

Practice

Solving Quadratic Equations by Using the Quadratic Formula

Solve each equation by using the Quadratic Formula. Round to the nearest tenth if necessary.

1. $g^2 + 2g - 3 = 0$

2. $a^2 + 8a + 7 = 0$

3. $v^2 - 4v + 6 = 0$

4. $d^2 - 6d + 7 = 0$

5. $2z^2 + 9z - 5 = 0$

6. $2r^2 + 12r + 10 = 0$

7. $2b^2 - 9b = -12$

8. $2h^2 - 5h = 12$

9. $3p^2 + p = 4$

10. $3m^2 - 1 = -8m$

11. $4y^2 + 7y = 15$

12. $1.6n^2 + 2n + 2.5 = 0$

13. $4.5k^2 + 4k - 1.5 = 0$

14. $\frac{1}{2}c^2 + 2c + \frac{3}{2} = 0$

15. $3w^2 - \frac{3}{4}w = \frac{1}{2}$

State the value of the discriminant for each equation. Then determine the number of real roots of the equation.

16. $a^2 + 8a + 16 = 0$

17. $c^2 + 3c + 12 = 0$

18. $2w^2 + 12w = -7$

19. $2u^2 + 15u = -30$

20. $4n^2 + 9 = 12n$

21. $3g^2 - 2g = 3.5$

22. $2.5k^2 + 3k - 0.5 = 0$

23. $\frac{3}{4}d^2 - 3d = -4$

24. $\frac{1}{4}s^2 = -s - 1$

CONSTRUCTION For Exercises 25 and 26, use the following information.

A roofer tosses a piece of roofing tile from a roof onto the ground 30 feet below. He tosses the tile with an initial downward velocity of 10 feet per second.

25. Write an equation to find how long it takes the tile to hit the ground. Use the model for vertical motion, $H = -16t^2 + vt + h$, where H is the height of an object after t seconds, v is the initial velocity, and h is the initial height. (*Hint:* Since the object is thrown down, the initial velocity is negative.)

26. How long does it take the tile to hit the ground?

27. **PHYSICS** Lupe tosses a ball up to Quyen, waiting at a third-story window, with an initial velocity of 30 feet per second. She releases the ball from a height of 6 feet. The equation $h = -16t^2 + 30t + 6$ represents the height h of the ball after t seconds. If the ball must reach a height of 25 feet for Quyen to catch it, does the ball reach Quyen? Explain. (*Hint:* Substitute 25 for h and use the discriminant.)