

2.9 Practice Set

1. What is the Quadratic Formula?
2. Describe the process that is used to derive the Quadratic Formula.
3. What conditions must be met prior to using the Quadratic Formula?
4. What method can you try before either completing the square or using the quadratic formula?

Solve each of the following equations for the indicated variable.

Write answers as complex numbers $\mathbf{a + bi}$ when they are complex.

Simplify your answers and rationalize denominators in your answers when necessary.

5. $x^2 - 7x + 4 = 0$

6. $y^2 + 5y = 3$

7. $3z^2 - 2z - 1 = 0$

8. $2m^2 + 4m = 5$

9. $12r^2 + 15r = 30$

10. $\frac{1}{5}x^2 - 2x + 3 = 0$

11. $\frac{3}{4}y^2 - \frac{1}{4}y + \frac{5}{4} = 0$

12. $x^2 + 8x + 1 = 0$

13. $z^2 + 3z = -8$

14. $(x + 2)(x - 4) = 3$

15. $(3t - 2)(t - 1) = 2(t - 7) + 4$

$$16. \quad x^2 + 15x - 9 = 3x^2 - 5x$$

$$17. \quad \frac{m^2}{3} + m = \frac{4}{3}$$

$$18. \quad 6y^2 - 6y - 10 = 2$$

$$19. \quad 4x(x - 2) = 3$$

$$20. \quad n(2n + 3) = 10$$

$$21. \quad (s - 3)^2 = 5s$$

$$22. \quad 2x^2 - 20 = 14x$$

$$23. \quad 5y^2 + 3y - 2 = 0$$

$$24. \quad 11r^2 - \sqrt{3}r - 1 = 0$$

$$25. \quad 4x^2 - \sqrt{5}x = -2$$

Distributed Practice Problems

Perform the indicated operation and/or simplify each of the following.

Assume that all variables represent positive real numbers and rationalize all denominators.

$$26. \quad \frac{\sqrt[4]{162x^9y^2}}{\sqrt[4]{2xy^{10}}}$$

$$27. \quad \frac{2\sqrt{3}+5\sqrt{7}}{4\sqrt{3}-9\sqrt{7}}$$

$$28. \quad (5 - 4i)^2$$

Solve each of the following equations for the indicated variable.
Simplify all answers completely.

29. $\sqrt{2x - 3} - 4 = 7$

30. $\sqrt{m + 5} + \sqrt{m - 25} = 5$