Instructor: Dr. R.A.G. Seely Practice Assignment 6b

Algebra & Functions (Maths 201–016)

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 the trinomial completely.

22. $x^2 + 6x + 8$
23. $y^2 + 7y + 10$
24. $x^2 + 9x + 18$
25. $z^2 + 4z + 4$
26. $x^2 + 4x - 21$
27. $y^2 - 9y - 22$
28. $x^2 - 4x + 4$
29. $a^2 - 9a - 10$
30. $x^2 - 2x - 63$
31. $-x^2 + 5x + 6$
32. $x^2 + 3x - 70$
33. $x^2 + 16x + 48$
34. $-x^2 + x + 56$
35. $x^2 - 13x + 40$
36. $-1 - 2x - x^2$
37. $2x^2 + 4x - 30$
38. $4x^2 - 32x + 60$
39. $4y^2 - 8y - 12$
40. $9x^2 + 18x - 27$
41. $x^3 - 13x^2 + 30x$
42. $x^3 + x^2 - 2x$
43. $3x^3 + 18x^2 + 24x$
44. $4x^3 + 8x^2 - 12x$

45. $2x^4 - 20x^3 + 42x^2$

46. $5x^4 - 10x^3 - 240x^2$

47. $2x^2 + 5x + 3$

48. $4x^2 + 4x + 1$

49. $3x^2 + 4x + 1$

50. $6z^2 - 7z + 1$

51. $15x^2 - 11x + 2$

52. $2 - 5y - 3y^2$

53. $12 - 13y - 4y^2$

54. $9z^2 - 18z + 8$

55. $200x^2 + 500x + 300$

56. $9y^2 - 24y + 15$

57. $6x - 3x^2 - 18x^3$

58. $16y^3 - 28y^2 + 6y$

59. $30 + 25x - 5x^2$

60. $10x^3 - 26x^2 + 16x$

61. $4x^3 + 22x^2 - 12x$

62. $72 - x - x^2$

Factor completely.

63. $x^2 - 4$

64. $9 - x^2$

65. $y^2 - 25$

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

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

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

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

70. $81 - (x - 7)^2$

71. $13x^2 - 13$

72. $3y^2 - 12$

73. $27 - 3z^2$

74. $2x^3 - 2x$

75. $32y^2 - 2y^4$

76. $4x^2 - 25$

77. $9 - 16y^2$

78. $8x^5 - 2x^3$

79. $2a^3b^3 - 50ab^3$

80. $y^4 - 81$

81. $1 - x^4$

82. $2y^4 - 32$

83. $x^3 - 8$

84. $27 - y^3$

85. $z^3 + 125$

86. $x^3 + 64$

87. $8t^3 + 1$

88. $8 - 27y^3$

89. $64z^3 - 27$

90. $125x^3 + 8$

91. $17 - 17x^3$

92. $x^4 + x$

93. $8xy - xy^4$

94. $54a^5b^2 - 2a^2b^2$

95. $32x^5 + 4x^2$

96. $16d^4 - 2d$

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

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

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

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

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

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

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

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

105. $2x^3 + x^2 - 18x - 9$

106. $2x^3 - 9x^2 - 8x + 36$

Factor completely.

107. $-6 - 12x - 6x^2$

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

109. $27x^5 - x^2$

110. $4x^4 + 8x^2 - 12$

111. $8x^7 - 64x^4$

112. $2x^3 - x^2 + 4x - 2$

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

114. $24x^2 + 3x^5$

115. $16s^4 - 2st^3$

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

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

23. $(y + 2)(y + 5)$

24. $(x + 3)(x + 6)$

25. $(z+2)^2$
26. $(x+7)(x-3)$
27. $(y-11)(y+2)$
28. $(x-2)^2$
29. $(a-10)(a+1)$
30. $(x-9)(x+7)$
31. $-(x-6)(x+1)$
32. $(x+10)(x-7)$
33. $(x+4)(x+12)$
34. $-(x-8)(x+7)$
35. $(x-5)(x-8)$
36. $-(x+1)^2$
37. $2(x+5)(x-3)$
38. $4(x-3)(x-5)$
39. $4(y-3)(y+1)$
40. $9(x+3)(x-1)$
41. $x(x-3)(x-10)$
42. $x(x+2)(x-1)$
43. $3x(x+2)(x+4)$
44. $4x(x+3)(x-1)$
45. $2x^2(x-7)(x-3)$
46. $5x^2(x-8)(x+6)$
47. $(x+1)(2x+3)$
48. $(2x+1)^2$
49. $(x+1)(3x+1)$
50. $(z-1)(6z-1)$
51. $(3x-1)(5x-2)$
52. $-(y+2)(3y-1)$
53. $-(y+4)(4y-3)$
54. $(3z-4)(3z-2)$
55. $100(x+1)(2x+3)$
56. $3(3y-5)(y-1)$
57. $-3x(3x+2)(2x-1)$
58. $2y(2y-3)(4y-1)$
59. $-5(x-6)(x+1)$
60. $2x(5x-8)(x-1)$
61. $2x(x+6)(2x-1)$
62. $-(x+9)(x-8)$
63. $(x-2)(x+2)$
64. $(3-x)(3+x)$
65. $(y-5)(y+5)$
66. $(z-\frac{1}{2})(z+\frac{1}{2})$
67. $(x-\frac{1}{3})(x+\frac{1}{3})$
68. $(\frac{2}{5}-y)(\frac{2}{5}+y)$
69. $(x+2)(x+4)$
70. $(16-x)(x+2)$
71. $13(x-1)(x+1)$
72. $3(y-2)(y+2)$
73. $3(3-z)(3+z)$
74. $2x(x-1)(x+1)$

75. $2y^2(4-y)(4+y)$

76. $(2x-5)(2x+5)$

77. $(3-4y)(3+4y)$

78. $2x^3(2x-1)(2x+1)$

79. $2ab^3(a-5)(a+5)$

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

81. $(1-x)(1+x)(1+x^2)$

82. $2(y-2)(y+2)(y^2+4)$

83. $(x-2)(x^2+2x+4)$

84. $(3-y)(9+3y+y^2)$

85. $(z+5)(z^2-5z+25)$

86. $(x+4)(x^2-4x+16)$

87. $(2t+1)(4t^2-2t+1)$

88. $(2-3y)(4+6y+9y^2)$

89. $(4z-3)(16z^2+12z+9)$

90. $(5x+2)(25x^2-10x+4)$

91. $17(1-x)(1+x+x^2)$

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

93. $xy(2-y)(4+2y+y^2)$

94. $2a^2b^2(3a-1)(9a^2+3a+1)$

95. $4x^2(2x+1)(4x^2-2x+1)$

96. $2d(2d-1)(4d^2+2d+1)$

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

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

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

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

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

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

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

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

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

106. $(2x-9)(x-2)(x+2)$

107. $-6(x+1)^2$

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

109. $x^2(3x-1)(9x^2+3x+1)$

110. $4(x-1)(x+1)(x^2+3)$

111. $8x^4(x-2)(x^2+2x+4)$

112. $(2x-1)(x^2+2)$

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

114. $3x^2(x+2)(x^2-2x+4)$

115. $2s(2s-t)(4s^2+2st+t^2)$

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