6.2 Exercises

Use the quadratic formula to find the real number solutions of each of the following equations. See Examples 1 and 2.

1. $m^2 - 8m + 15 = 0$

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

3. $4x^2 - 8x + 1 = 0$

4. $m^2 + 2m - 5 = 0$

5. $2x^2 + 4x + 1 = 0$

6. $2z^2 + 3z - 1 = 0$

7. $m^2 + 18 = 10m$

8. $p^2 + 6p + 4 = 0$

9. $2y^2 = 2y + 1$

10. $9r^2 + 6r = 1$

11. $q^2 - 1 = q$

12. $2p^2 - 4p = 5$

13. $5m^2 + 8m + 2 = 0$

14. $3r^2 - r - 1 = 0$

15. $5r^2 - 2r - 1 = 0$

16. $5q^2 - 2q - 2 = 0$

17. $4r^2 - 3r = 5$

18. $6t^2 = 7 - 19t$

19. $p^2 + \frac{p}{3} = \frac{2}{3}$

20. $\frac{x^2}{4} - \frac{x}{2} = 1$

21. $4k(k + 1) = 1$

22. $(r - 1)(4r) = 19$

23. $(g + 2)(g - 3) = 1$

24. $(y - 5)(y + 2) = 6$

25. $3x^2 + 2x = 2$

26. $26r - 2 = 3r^2$

27. $y = \frac{5(5 - y)}{3(y + 1)}$

28. $k = \frac{k - 15}{3(k - 1)}$

Use the quadratic formula to find the imaginary number solutions of the following equations. See Examples 3 and 4.

29. $3x^2 + 4x + 2 = 0$

30. $2k^2 + 3k = -2$

31. $m^2 - 6m + 14 = 0$

32. $p^2 + 4p + 11 = 0$

33. $4z^2 = 4z - 7$

34. $9a^2 + 7 = 6a$

35. $m^2 + 1 = -m$

36. $y^2 = 2y - 2$

37. $3w^2 - w + 4 = 0$

38. $2p^2 - 3p + 2 = 0$

39. $4ix - 3x^2 = 0$

40. $5m^2 - 8im = 0$

41. $2iz^2 - 3z + 2i = 0$

42. $r^2 - ir + 12 = 0$

Section 6.2 (page 258)

1. $\{-5, -3\}$ **3.** $\left\{\frac{2+\sqrt{3}}{2}, \frac{2-\sqrt{3}}{2}\right\}$ **5.** $\left\{\frac{-2+\sqrt{2}}{2}, \frac{-2-\sqrt{2}}{2}\right\}$

7. $\{5+\sqrt{7}, 5-\sqrt{7}\}$ **9.** $\left\{\frac{1+\sqrt{3}}{2}, \frac{1-\sqrt{3}}{2}\right\}$ **11.** $\left\{\frac{1+\sqrt{5}}{2}, \frac{1-\sqrt{5}}{2}\right\}$

13. $\left\{\frac{-4+\sqrt{6}}{5}, \frac{-4-\sqrt{6}}{5}\right\}$ **15.** $\left\{\frac{1+\sqrt{6}}{5}, \frac{1-\sqrt{6}}{5}\right\}$ **17.** $\left\{\frac{3+\sqrt{89}}{8}, \frac{3-\sqrt{89}}{8}\right\}$

19. $\{-1, 2/3\}$ **21.** $\left\{\frac{-1+\sqrt{2}}{2}, \frac{-1-\sqrt{2}}{2}\right\}$ **23.** $\left\{\frac{1+\sqrt{29}}{2}, \frac{1-\sqrt{29}}{2}\right\}$

25. $\left\{\frac{-1+\sqrt{7}}{3}, \frac{-1-\sqrt{7}}{3}\right\}$ **27.** $\left\{\frac{-4+\sqrt{91}}{3}, \frac{-4-\sqrt{91}}{3}\right\}$ **29.** $\left\{-\frac{2}{3}+\frac{\sqrt{2}}{3}i, -\frac{2}{3}-\frac{\sqrt{2}}{3}\right.$

31. $\{3+i\sqrt{5}, 3-i\sqrt{5}\}$ **33.** $\left\{\frac{1}{2}+\frac{\sqrt{6}}{2}i, \frac{1}{2}-\frac{\sqrt{6}}{2}i\right\}$ **35.** $\left\{-\frac{1}{2}+\frac{\sqrt{3}}{2}i, -\frac{1}{2}-\frac{\sqrt{3}}{2}i\right\}$

37. $\left\{\frac{1}{6}+\frac{\sqrt{47}}{6}i, \frac{1}{6}-\frac{\sqrt{47}}{6}i\right\}$ **39.** $\{0, 4i/3\}$ **41.** $\{-2i, i/2\}$ **43.** $\{-.275, 7.275\}$

45. $\{-1.212, 3.712\}$ **47.** $\{-2.165, .594\}$ **49.** Bezzone, approximately 13.1 hours; Nicolai, approximately 15.1 hours **51.** Johnson, 4 hours; Toms, 8 hours **53.** Dick, 23.0 hours; Tom, 25.0 hours **55.** $\{-2\sqrt{2}, \sqrt{2}\}$ **57.** $\left\{\frac{-4\sqrt{5}}{5}, \frac{\sqrt{5}}{2}\right\}$ **59.** $\{-i, 2i\}$ **61.** 52; 1/2; $-3/4$

63. 17; $\frac{5\sqrt{2}}{2}$; 1 **65.** 3 **67.** 1/4