41. $5(x - 3)$

42. $5x(x^2 - 4)$

43. $yz(z^2 - 3z + 2)$

44. $(x + 3)(2x - 5)$

45. $z^2 - 7^2 = (z + 7)(z - 7)$

46. $(3y)^2 - 4^2 = (3y + 4)(3y - 4)$

47. $8^2 - (5y)^2 = (8 + 5y)(8 - 5y)$

48. $4^2 - (x + 2)^2 = [4 + (x + 2)]$
$[(4 - (x + 2)] = (6 + x)(2 - x)$

49. $y^2 + 2(y)(4) + 4^2 = (y + 4)^2$

50. $(6y)^2 + 2(6y)(1) + 1^2 = (6y + 1)^2$

51. $(2z)^2 - 2(2z)(1) + 1^2 = (2z - 1)^2$

52. $(3z)^2 - 2(3z)(4) + 4^2 = (3z - 4)^2$

53. $y^3 - 2^3 = (y - 2)[y^2 + (y)(2) + 2^2]$
$= (y - 2)(y^2 + 2y + 4)$

54. $z^3 + 4^3 = (z + 4)[z^2 - (z)(4) + 4^2]$
$= (z + 4)(z^2 - 4z + 16)$

55. $(3y)^3 - 2^3 = (3y - 2)[(3y)^2 + (3y)(2) + 2^2]$
$= (3y - 2)(9y^2 + 6y + 4)$

56. $(4z)^3 + 3^3 = (4z + 3)[(4z)^2 - (4z)(3) + 3^2]$
$= (4z + 3)(16z^2 - 12z + 9)$

57. $1^3 - x^3 = (1 - x)[1^2 + (1)(x) + x^2]$
$= (1 - x)(1 + x + x^2) = (1 - x)(1 + x + x^2)$

58. $3^3 - y^3 = (3 - y)[3^2 + (3)(y) + y^2]$
$= (3 - y)(9 + 3y + y^2) = (3 - y)(9 + 3y + y^2)$

59. $(x + 2)(x + 7)$

60. $(y - 5)(y - 6)$

61. $(z - 8)(z + 3)$

62. $(2t + 1)(3t + 1)$

63. $(2u - 5)(7u + 1)$

64. $(2v + 3)(5v + 4)$

65. $(3x + 5)(4x - 3)$

66. $(x - y)(2x - y)$

67. $(2x + 5y)(3x - 2y)$

68. $(3x + 7y)(5x - 2y)$

69. $(x^3 - 4x^2) + (5x - 20) = x^2(x - 4) + 5(x - 4)$
$= (x - 4)(x^2 + 5)$

70. $(2x^3 - 3x^2) + (2x - 3) = x^2(2x - 3) + 1(2x - 3)$
$= (2x - 3)(x^2 + 1)$

71. $(x^6 - 3x^4) + (x^2 - 3) = x^4(x^2 - 3) + 1(x^2 - 3)$
$= (x^2 - 3)(x^4 + 1)$

72. $(x^6 + 2x^4) + (x^2 + 2) = x^4(x^2 + 2) + 1(x^2 + 2)$
$= (x^2 + 2)(x^4 + 1)$

73. $(2ac + 6ad) - (bc + 3bd) = 2a(c + 3d) - b(c + 3d)$
$= (c + 3d)(2a - b)$

74. $(3uw + 12uz) - (2vw + 8vz) = 3u(w + 4z)$
$-2v(w + 4z) = (w + 4z)(3u - 2v)$

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

76. $y(4y^2 - 20y + 25) = y[(2y)^2 - 2(2y)(5) + 5^2]$
$= y(2y - 5)^2$

77. $2y(9y^2 + 24y + 16) = 2y[(3y)^2 + 2(3y)(4)$
$+ 4^2] = 2y(3y + 4)^2$

78. $2x(x^2 - 8x + 7) = 2x(x - 1)(x - 7)$

79. $y(16 - y^2) = y(4^2 - y^2) = y(4 + y)(4 - y)$

80. $3x(x^3 + 8) = 3x(x^3 + 2^3)$
$= 3x(x + 2)[x^2 - (x)(2) + 2^2]$
$= 3x(x + 2)(x^2 - 2x + 4)$

81. $y(5 + 3y - 2y^2) = y(1 + y)(5 - 2y)$

82. $z(1 - 8z^3) = z[1^3 - (2z)^3]$
$= z(1 - 2z)[1^2 + (1)(2z) + (2z)^2]$
$= z(1 - 2z)(1 + 2z + 4z^2)$

83. $2[(5x + 1)^2 - 9] = 2[(5x + 1)^2 - 3^2]$
$= 2[(5x + 1) + 3][(5x + 1) - 3]$
$= 2(5x + 4)(5x - 2)$

84. $5[(2x - 3)^2 - 4] = 5[(2x - 3)^2 - 2^2]$
$= 5[(2x - 3) + 2][(2x - 3) - 2]$
$= 5(2x - 1)(2x - 5)$

85. $2(6x^2 + 11x - 10) = 2(2x + 5)(3x - 2)$

86. $(x + 5y)(3x - 2y)$

87. $(2ac + 4ad) - (2bd + bc) = 2a(c + 2d) - b(2d + c)$
$= (c + 2d)(2a - b) = (2a - b)(c + 2d)$

88. $(6ac + 4bc) - (2bd + 3ad)$
$= 2c(3a + 2b) - d(2b + 3a) = (3a + 2b)(2c - d)$

89. $(x^3 - 3x^2) - (4x - 12) = x^2(x - 3) - 4(x - 3)$
$= (x - 3)(x^2 - 4) = (x - 3)(x + 2)(x - 2)$

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