Practice 5-8

The Quadratic Formula

Evaluate the discriminant of each equation. Tell how many solutions each equation has and whether the solutions are real or imaginary.

1. $y = x^2 + 10x - 25$

2. $y = x^2 + 10x + 10$

3. $y = 9x^2 - 24x$

4. $y = 4x^2 - 4x + 1$

5. $y = 4x^2 - 5x + 1$

6. $y = 4x^2 - 3x + 1$

7. $y = x^2 + 3x + 4$

8. $y = x^2 + 7x - 3$

9. $y = -2x^2 + 3x - 5$

10. $y = x^2 - 5x + 4$

11. $y = x^2 + 12x + 36$

12. $y = x^2 + 2x + 3$

13. $y = 2x^2 - 13x - 7$

14. $y = -5x^2 + 6x - 4$

15. $y = -4x^2 - 4x - 1$

Solve each equation using the Quadratic Formula.

16. $x^2 + 6x + 9 = 0$

17. $x^2 - 15x + 56 = 0$

18. $3x^2 - 5x + 2 = 0$

19. $2x^2 + 3x + 5 = 0$

20. $10x^2 - 23x + 12 = 0$

21. $4x^2 + x - 5 = 0$

22. $x^2 + 8x + 15 = 0$

23. $3x^2 + 2x + 1 = 0$

24. $4x^2 + x + 5 = 0$

25. $x^2 - 4x - 12 = 0$

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

27. $2x^2 - 5x + 2 = 0$

28. $x^2 + 6x - 4 = 0$

29. $x^2 = 2x - 5$

30. $3x^2 + 7 = -6x$

31. $2x^2 + 6x + 3 = 0$

32. $x^2 = -18x - 80$

33. $x^2 + 9x - 13 = 0$

34. $x^2 - 8x + 25 = 0$

35. $4x^2 + 13x = 12$

36. $3x^2 - 5x = -12$

37. $3x^2 + 4x + 5 = 0$

38. $2x^2 = 3x - 7$

39. $5x^2 + 2x + 1 = 0$

40. $5x^2 + x + 3 = 0$

41. $5x^2 + x = 3$

42. $5x^2 - 2x + 7 = 0$

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

44. $-2x^2 + 3x = 24$

45. $4x^2 = 5x - 6$

46. $x^2 + 6x + 5 = 0$

47. $x^2 - 6x = -8$

48. $x^2 - 6x = -6$

Solve.

49. A model of the daily profits p of a gas station based on the price per gallon g is $p = -15,000g^2 + 34,500g - 16,800$. Use the discriminant to find whether the station can profit $4000 per day. Explain.

Solve each equation using the Quadratic Formula. Find the exact solutions. Then approximate any radical solutions. Round to the nearest hundredth.

50. $x^2 - 2x - 3 = 0$

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

52. $x^2 - 2x - 8 = 0$

53. $7x^2 - 12x + 3 = 0$

54. $5x^2 + 5x - 1 = 0$

55. $4x^2 + 5x + 1 = 0$

56. $6x^2 + 5x - 4 = 0$

57. $x^2 + x = 6$

58. $x^2 - 13x = 48$

59. $2x^2 + 5x = 0$

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

61. $x^2 - 4x + 1 = 0$

62. $9x^2 - 6x - 7 = 0$

63. $x^2 - 35 = 2x$

64. $x^2 + 7x + 10 = 0$