p. 416 Integrated Review 1-99

1. $x^2+2xy+y^2$
$(x+y)(x+y)$
$\boxed{(x+y)^2}$

2. $x^2-2xy+y^2$
$(x-y)(x-y)$
$\boxed{(x-y)^2}$

3. $a^2+11a-12$
$\boxed{(a+12)(a-1)}$

4. $a^2-11a+10$
$\boxed{(a-10)(a-1)}$

5. a^2-a-6
$\boxed{(a-3)(a+2)}$

6. a^2-2a+1
$(a-1)(a-1)$
$\boxed{(a-1)^2}$

7. x^2+2x+1
$(x+1)(x+1)$
$\boxed{(x+1)^2}$

8. x^2+x-2
$\boxed{(x+2)(x-1)}$

9. x^2+4x+3
$\boxed{(x+3)(x+1)}$

10. x^2+x-6
$\boxed{(x+3)(x-2)}$

11. $x^2+7x+12$
$\boxed{(x+3)(x+4)}$

12. x^2+x-12
$\boxed{(x+4)(x-3)}$

13. x^2+3x-4
$\boxed{(x+4)(x-1)}$

14. $x^2-7x+10$
$\boxed{(x-5)(x-2)}$

15. $x^2+2x-15$
$\boxed{(x+5)(x-3)}$

16. $x^2+11x+30$
$\boxed{(x+5)(x+6)}$

17. x^2-x-30
$\boxed{(x-6)(x+5)}$

18. $x^2+11x+24$
$\boxed{(x+8)(x+3)}$

19. $2x^2-98$
$2(x^2-49)$
$\boxed{2(x+7)(x-7)}$

20. $3x^2-75$
$3(x^2-25)$
$\boxed{3(x+5)(x-5)}$

21. $(x^2+3x)+(xy+3y)$
$x(x+3)+y(x+3)$
$\boxed{(x+y)(x+3)}$

22. $(3y-21)+(xy-7x)$

$3(y-7)+x(y-7)$

$(3+x)(y-7)$

23. $x^2+6x-16$

$(x+8)(x-2)$

24. $x^2-3x-28$

$(x-7)(x+4)$

25. $4x^3+20x^2-56x$

$4x(x^2+5x-14)$

$4x(x+7)(x-2)$

26. $6x^3-6x^2-120x$

$6x(x^2-x-20)$

$6x(x-5)(x+4)$

27. $12x^2+34x+24$

a·c: 72; +9, +8; b: 17

$2(6x^2+17x+12)$

$2[(6x^2+9x)+(8x+12)]$

$2[3x(2x+3)+4(2x+3)]$

$2(3x+4)(2x+3)$

28. $8a^2+10ab-5b^2$

a·c: −40; 8, −5; +10, −4; b

$(8a^2-4ab)+(10ab-5b^2)$

$4a(2a-b)+5b(2a-b)$

$(4a+5b)(2a-b)$

29. $4a^2-b^2$

$2a$, b

$(2a+b)(2a-b)$

30. $28-13x-6x^2$

a·c: −168; −6, 28; 8, −21; −13; b

$(28+8x)(-21x-6x^2)$

$4(7+2x)-3x(7+2x)$

$(7+2x)(4-3x)$

31. $20-3x-2x^2$

a·c: −40; −2, 20; −8, +5; −3; b

$(20+5x)(-8x-2x^2)$

$5(4+x)-2x(4+x)$

$(5-2x)(4+x)$

32. x^2-2x+4

prime

33. a^2+a-3

prime

34. $6y^2+y-15$

a·c: −90; 6, −15; −9, +10; 1; b

$(6y^2-9y)+(10y-15)$

$3y(2y-3)+5(2y-3)$

$(3y+5)(2y-3)$

35. $4x^2-x-5$

$(4x^2+4x)(-5x-5)$

$4x(x+1)-5(x+1)$

$(4x-5)(x+1)$

36. x^2y-y^3

$y(x^2-y^2)$

$y(x+y)(x-y)$

a·c: −20; 4, −5; −5, +4; −1; b

37. $4t^2+36$

$4(t^2+9)$

38. $(x^2+x)+(xy+y)$

$x(x+1)+y(x+1)$

$(x+y)(x+1)$

39. $(ax+2x)(+a+2)$

$x(a+2)+1(a+2)$

$(x+1)(a+2)$

a·c

2·1

2

X X

-7

b

40. $18x^3-63x^2+9x$

$9x(2x^2-7x+1)$

41. $12a^3-24a^2+4a$

$4a(3a^2-6a+1)$

42. $x^2+14x-32$

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

43. $x^2-14x-48$

$(x-8)(x-6)$

44. $16a^2-56ab+49b^2$

$4a \quad 2\cdot4a\cdot7b \quad 7b$

$(4a-7b)(4a-7b)$

$(4a-7b)^2$

45. $25p^2-70pq+49q^2$

$5p \quad 2\cdot5p\cdot7q \quad 7q$

$(5p-7q)(5p-7q)$

$(5p-7q)^2$

a·c

7·9

63

3 21

24

b

46. $7x^2+24xy+9y^2$

$(7x^2+21xy)+(3xy+9y^2)$

$7x(x+3y)+3y(x+3y)$

$(7x+3y)(x+3y)$

47. $125-8y^3$ SOAP

$a=5 \quad b=2y$

$(5-2y)(25+10y+4y^2)$

48. $64x^3+27$ SOAP

$4x \quad 3$

$(4x+3)(16x^2-12x+9)$

49. $-x^2-x+30$

$-1(x^2+x-30)$

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

50. $-x^2+6x-8$

$-1(x^2-6x+8)$

$-1(x-4)(x-2)$

51. $14+5x-x^2$

$(7-x)(2+x)$

52. $3-2x-x^2$

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

53. $3x^4y+6x^3y-72x^2y$

$3x^2y(x^2+2x-24)$

$3x^2y(x+6)(x-4)$

54. $2x^3y+8x^2y^2-10xy^3$

$2xy(x^2+4xy-5y^2)$

$2xy(x+5y)(x-y)$

a·c

1·-5

-5

5 -1

4

b

55. $5x^3y^2 - 40x^2y^3 + 35xy^4$

$5xy^2(x^2 - 8xy + 7y^2)$

$\boxed{5xy^2(x-7y)(x-y)}$

56. $4x^4y - 8x^3y - 60x^2y$

$4x^2y(x^2 - 2x - 15)$

$\boxed{4x^2y(x-5)(x+3)}$

57. $12x^3y + 243xy$

$\boxed{3xy(4x^2 + 81)}$

$2x \quad 9$

~~$3xy(2x+$~~ Sum

58. $6x^3y^2 + 8xy^2$

$\boxed{2xy^2(3x^2 + 4)}$

59. $4 - x^2$

$\boxed{(2-x)(2+x)}$

60. $9 - y^2$

$\boxed{(3-y)(3+y)}$

61. $(3rs - s) + (12r - 4)$

$s(3r-1) + 4(3r-1)$

$\boxed{(s+4)(3r-1)}$

62. $(x^3 - 2x^2) + (3x - 6)$

$x^2(x-2) + 3(x-2)$

$\boxed{(x^2+3)(x-2)}$

63. $(4x^2 - 8xy)(-3x + 6y)$

$4x(x-2y) - 3(x-2y)$

$\boxed{(4x-3)(x-2y)}$

64. $(4x^2 - 2xy)(-7yz + 14xz)$

$2x(2x-y) + 7z(-y + 2x)$

$\boxed{(2x-y)(2x+7z)}$

65. $6x^2 + 18xy + 12y^2$

$6(x^2 + 3xy + 2y^2)$

$\boxed{6(x+2y)(x+y)}$

66. $12x^2 + 46xy - 8y^2$

$2(6x^2 + 23xy - 4y^2)$

$2[(6x^2 + 24xy)(xy - 4y^2)]$

$2[6x(x+4y) - y(x+4y)]$

$\boxed{2[6x-y](x+4y)}$

a·c

6·-4

-24

+24 | -1

23

b

67. $(xy^2-4x)+(3y^2-12)$

$x(y^2-4)+3(y^2-4)$

$(x+3)(y^2-4)$

$(x+3)(y+2)(y-2)$

68. $(x^2y^2-9y^2)+(3y^2-27)$

$x^2(y^2-9)+3(y^2-9)$

$(x^2+3)(y^2-9)$

$(x^2+3)(y+3)(y-3)$

69. $5(x+y)+x(x+y)$

$(5+x)(x+y)$

70. $7(x-y)+y(x-y)$

$(7+y)(x-y)$

71. $14t^2-9t+1$

a·c: $14\cdot 1=14$; $-7\cdot -2$; $b=-9$

$(14t^2-7t)(-2t+1)$

$7t(2t-1)-1(2t-1)$

$(7t-1)(2t-1)$

72. $3t^2-5t+1$

prime

a·c: $3\cdot 1=3$; $x\cdot x$; $b=-5$

73. $3x^2+2x-5$

a·c: $3\cdot -5=-15$; $+5\cdot -3$; $b=2$

$(3x^2-3x)+(5x-5)$

$3x(x-1)+5(x-1)$

$(3x+5)(x-1)$

74. $7x^2+19x-6$

a·c: $7\cdot -6=-42$; $+21\cdot -2$; $b=19$

$(7x^2+21x)(-2x-6)$

$7x(x+3)-2(x+3)$

$(7x-2)(x+3)$

75. $x^2+9xy-36y^2$

$(x+12y)(x+-3y)$

76. $3x^2+10xy-8y^2$

a·c: $3\cdot -8=-24$; $-2\cdot +12$; $b=10$

$(3x^2+12xy)-2xy-8y^2)$

$3x(x+4y)-2y(x+4y)$

$(3x-2y)(x+4y)$

77. $1-8ab-20a^2b^2$

$(1-10ab)+(2ab-20a^2b^2)$

$1(1-10ab)+2ab(1-10ab)$

$(1+2a)(1-10ab)$

78. $1-7ab-60a^2b^2$

$(1-12ab)+(5ab-60a^2b^2)$

$1(1-12ab)+5ab(1-12ab)$

$(1+5ab)(1-12ab)$

79. $9-10x^2+x^4$

$(9-x^2)(1-x^2)$

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

80. $36-13x^2+x^4$

$(9-x^2)(4-x^2)$

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

81. x^4-14x^2-32

$(x^2-16)(x^2+2)$

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

82. x^4-22x^2-75

$(x^2-25)(x^2+3)$

$(x+5)(x-5)(x^2+3)$

83. $x^2-23x+120$

$(x-15)(x-8)$

84. $y^2+22y+96$

$(y+6)(y+16)$

a·c

3·8

24

-2 × -12

-14

b

85. $16x^3-28x^2+16x$

$2x(3x^2-14x+8)$

$2x(3x^2-12x-2x+8)$

$2x[3x(x-4)-2(x-4)]$

$2x(3x-2)(x-4)$

86. $6y^3-8y^2-30y$

$2y(3y^2-4y-15)$

$2y[3y^2-9y+5y-15)]$

$2y[3y(y-3)+5(y-3)]$

$2y(3y+5)(y-3)$

a·c

3·-15

-45

-9 × +5

-4

b

87. $27x^3-125y^3$

$3x \quad 5y$

$(3x-5y)(9x^2+15xy+25y^2)$

88. $216y^3-z^3$

$6y \quad z$

$(6y-z)(36y^2+6yz+z^2)$

89. $x^3y^3 + 8z^3$

$xy \quad 2z$

$(xy+2z)(x^2y^2 - 2xy + 4z^2)$

90. $27a^3b^3 + 8$

$3ab \quad 2$

$(3ab+2)(9a^2b^2 - 6ab + 4)$

91. $2xy - 72x^3y$

$2xy(1 - 36x^2)$

$2xy(1-6x)(1+6x)$

92. $2x^3 - 18x$

$2x(x^2 - 9)$

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

93. $(x^3 + 6x^2)(4x - 24)$

$x^2(x+6) - 4(x+6)$

$(x^2 - 4)(x+6)$

$(x+2)(x-2)(x+6)$

94. $(x^3 - 2x^2)(-36x + 72)$

$x^2(x-2) - 36(x-2)$

$(x^2 - 36)(x-2)$

$(x+6)(x-6)(x-2)$

95. $6a^3 + 10a^2$

$2a^2(3a+5)$

96. $4n^2 - 6n$

$2n(2n-3)$

97. $a^2(a+2) + 2(a+2)$

$(a^2+2)(a+2)$

98. $a - b + x(a-b)$

$(1+x)(a-b)$

99. $(x^3 - 28) + (7x^2 - 4x)$

$(x^3 + 7x^2)(-4x - 28)$

$x^2(x+7) - 4(x+7)$

$(x^2 - 4)(x+7)$

$(x+2)(x-2)(x+7)$

100. $(a^3 + 5a^2)(-9a - 45)$

$a^2(a+5) - 9(a+5)$

$(a^2 - 9)(a+5)$

$(a+3)(a-3)(a+5)$