EXERCISE 1.4

A

■ *Factor completely. Check by multiplying factors. See Example* 1.

1. $4x^2z + 8xz$
2. $3x^2y + 6xy$
3. $3n^4 - 6n^3 + 12n^2$
4. $2x^4 - 4x^2 + 8x$
5. $15r^2s + 18rs^2 - 3r$
6. $2x^2y^2 - 3xy + 5x^2$
7. $3m^2n^4 - 6m^3n^3 + 14m^3n^2$
8. $6x^3y - 6xy^3 + 12x^2y^2$
9. $15a^4b^3c^4 - 12a^2b^2c^5 + 6a^2b^3c^4$
10. $14xy^4z^3 + 21x^2y^3z^2 - 28x^3y^2z^5$
11. $a(a + 3) + b(a + 3)$
12. $b(a - 2) + a(a - 2)$
13. $y(y - 2) - 3x(y - 2)$
14. $2x(x + 3) - y(x + 3)$
15. $4(x - 2)^2 - 8x(x - 2)^3$
16. $6(x + 1) - 3x(x + 1)^2$
17. $x(x - 5)^2 - x^2(x - 5)^3$
18. $x^2(x + 3)^3 - x(x + 3)^2$
19. $(x - 1)^2 - (x - 1)^2(x + 3)$
20. $(x + 2)^2(x - 1) - (x + 2)^2$
21. $4(x - 1)(x + 3)^2 + 2(x + 1)^2(x + 3)$
22. $3(x + 2)^2(x - 4) + 6(x + 2)(x + 1)^2$

■ *Supply the missing factors or terms. See Example* 2.

23. $3m - 2n = -(?)$
24. $2a - b = -(?)$
25. $-2x + 2 = -2(?)$
26. $-6x - 9 = -3(?)$
27. $-ab - ac = ?(b + c)$
28. $-a^2 + ab = ?(a - b)$
29. $2x - y + 3z = -(?)$
30. $3x + 3y - 2z = -(?)$

■ *Factor completely. See Examples* 3, 4, *and* 5.

31. $x^2 + 5x + 6$
32. $x^2 + 5x + 4$
33. $y^2 - 7y + 12$
34. $y^2 - 7y + 10$
35. $x^2 - 6 - x$
36. $x^2 - 15 - 2x$
37. $2x^2 + 3x - 2$
38. $3x^2 - 7x + 2$
39. $7x + 4x^2 - 2$
40. $1 - 5x + 6x^2$
41. $9y^2 - 21y - 8$
42. $10y^2 - 3y - 18$
43. $10u^2 - 3 - u$
44. $8u^2 - 3 + 5u$
45. $21x^2 - 43x - 14$
46. $24x^2 - 29x + 5$
47. $5a + 72a^2 - 12$
48. $-30a + 72a^2 - 25$
49. $12 - 53x + 30x^2$
50. $39x + 80x^2 - 20$
51. $-30t - 44 + 54t^2$
52. $48t^2 - 122t + 39$
53. $3x^2 - 7ax + 2a^2$
54. $9x^2 + 9ax - 10a^2$
55. $15x^2 - 4xy - 4y^2$
56. $12x^2 + 7xy - 12y^2$
57. $18u^2 + 20v^2 - 39uv$
58. $24u^2 - 20v^2 + 17uv$
59. $12a^2 - 14b^2 - 13ab$
60. $24a^2 - 15b^2 - 2ab$
61. $10a^2b^2 - 19ab + 6$
62. $12a^2b^2 - ab - 20$
63. $56x^2y^2 - 2xy - 4$
64. $54x^2y^2 + 3xy - 2$
65. $22a^2z^2 - 21 - 19az$
66. $26a^2z^2 - 24 + 23az$

■ *Factor completely. See Examples* 6 *and* 7.

67. $ax + a + b + bx$
68. $ax^2 + x + a^2x + a$
69. $x^2 - ax + xy - ay$
70. $x^3 - x^2y + xy - y^2$
71. $3x - 2xy - 6x^2 + y$
72. $5xz + y - 5yz - x$
73. $a^3 + 2ab^2 - 2a^2b - 4b^3$
74. $2a^2 + 3a - 2ab - 3b$
75. $6x^2y - 4xy^2 + 3x - 2y$