

1.4 EXERCISES

 PRACTICE

Solve the following quadratic equations by factoring. See Example 1.

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| 1. $2x^2 - x = 3$ | 2. $3x^2 - 7x = 0$ |
| 3. $x^2 - 14x + 49 = 0$ | 4. $9x - 5x^2 = -2$ |
| 5. $y(2y + 9) = -9$ | 6. $2x^2 - 3x = x^2 + 18$ |
| 7. $(3x + 2)(x - 1) = 7 - 7x$ | 8. $3x^2 + 33 = 2x^2 + 14x$ |
| 9. $5x^2 + 2x + 3 = 4x^2 + 6x - 1$ | 10. $15x^2 + x = 2$ |
| 11. $(x - 7)^2 = 16$ | 12. $4x^2 - 9 = 0$ |

Solve the following quadratic equations by taking square roots. See Example 2.

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| 13. $(x - 3)^2 = 9$ | 14. $(8t - 3)^2 = 0$ | 15. $(2x + 1)^2 - 7 = 0$ |
| 16. $(y - 18)^2 - 1 = 0$ | 17. $9 = (3s + 2)^2$ | 18. $(2x - 1)^2 = 8$ |
| 19. $x^2 - 4x + 4 = 49$ | 20. $-3(n + 7)^2 = -27$ | 21. $(3x - 6)^2 = 4x^2$ |

Solve the following quadratic equations by completing the square. See Example 3.

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| 22. $x^2 + 8x + 7 = -8$ | 23. $2x^2 + 6x - 10 = 10$ | 24. $2x^2 + 7x - 15 = 0$ |
| 25. $4x^2 - 4x - 63 = 0$ | 26. $u^2 + 10u + 9 = 0$ | 27. $4x^2 - 56x + 195 = 0$ |
| 28. $4x^2 + 32x - 260 = 0$ | 29. $z^2 + 26z + 2 = -23$ | 30. $y^2 + 22y + 96 = 0$ |

Solve the following quadratic equations using the quadratic formula. See Example 4.

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|---------------------------|------------------------------|----------------------|
| 31. $3x^2 - 4 = -x$ | 32. $2.1y^2 - 3.5y = 4$ | 33. $a(a + 2) = -1$ |
| 34. $3x^2 - 2x = 0$ | 35. $6x^2 + 5x - 4 = 3x - 2$ | 36. $7x^2 - 4x = 51$ |
| 37. $4x^2 - 14x - 27 = 3$ | | |

Solve the following quadratic equations using any appropriate method.

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|---------------------------|----------------------------|
| 38. $(z - 11)^2 = 9$ | 39. $x^2 + 20x + 36 = -48$ |
| 40. $256t^2 - 324 = 0$ | 41. $(y - 8)^2 = 36$ |
| 42. $(9y - 6)^2 = 121y^2$ | 43. $2x^2 + 8x - 3 = 6x$ |
| 44. $x^2 - 6x = 27$ | 45. $3a^2 + 12a - 576 = 0$ |
| 46. $-3(b + 5)^2 = -768$ | 47. $y^2 + 13y + 42 = 0$ |

48. $3x^2 - 6x = 0$

49. $7x^2 - 42x = 0$

50. $y^2 + 24y + 23 = 0$

51. $5x^2 - 5x - 10 = 0$

52. $4w^2 + 10w + 5 = 3w^2 + 18w - 10$

53. $|x^2 - 3x| = 2$ (**Hint:** Replace $|x^2 - 3x|$ first with $x^2 - 3x$ and solve the resulting equation, then replace it with $-(x^2 - 3x)$ and solve the resulting equation.)

54. $|x^2 - 8| = 1$

**WRITING & THINKING**

55. Factor the quadratic $9x^2 - 6x - 4$.

56. Factor the quadratic $4x^2 + 12x + 1$.

57. Determine b and c so that the equation $x^2 + bx + c = 0$ has the solution set $\{-3, 8\}$.

**TECHNOLOGY**

Use a graphing utility to solve the following quadratic equations.

58. $5x^2 - 3x = 17$

59. $(a + 4)(4a - 3) = 5$

60. $10\pi r + \pi r^2 = 107$

61. $4.8x^2 + 3.5x - 9.2 = 0$