

8.6 Exercises

Concept Check

Fill-in-the-Blank. Complete each sentence using information found in this section.

1. If a trinomial is not a perfect square trinomial, you can try factoring it by using the _____ method or the _____-method.
2. When factoring a polynomial with two terms, check to see if it is of the form of the sum or difference of two _____ or two _____.
3. Factoring can be checked by multiplying the factors. The product should be the _____ expression.
4. If there are four terms when factoring, consider factoring by _____.
5. When factoring, always look for a common _____ factor first.

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

6. You should always start by checking the number of terms when factoring a polynomial.
7. If a trinomial is to be factored, the trial-and-error or *ac*-methods can be used.
8. If there are four terms in a polynomial, it cannot be factored.

Practice

Completely factor each of the given polynomials. If a polynomial cannot be factored, write "not factorable."

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|-----------------------|-------------------------|---------------------------|
| 1. $m^2 + 7m + 6$ | 12. $49x^2 + 4$ | 23. $x^3 - 4x^2 - 12x$ |
| 2. $a^2 - 4a + 3$ | 13. $x^2 + 10x + 25$ | 24. $3n^3 + 15n^2 + 18n$ |
| 3. $x^2 + 11x + 18$ | 14. $x^2 + 3x - 10$ | 25. $112a - 2a^2 - 2a^3$ |
| 4. $y^2 + 8y + 15$ | 15. $x^2 + 9x - 36$ | 26. $200x + 20x^2 - 4x^3$ |
| 5. $x^2 - 100$ | 16. $x^2 + 16x + 64$ | 27. $16x^3 - 100x$ |
| 6. $n^2 - 8n + 12$ | 17. $3a^2 + 12a - 36$ | 28. $48x^3 - 27x$ |
| 7. $m^2 - m - 6$ | 18. $-2y^2 + 24y - 70$ | 29. $-3x^2 + 17x - 10$ |
| 8. $y^2 - 49$ | 19. $-5x^2 + 70x - 240$ | 30. $2x^2 + 7x + 3$ |
| 9. $a^2 + 2a + 24$ | 20. $7t^2 + 14t - 168$ | 31. $6x^2 - 11x + 4$ |
| 10. $-x^2 - 12x - 35$ | 21. $64 + 49t^2$ | 32. $12x^2 - 32x + 5$ |
| 11. $64a^2 - 1$ | 22. $3x^2 - 147$ | 33. $12m^2 + m - 6$ |

34. $6t^2 + t - 35$ 50. $252x - 175x^3$ 66. $2x^3 - 14x^2 - 3x + 21$
35. $4x^2 - 14x + 6$ 51. $12n^2 - 60n - 75$ 67. $x^3 + 125$
36. $-4x^2 + 18x - 20$ 52. $-12x^3 - 2x^2 - 70x$ 68. $y^3 - 1000$
37. $8x^2 + 6x - 35$ 53. $21a^3 - 13a^2 - 2a$ 69. $x^4y^3 - x^4$
38. $12x^2 + 5x - 3$ 54. $13x^3 + 120x^2 + 100x$ 70. $x^6y^3 - x^3$
39. $20x^2 - 21x - 54$ 55. $36x^3 + 21x^2 - 30x$ 71. $8a^6 + 27b^6$
40. $21x^2 - x - 10$ 56. $63x - 3x^2 - 30x^3$ 72. $a^9 + 64b^3$
41. $14 + 11x - 15x^2$ 57. $16x^3 - 52x^2 + 22x$ 73. $x^6y^3 - 125$
42. $24 + x - 3x^2$ 58. $24y^3 - 4y^2 - 160y$ 74. $x^3y^3 + 216$
43. $-8a^2 + 22a - 15$ 59. $75 + 10m + 120m^2$ 75. $x^3 + 7x^2 - 9x - 63$
44. $63x^2 - 40x - 12$ 60. $144x^3 - 10x^2 - 50x$ 76. $x^5 + 5x^4 - 4x - 20$
45. $20y^2 + 9y - 20$ 61. $xy + 3y - 4x - 12$ 77. $9x^2 - (y + 6)^2$
46. $35x^2 - x - 6$ 62. $2xz + 10x + z + 5$ 78. $(x + 2)^2 - 25a^2$
47. $18x^2 - 15x + 2$ 63. $x^2 + 2xy - 6x - 12y$ 79. $(y^2 + 20y + 100) - 49x^2$
48. $12x^2 - 47x + 11$ 64. $2y^2 + 6yz + 5y + 15z$ 80. $(t^2 + 22t + 121) - 16s^2$
49. $-150x^2 + 96$ 65. $-x^3 + 8x^2 + 5x - 40$