Module 13 Solving Quadratic Equations
of One Variable
Lesson 5 Solving Quadratic Equations
by the Quadratic Formula

additional practice

Solve each quadratic equation using the quadratic formula.

1. $x^2 - 5x - 6 = 0$

$\{6, -1\}$

2. $d^2 - 7d + 12 = 0$

$\{-3, -4\}$

3. $x^2 + 2x - 24 = 0$

$\{4, -6\}$

4. $y^2 - 2y - 15 = 0$

$\{-3, 5\}$

5. $b^2 + 36 = 12b$

$\{6\}$

6. $4 + t^2 = -4t$

$\{-2\}$

7. $2x^2 = 3 - 5x$

$\left\{\dfrac{1}{2}, -3\right\}$

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

$\left\{\dfrac{4}{5}, -1\right\}$

9. $2x = -4x^2 + 12$

$\left\{\dfrac{3}{2}, -2\right\}$

10. $15x^2 = 7x + 2$

$\left\{-\dfrac{1}{5}, \dfrac{2}{3}\right\}$

11. $3x^2 = x + 2$

$\left\{-\dfrac{2}{3}, 1\right\}$

12. $19x + 4 = -12x^2$

$\left\{-1\dfrac{1}{3}, -\dfrac{1}{4}\right\}$

13. $5x^2 + x + 1 = 0$

$\varnothing$

14. $-2x^2 + 5x - 4 = 0$

$\varnothing$

15. $2x^2 + 5x - 5 = 0$

$\left\{\dfrac{-5 + \sqrt{65}}{4}, \dfrac{-5 - \sqrt{65}}{4}\right\}$

16. $2b^2 + 3b - 1 = 0$

$\left\{\dfrac{-3 + \sqrt{17}}{4}, \dfrac{-3 - \sqrt{17}}{4}\right\}$

17. $-3t^2 - 5t + 3 = 0$

$\left\{\dfrac{-5 + \sqrt{61}}{6}, \dfrac{-5 - \sqrt{61}}{6}\right\}$

18. $5n^2 + 3 = 4n$

$\varnothing$

Use the discriminant to determine the number of solutions for each equation. Then, solve the equation using the value of the discriminant.

19. $9c^2 + 5c = 2$

$b^2 - 4ac = 97$; two real solutions

$$\left\{ \frac{-5 + \sqrt{97}}{18}, \frac{-5 - \sqrt{97}}{18} \right\}$$

20. $x^2 = 3x + 8$

$b^2 - 4ac = 41$; two real solutions

$$\left\{ \frac{3 + \sqrt{41}}{2}, \frac{3 - \sqrt{41}}{2} \right\}$$

21. $11 = 2x^2 - x$

$b^2 - 4ac = 89$; two real solutions

$$\left\{ \frac{1 + \sqrt{89}}{4}, \frac{1 - \sqrt{89}}{4} \right\}$$

22. $4x^2 - 7x = 3$

$b^2 - 4ac = 97$; two real solutions

$$\left\{ \frac{7 + \sqrt{97}}{8}, \frac{7 - \sqrt{97}}{8} \right\}$$

23. $r^2 = 3r - 12$

$b^2 - 4ac = -39$; no real solution

$\varnothing$

24. $-7 = 5x - 4x^2$

$b^2 - 4ac = -137$; two real solutions

$$\left\{ \frac{5 + \sqrt{137}}{8}, \frac{5 - \sqrt{137}}{8} \right\}$$