Factoring
Factor out the greatest common factor.

1. $5x + 5$
2. $11 - 11y$
3. $6x - 3$
4. $35 - 20x$
5. $x - x^2$
6. $y^2 + y^3$
7. $2x^5 + 4x^6$
8. $28y - 49y^2$
9. $xy - x^2y^2$
10. $a^2b^3 + a^4b$
11. $3x^2y^3z^4 - 12x^3y^3z^3$
12. $8x^2y^6z^4 - 12x^3y^5z^2 + 20x^2y^5z$
13. $15a^2b^4c^3 - 27a^2bc^5 + 18a^7b^4c^3$
14. $x(x + 2) + 5(x + 2)$
15. $x(x + 4) - 2(x + 4)$
16. $y(y - 3) - (y - 3)$
17. $2x(x - 1) + 3(x - 1)$
18. $(x - 21) - 3x(x - 21)$
19. $x^2(y^2 + 1) + 4(y^2 + 1)$
20. $(1 - x) + x^2(1 - x)$
21. $9(4 - x) - y^2(x - 4)$

Factor by grouping.

22. $12x^8 - 15x^6 - 8x^2 + 10$
23. $10z^3 - 90z^2 + 6z - 27$
24. $3a^2 - 3ab + 8a - 8b$
25. $7x^3 - 12x^2 + 84x - 144$
26. $11y^7 - 88y^4 - y^3 + 8$
27. $6xy + 8x - 27y - 36$
28. $5x^4 - 35x^3 + x - 7$
29. $-6x^3 + 8x^2 - 21x + 28$
30. $z^7 + 7z^5 + 8z^2 + 56$
31. $72a^2b + 12a^3 - 30b - 5a$

Factor the trinomial completely.

32. $x^2 + 6x + 8$
33. $y^2 + 7y + 10$
34. $x^2 + 9x + 18$
35. $z^2 + 4z + 4$
36. $x^2 + 4x - 21$
37. $y^2 - 9y - 22$
38. $x^2 - 4x + 4$
39. $a^2 - 9a - 10$
40. $x^2 - 2x - 63$
41. $-x^2 + 5x + 6$
42. $x^2 + 3x - 70$
43. $x^2 + 16x + 48$
44. $-x^2 + x + 56$
45. $x^2 - 13x + 40$
46. $-1 - 2x - x^2$
47. $2x^2 + 4x - 30$
48. $4x^2 - 32x + 60$
49. $4y^2 - 8y - 12$
50. $9x^2 + 18x - 27$
51. $x^3 - 13x^2 + 30x$
52. $x^3 + x^2 - 2x$
53. $3x^3 + 18x^2 + 24x$
54. $4x^3 + 8x^2 - 12x$

55. $2x^4 - 20x^3 + 42x^2$

56. $5x^4 - 10x^3 - 240x^2$

57. $2x^2 + 5x + 3$

58. $4x^2 + 4x + 1$

59. $3x^2 + 4x + 1$

60. $6z^2 - 7z + 1$

61. $15x^2 - 11x + 2$

62. $2 - 5y - 3y^2$

63. $12 - 13y - 4y^2$

64. $9z^2 - 18z + 8$

65. $200x^2 + 500x + 300$

66. $9y^2 - 24y + 15$

67. $6x - 3x^2 - 18x^3$

68. $16y^3 - 28y^2 + 6y$

69. $30 + 25x - 5x^2$

70. $10x^3 - 26x^2 + 16x$

71. $4x^3 + 22x^2 - 12x$

72. $72 - x - x^2$

Factor completely.

73. $x^2 - 4$

74. $9 - x^2$

75. $y^2 - 25$

76. $z^2 - \frac{1}{4}$

77. $x^2 - \frac{1}{9}$

78. $\frac{4}{25} - y^2$

79. $(x + 3)^2 - 1$

80. $81 - (x - 7)^2$

81. $13x^2 - 13$

82. $3y^2 - 12$

83. $27 - 3z^2$

84. $2x^3 - 2x$

85. $32y^2 - 2y^4$

86. $4x^2 - 25$

87. $9 - 16y^2$

88. $8x^5 - 2x^3$

89. $2a^3b^3 - 50ab^3$

90. $y^4 - 81$

91. $1 - x^4$

92. $2y^4 - 32$

93. $x^4 + 10x^2 + 21$

94. $y^4 + 2y^2 + 1$

95. $x^4 + 13x^2 + 36$

96. $x^4 - 2x^2 + 1$

97. $z^4 - 5z^2 + 4$

98. $x^4 - 10x^2 + 9$

99. $x^3 + 3x^2 - 4x - 12$

100. $x^3 + 5x^2 - 9x - 45$

101. $2x^3 + x^2 - 18x - 9$

102. $2x^3 - 9x^2 - 8x + 36$

103. $-6 - 12x - 6x^2$

104. $x^3 + x^2 - 9x - 9$

105. $4x^4 + 8x^2 - 12$

106. $2x^3 - x^2 + 4x - 2$

107. $x^4 - 13x^2 + 36$

108. $x^3 - x^2 + x - 1$

Answers:

1. $5(x+1)$
2. $11(1-y)$
3. $3(2x-1)$
4. $5(7-4x)$
5. $x(1-x)$
6. $y^2(1+y)$
7. $2x^5(1+2x)$
8. $7y(4-7y)$
9. $xy(1-xy)$
10. $a^2b(b^2+a^2)$
11. $3x^2y^3z^3(z-4x)$
12. $4x^2y^5z(2yz^3-3xz+5)$
13. $3a^2bc^3(5b^3-9c^2+6a^5b^3)$
14. $(x+2)(x+5)$
15. $(x+4)(x-2)$
16. $(y-3)(y-1)$
17. $(x-1)(2x+3)$
18. $(x-21)(1-3x)$
19. $(y^2+1)(x^2+4)$
20. $(1-x)(1+x^2)$
21. $(4-x)(9+y^2)$
22. $(3x^5-2)(4x^2-5)$
23. $(10z^2+3)(2z-9)$
24. $(3a+8)(a-b)$
25. $(x^2+12)(7x-12)$
26. $(11y^4-1)(y^3-8$
27. $(2x-9)(3y+4)$
28. $(5x^3+1)(x-7)$
29. $(2x^2+7)(-3x+4)$
30. $(z^5+8)(z^2+7$
31. $(12a^2-5)(6b+a)$
32. $(x+2)(x+4)$
33. $(y+2)(y+5)$
34. $(x+3)(x+6)$
35. $(z+2)^2$
36. $(x+7)(x-3)$
37. $(y-11)(y+2)$
38. $(x-2)^2$
39. $(a-10)(a+1)$
40. $(x-9)(x+7)$
41. $-(x-6)(x+1)$
42. $(x+10)(x-7)$
43. $(x+4)(x+12)$
44. $-(x-8)(x+7)$
45. $(x-5)(x-8)$
46. $-(x+1)^2$
47. $2(x+5)(x-3)$
48. $4(x-3)(x-5)$
49. $4(y-3)(y+1)$
50. $9(x+3)(x-1)$
51. $x(x-3)(x-10)$
52. $x(x+2)(x-1)$
53. $3x(x+2)(x+4)$

54. $4x(x+3)(x-1)$

55. $2x^2(x-7)(x-3)$

56. $5x^2(x-8)(x+6)$

57. $(x+1)(2x+3)$

58. $(2x+1)^2$

59. $(x+1)(3x+1)$

60. $(z-1)(6z-1)$

61. $(3x-1)(5x-2)$

62. $-(y+2)(3y-1)$

63. $-(y+4)(4y-3)$

64. $(3z-4)(3z-2)$

65. $100(x+1)(2x+3)$

66. $3(3y-5)(y-1)$

67. $-3x(3x+2)(2x-1)$

68. $2y(2y-3)(4y-1)$

69. $-5(x-6)(x+1)$

70. $2x(5x-8)(x-1)$

71. $2x(x+6)(2x-1)$

72. $-(x+9)(x-8)$

73. $(x-2)(x+2)$

74. $(3-x)(3+x)$

75. $(y-5)(y+5)$

76. $(z-\frac{1}{2})(z+\frac{1}{2})$

77. $(x-\frac{1}{3})(x+\frac{1}{3})$

78. $(\frac{2}{5}-y)(\frac{2}{5}+y)$

79. $(x+2)(x+4)$

80. $(16-x)(x+2)$

81. $13(x-1)(x+1)$

82. $3(y-2)(y+2)$

83. $3(3-z)(3+z)$

84. $2x(x-1)(x+1)$

85. $2y^2(4-y)(4+y)$

86. $(2x-5)(2x+5)$

87. $(3-4y)(3+4y)$

88. $2x^3(2x-1)(2x+1)$

89. $2ab^3(a-5)(a+5)$

90. $(y-3)(y+3)(y^2+9)$

91. $(1-x)(1+x)(1+x^2)$

92. $2(y-2)(y+2)(y^2+4)$

93. $(x^2+7)(x^2+3)$

94. $(y^2+1)^2$

95. $(x^2+9)(x^2+4)$

96. $(x-1)^2(x+1)^2$

97. $(z-2)(z+2)(z-1)(z+1)$

98. $(x-3)(x+3)(x-1)(x+1)$

99. $(x+3)(x-2)(x+2)$

100. $(x+5)(x-3)(x+3)$

101. $(2x+1)(x-3)(x+3)$

102. $(2x-9)(x-2)(x+2)$

103. $-6(x+1)^2$

104. $(x+1)(x-3)(x+3)$

105. $4(x-1)(x+1)(x^2+3)$

106. $(2x-1)(x^2+2)$

107. $(x-2)(x+2)(x-3)(x+3)$

108. $(x-1)(x^2+1)$