 0$.

Work: Factor the quadratic: $x^2 - 5x + 6 = (x - 2)(x - 3)$. Set each factor equal to zero.

Answer: $x = 2$ or $x = 3$

Practice Problems

Solve each problem. Show enough work that another student could follow your thinking.

1. Solve $x^2 = 49$. _____

6. Solve $3(x - 1)^2 = 27$. _____

2. Solve $x^2 - 16 = 0$. _____

7. Solve $x^2 + 9 = 0$ over the reals. _____

3. Solve $(x - 3)^2 = 25$. _____

8. Solve $(2x)^2 = 64$. _____

4. Solve $2x^2 = 50$. _____

9. Solve $5x^2 - 20 = 0$. _____

5. Solve $(x + 4)^2 = 12$. _____

10. Solve $(x - 7)^2 = 0$. _____

Word Problems

11. A square has area 121 square feet. Find its side length. _____

12. A dropped object has $16t^2 = 144$. Find positive t . _____



Answer Keys

1. $x = \pm 7$

2. $x = \pm 4$

3. $x = 8, -2$

4. $x = \pm 5$

5. $x = -4 \pm 2\sqrt{3}$

6. $x = 4, -2$

7. No real solution

8. $x = \pm 4$

9. $x = \pm 2$

10. $x = 7$

11. 11 ft

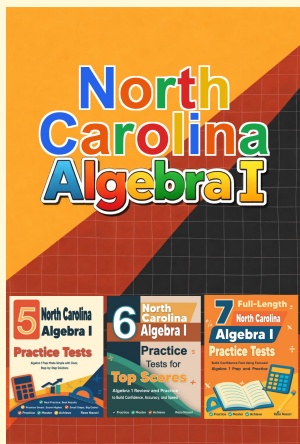
12. 3

Step-by-Step Explanations

- Both 7 and -7 square to 49.
- Move to $x^2 = 16$, then take both square roots.
- Take square roots: $x - 3 = \pm 5$.
- Divide by 2 first, giving $x^2 = 25$.
- Take square roots and simplify $\sqrt{12} = 2\sqrt{3}$.
- Divide by 3, then solve $x - 1 = \pm 3$.
- This would require $x^2 = -9$, impossible for real numbers.
- Take square roots: $2x = \pm 8$, then divide by 2.
- Add 20 and divide by 5, giving $x^2 = 4$.
- A square equals zero only when the inside equals zero.
- Side length is the positive square root of area.
- Divide by 16 to get $t^2 = 9$, then use the positive time.



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