Concept Quiz 6.4

For Problems 1–10, answer true or false.

1. The quadratic formula can be used to solve any quadratic equation.
2. The number $\sqrt{b^2 - 4ac}$ is called the discriminant of the quadratic equation.
3. Every quadratic equation will have two solutions.
4. The quadratic formula cannot be used if the quadratic equation can be solved by factoring.
5. To use the quadratic formula for solving the equation $3x^2 + 2x - 5 = 0$, you must first divide both sides of the equation by 3.
6. The equation $9x^2 + 30x + 25 = 0$ has one real solution with a multiplicity of 2.
7. The equation $2x^2 + 3x + 4 = 0$ has two nonreal complex solutions.
8. The equation $x^2 + 9 = 0$ has two real solutions.
9. Because the quadratic formula has a denominator, it could be simplified and written as $x = -b \pm \dfrac{\sqrt{b^2 - 4ac}}{2a}$.
10. Rachel reduced the result $x = \dfrac{6 \pm 5\sqrt{7}}{2}$ to obtain $x = 3 \pm \dfrac{5\sqrt{7}}{2}$. Her result is correct.

Problem Set 6.4

For Problems 1–10, simplify and reduce each expression.

1. $\dfrac{2 \pm \sqrt{20}}{4}$
2. $\dfrac{4 \pm \sqrt{20}}{6}$
3. $\dfrac{-6 \pm \sqrt{27}}{3}$
4. $\dfrac{-9 \pm \sqrt{54}}{3}$
5. $\dfrac{6 \pm \sqrt{18}}{9}$
6. $\dfrac{12 \pm \sqrt{32}}{8}$
7. $\dfrac{-10 \pm \sqrt{75}}{10}$
8. $\dfrac{-4 \pm \sqrt{8}}{4}$
9. $\dfrac{-6 \pm \sqrt{48}}{4}$
10. $\dfrac{-8 \pm \sqrt{72}}{4}$

For Problems 11–50, use the quadratic formula to solve each of the quadratic equations. (Objective 1)

11. $x^2 + 2x - 1 = 0$
12. $x^2 + 4x - 1 = 0$
13. $n^2 + 5n - 3 = 0$
14. $n^2 + 3n - 2 = 0$
15. $a^2 - 8a = 4$
16. $a^2 - 6a = 2$
17. $n^2 + 5n + 8 = 0$
18. $2n^2 - 3n + 5 = 0$
19. $x^2 - 18x + 80 = 0$
20. $x^2 + 19x + 70 = 0$
21. $-y^2 = -9y + 5$
22. $-y^2 + 7y = 4$
23. $2x^2 + x - 4 = 0$
24. $2x^2 + 5x - 2 = 0$
25. $4x^2 + 2x + 1 = 0$
26. $3x^2 - 2x + 5 = 0$
27. $3a^2 - 8a + 2 = 0$
28. $2a^2 - 6a + 1 = 0$
29. $-2n^2 + 3n + 5 = 0$
30. $-3n^2 - 11n + 4 = 0$
31. $3x^2 + 19x + 20 = 0$
32. $2x^2 - 17x + 30 = 0$
33. $36n^2 - 60n + 25 = 0$
34. $9n^2 + 42n + 49 = 0$
35. $4x^2 - 2x = 3$
36. $6x^2 - 4x = 3$
37. $5x^2 - 13x = 0$
38. $7x^2 + 12x = 0$
39. $3x^2 = 5$
40. $4x^2 = 3$
41. $6t^2 + t - 3 = 0$
42. $2t^2 + 6t - 3 = 0$
43. $n^2 + 32n + 252 = 0$
44. $n^2 - 4n - 192 = 0$
45. $12x^2 - 73x + 110 = 0$
46. $6x^2 + 11x - 255 = 0$
47. $-2x^2 + 4x - 3 = 0$
48. $-2x^2 + 6x - 5 = 0$
49. $-6x^2 + 2x + 1 = 0$
50. $-2x^2 + 4x + 1 = 0$