계산시 참고사항

1. 공통인수로 묶어 인수분해하기
: 공통인수가 있으면 공통인수로 묶어내고 인수분해 공식을 이용하여 인수분해한다.
예 $xy+x+y+1=x(y+1)+y+1=(x+1)(y+1)$

2. 치환하여 인수분해하기
: 주어진 식에 공통부분이 있는 경우 공통부분을 한 문자로 치환하여 인수분해한다.
예 $(2x-3)^2-8(2x-3)+16=A^2-8A+16=(A-4)^2=(2x-7)^2$

3. A^2-B^2꼴 이용하여 인수분해하기
: 완전제곱식이 되는 3개의 항을 찾아 (3개의 항+1개의 항) 또는 (1개의 항+3개의 항)으로 묶어 A^2-B^2꼴로 만들어 $(A+B)(A-B)$로 인수분해한다.
예 $a^2+2ab+b^2-1=(a+b)^2-1^2=(a+b+1)(a+b-1)$

4. ( )( )( )( )+k꼴 인수분해하기
(1) 공통부분이 나오도록 두 개씩 짝을 지어 전개한다.
(2) 공통부분을 치환하여 인수분해한다.

5. 내림차순으로 정리하여 인수분해하기
차수가 낮은 문자에 대하여 내림차순으로 정리한 후, 인수분해 공식을 사용한다.

항이 4개 이상인 복잡한 식 인수분해하기

◪ 다음 식을 인수분해하여라.

1. $x^2+xy-8x-4y+16$

2. $x^2+2xy+x-4y-6$

3. $x^2+y^2+2xz+2yz+2xy$

4. $x^2+xy-x+2y-6$

5. $xy-x-4y+4$

6. a^3+a^2-a-1

7. $xy-xz-y+z$

8. $x^2+3x-3y-y^2$

9. $x^2+2x+1-y^2$

10. $a^2-4a+4-b^2$

ECN-0199-2015-001-000666229

11. a^2-6a-b^2+9

12. x^3y+4x^2y+4xy

13. $xy-x-y+1$

14. $x^2+3x+3y-y^2$

15. x^3-3x^2-x+3

16. $2x^2-xy+4xz-2yz$

17. $xy+2y+x+2$

18. $xy+x-y-1$

19. $x^2-xy+y-x$

20. $x^2-4x+4-y^2$

21. $x^2+y^2-4+2xy$

22. x^2-y^2-6y-9

23. $xy-3x+y-3$

24. $xy+5x-3y-15$

25. $xy-xz+y-z$

26. $x^2-y^2-2x+2y$

27. $y^2-x^2+8x-16$

28. $4-x^2-y^2+2xy$

29. $x^2-y^2+z^2-2xz$

30. $x^2+xy-3x+y-4$

31. $x^2-xy+5x-2y+6$

32. $x^2-8x+15+2xy-6y$

33. $2x^2-4x+2+xy-y$

34. $3x^2-5x+2xy-4y-2$

35. $2x^2-xy-x+y-y^2$

36. $x^2-2x+1+xy-y$

37. $x^2+6x+9+2xy+6y$

38. $x^2-xy-x-2y-6$

39. $x^2+3xy-6x-3y+5$

40. $x^2+2y^2-3xy-3x+6y$

41. $x^2+2xy+y^2-2x-2y+1$

42. $x^2-3xy-5x+6y+6$

43. $x^2-2xy-4x+2y+3$

44. $x^2+3xy+4x-3y-5$

45. $2x^2+xy-5x-3y-3$

46. $2x^2-x+2y-xy-6$

47. $x^2-2xy+xz-yz+y^2$

48. $x^2-2xy+y^2-4$

49. $x^2-16+4y^2-4xy$

50. $36-x^2-y^2+2xy$

51. $16a^2-b^2+8a+1$

52. $a^2-b^2-2bc-c^2$

53. x^2-y^2-6x+9

54. $9x^2(x+1)-4x-4$

치환하여 인수분해하기

◪ 다음 식을 인수분해하여라.

55. $(x+y)^2+3(x+y)-10$

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

57. $(2x-y)^2-(x+5y)^2$

58. $(a+b)(a+b-2)-8$

59. $(x-y)(x-y-5)-14$

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

61. $(2x+3)^2-(x+2)^2$

62. $(a-b)^2-(a-b)-2$

63. $(a+2b)^2+5(a+2b)+6$

64. $(x+y)(x+y-6)+9$

65. $(3x-4)^2+6(3x-4)+9$

66. $(a+b)^2-14(a+b)+49$

67. $(x-2y)^2+8(x-2y)+16$

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

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

70. $(2x+y)^2+2x+y-12$

71. $3(x+y)^2+10(x+y)+8$

72. $(2x+1)^2-6(2x+1)+8$

73. $(x-3y)^2-7(x-3y)+12$

74. $2(x+y)(x+y+1)-24$

75. $(3x-y)^2+(3x-y)(x+4y)$

76. $(a-3)x^2+2(a-3)x-24(a-3)$

77. $(x-1)x^2-16(x-1)$

78. $3(x+y)x^2-5xy(x+y)-2y^2(x+y)$

79. $(3x-1)y^2+5(3x-1)y-14(3x-1)$

80. $(x+1)^2-2(x+1)-15$

81. $(3x+1)^2-2(3x+1)-8$

82. $2(a-1)^2+3(a-1)-2$

83. $6(x+2)^2-13(x+2)-5$

84. $3(x+4y)^2-5(x+4y)-2$

85. $4(a-b)^2-7(a-b)-2$

86. $(a+b)(a+b-1)-56$

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

88. $(x-5y)(x-5y+2)+1$

89. $(2a-b)(2a-b-5)+6$

90. $(3a-4b)(3a-4b-3)-10$

91. $(7x+2y)(7x+2y-6)-16$

92. $(2x+y)(2x+y-3)-10$

93. $2(3x-1)^2-7(3x-1)+5$

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

( )( )( )( )+k꼴 인수분해하기

◪ 다음 식을 인수분해하여라.

95. $(x-1)(x-3)(x+2)(x+4)+24$

96. $(a-1)(a-2)(a+3)(a+4)-6$

97. $(x-2)(x-3)(x-4)(x-5)+1$

98. $(x+1)(x+2)(x+3)(x+4)+1$

내림차순으로 정리하여 인수분해하기

◪ 다음 식을 인수분해하여라.

99. $x^2-y^2-x+5y-6$

100. $x^2-y^2+x+7y-12$

101. $x^2-5xy+6y^2+x-y-2$

102. $x^2-y^2+2x+8y-15$

103. $x^2-2y^2-xy-3x+2$

104. $x^2+2xy+y^2+3y+3x-4$

105. $x^2+y^2-2xy-x+y-2$

106. $x^2-y^2+6x+2y+8$

107. x^2-2x-y^2-4y-3

108. x^2+3x-y^2+y+2

109. $x^2-3y^2+x+2xy+7y-2$

110. x^2+4x-y^2+2y+3

111. $x^2-4xy+3y^2-6x+2y-16$

112. x^2-2x-y^2+2y

정답 및 해설

1) $(x-4)(x+y-4)$
⇨ (주어진 식)
$=y(x-4)+(x^2-8x+16)=y(x-4)+(x-4)^2$
$=(x-4)(x+y-4)$

2) $(x-2)(x+2y+3)$
⇨ (주어진 식)
$=2y(x-2)+(x^2+x-6)=2y(x-2)+(x+3)(x-2)$
$=(x-2)(x+2y+3)$

3) $(x+y)(x+y+2z)$
⇨ (주어진 식)
$=2z(x+y)+(x^2+2xy+y^2)=2z(x+y)+(x+y)^2$
$=(x+y)(x+y+2z)$

4) $(x+2)(x+y-3)$
⇨ (주어진 식)
$=y(x+2)+(x^2-x-6)=y(x+2)+(x-3)(x+2)$
$=(x+2)(x+y-3)$

5) $(y-1)(x-4)$
⇨ (주어진 식)$=x(y-1)-4(y-1)=(y-1)(x-4)$

6) $(a+1)^2(a-1)$
⇨ (주어진 식)$=a^2(a+1)-(a+1)=(a+1)(a^2-1)$
$=(a+1)(a+1)(a-1)=(a+1)^2(a-1)$

7) $(y-z)(x-1)$
⇨ (주어진 식)$=x(y-z)-(y-z)=(y-z)(x-1)$

8) $(x-y)(x+y+3)$
⇨ (주어진 식)
$=(x^2-y^2)+(3x-3y)=(x+y)(x-y)+3(x-y)$
$=(x-y)(x+y+3)$

9) $(x+y+1)(x-y+1)$
⇨ (주어진 식)$=(x+1)^2-y^2=(x+y+1)(x-y+1)$

10) $(a+b-2)(a-b-2)$
⇨ (주어진 식)$=(a-2)^2-b^2=(a+b-2)(a-b-2)$

11) $(a+b-3)(a-b-3)$
⇨ (주어진 식)$=(a-3)^2-b^2=(a+b-3)(a-b-3)$

12) $xy(x+2)^2$
⇨ $x^3y+4x^2y+4xy=xy(x^2+4x+4)=xy(x+2)^2$

13) $(y-1)(x-1)$
⇨ $xy-x-y+1=x(y-1)-(y-1)=(y-1)(x-1)$

14) $(x+y)(x-y+3)$
⇨ $x^2+3x+3y-y^2=x^2-y^2+3x+3y$
$=(x+y)(x-y)+3(x+y)=(x+y)(x-y+3)$

15) $(x-3)(x+1)(x-1)$
⇨ $x^3-3x^2-x+3=x^2(x-3)-(x-3)=(x-3)(x^2-1)$
$=(x-3)(x+1)(x-1)$

16) $(x+2z)(2x-y)$
⇨ $2x^2-xy+4xz-2yz=2x(x+2z)-y(x+2z)$
$=(x+2z)(2x-y)$

17) $(x+2)(y+1)$
⇨ $xy+2y+x+2=y(x+2)+x+2=(x+2)(y+1)$

18) $(y+1)(x-1)$
⇨ $xy+x-y-1=x(y+1)-(y+1)=(y+1)(x-1)$

19) $(x-y)(x-1)$
⇨ $x^2-xy+y-x=x(x-y)-(x-y)=(x-y)(x-1)$

20) $(x+y-2)(x-y-2)$
⇨ $x^2-4x+4-y^2=(x-2)^2-y^2=(x-2+y)(x-2-y)$
$=(x+y-2)(x-y-2)$

21) $(x+y+2)(x+y-2)$
⇨ $x^2+y^2-4+2xy=(x+y)^2-2^2$
$=(x+y+2)(x+y-2)$

22) $(x+y+3)(x-y-3)$
⇨ $x^2-y^2-6y-9=x^2-(y+3)^2=(x+y+3)(x-y-3)$

23) $(y-3)(x+1)$
⇨ $xy-3x+y-3=x(y-3)+y-3=(y-3)(x+1)$

24) $(y+5)(x-3)$
⇨ $xy+5x-3y-15=x(y+5)-3(y+5)$
$=(y+5)(x-3)$

25) $(y-z)(x+1)$
⇨ $xy-xz+y-z=x(y-z)+y-z=(y-z)(x+1)$

26) $(x-y)(x+y-2)$
⇨ $x^2-y^2-2x+2y=(x+y)(x-y)-2(x-y)$
$=(x-y)(x+y-2)$

27) $(y+x-4)(y-x+4)$
⇨ $y^2-x^2+8x-16=y^2-(x-4)^2$
$=\{y+(x-4)\}\{y-(x-4)\}=(y+x-4)(y-x+4)$

28) $(2+x-y)(2-x+y)$
⇨ $4-x^2-y^2+2xy=4-(x-y)^2$

$=\{2+(x-y)\}\{2-(x-y)\}=(2+x-y)(2-x+y)$

29) $(x-z+y)(x-z-y)$

⇨ $x^2-y^2+z^2-2xz=x^2-2xz+z^2-y^2=(x-z)^2-y^2$
$=(x-z+y)(x-z-y)$

30) $(x+1)(x+y-4)$

⇨ $x^2+xy-3x+y-4=x^2-3x-4+xy+y$
$=(x-4)(x+1)+y(x+1)=(x+1)(x+y-4)$

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

⇨ $x^2-xy+5x-2y+6=x^2+5x+6-xy-2y$
$=(x+2)(x+3)-y(x+2)=(x+2)(x-y+3)$

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

⇨ $x^2-8x+15+2xy-6y=(x-3)(x-5)+2y(x-3)$
$=(x-3)(x+2y-5)$

33) $(x-1)(2x+y-2)$

⇨ $2x^2-4x+2+xy-y=2(x-1)^2+y(x-1)$
$=(x-1)(2x+y-2)$

34) $(x-2)(3x+2y+1)$

⇨ $3x^2-5x+2xy-4y-2=3x^2-5x-2+2xy-4y$
$=(x-2)(3x+1)+2y(x-2)=(x-2)(3x+2y+1)$

35) $(x-y)(2x+y-1)$

⇨ $2x^2-xy-x+y-y^2=2x^2-xy-y^2-x+y$
$=(x-y)(2x+y)-(x-y)=(x-y)(2x+y-1)$

36) $(x-1)(x+y-1)$

⇨ $x^2-2x+1+xy-y=(x-1)^2+y(x-1)$
$=(x-1)(x+y-1)$

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

⇨ $x^2+6x+9+2xy+6y=(x+3)^2+2y(x+3)$
$=(x+3)(x+2y+3)$

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

⇨ $x^2-xy-x-2y-6=(x^2-x-6)-y(x+2)$
$=(x-3)(x+2)-y(x+2)=(x+2)(x-y-3)$

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

⇨ $x^2+3xy-6x-3y+5=(x^2-6x+5)+3y(x-1)$
$=(x-1)(x-5)+3y(x-1)=(x-1)(x+3y-5)$

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

⇨ $x^2+2y^2-3xy-3x+6y=(x^2-3xy+2y^2)-3(x-2y)$
$=(x-y)(x-2y)-3(x-2y)=(x-2y)(x-y-3)$

41) $(x+y-1)^2$

⇨ $x^2+2xy+y^2-2x-2y+1=(x+y)^2-2(x+y)+1$
$=(x+y-1)^2$

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

⇨ $x^2-3xy-5x+6y+6=x^2-5x+6-3xy+6y$
$=(x-2)(x-3)-3y(x-2)=(x-2)(x-3y-3)$

43) $(x-1)(x-2y-3)$

⇨ $x^2-2xy-4x+2y+3=x^2-4x+3-2xy+2y$
$=(x-1)(x-3)-2y(x-1)=(x-1)(x-2y-3)$

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

⇨ $x^2+3xy+4x-3y-5=x^2+4x-5+3xy-3y$
$=(x+5)(x-1)+3y(x-1)=(x-1)(x+3y+5)$

45) $(x-3)(2x+y+1)$

⇨ $2x^2+xy-5x-3y-3$
$=y(x-3)+2x^2-5x-3$
$=y(x-3)+(2x+1)(x-3)$
$=(x-3)(2x+y+1)$

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

⇨ $2x^2-x+2y-xy-6=y(2-x)+2x^2-x-6$
$=y(2-x)+(2x+3)(x-2)$
$=(x-2)(2x-y+3)$

47) $(x-y)(x-y+z)$

⇨ $x^2-2xy+xz-yz+y^2$
$=z(x-y)+x^2-2xy+y^2$
$=z(x-y)+(x-y)^2$
$=(x-y)(x-y+z)$

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

⇨ $x^2-2xy+y^2-4=(x-y)^2-2^2$
$=(x-y+2)(x-y-2)$

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

⇨ $x^2-16+4y^2-4xy=x^2-4xy+4y^2-16$
$=(x-2y)^2-4^2$
$=(x-2y+4)(x-2y-4)$

50) $(6+x-y)(6-x+y)$

⇨ $36-x^2-y^2+2xy=36-(x^2-2xy+y^2)$
$=6^2-(x-y)^2$
$=(6+x-y)(6-x+y)$

51) $(4a+b+1)(4a-b+1)$

⇨ $16a^2-b^2+8a+1=16a^2+8a+1-b^2$
$=(4a+1)^2-b^2$
$=(4a+b+1)(4a-b+1)$

52) $(a+b+c)(a-b-c)$

⇨ $a^2-b^2-2bc-c^2=a^2-(b^2+2bc+c^2)$
$=a^2-(b+c)^2$
$=(a+b+c)(a-b-c)$

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

⇨ $x^2-y^2-6x+9=x^2-6x+9-y^2$
$=(x-3)^2-y^2$
$=(x+y-3)(x-y-3)$

54) $(x+1)(3x+2)(3x-2)$
⇨ $9x^2(x+1)-4x-4=9x^2(x+1)-4(x+1)$
$=(x+1)(9x^2-4)=(x+1)(3x+2)(3x-2)$

55) $(x+y+5)(x+y-2)$
⇨ $x+y=A$로 치환하면
$A^2+3A-10=(A+5)(A-2)=(x+y+5)(x+y-2)$

56) $(x-1)(x-7)$
⇨ $x-4=A$로 치환하면
$A^2-9=(A+3)(A-3)$
$=(x-4+3)(x-4-3)=(x-1)(x-7)$

57) $(3x+4y)(x-6y)$
⇨ $2x-y=A$, $x+5y=B$로 치환하면
$A^2-B^2=(A+B)(A-B)$
$=(2x-y+x+5y)(2x-y-x-5y)=(3x+4y)(x-6y)$

58) $(a+b-4)(a+b+2)$
⇨ $a+b=A$로 치환하면
$A(A-2)-8=A^2-2A-8=(A-4)(A+2)$
$=(a+b-4)(a+b+2)$

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

60) $(x-3)^2$
⇨ $x-2=A$로 치환하면
(주어진 식)$=A^2-2A+1=(A-1)^2$
$=(x-2-1)^2=(x-3)^2$

61) $(3x+5)(x+1)$
⇨ $2x+3=A$, $x+2=B$로 치환하면
(주어진 식)$=A^2-B^2=(A+B)(A-B)$
$=\{(2x+3)+(x+2)\}\{(2x+3)-(x+2)\}$
$=(3x+5)(x+1)$

62) $(a-b+1)(a-b-2)$
⇨ $a-b=A$로 치환하면
(주어진 식)$=A^2-A-2=(A+1)(A-2)$
$=(a-b+1)(a-b-2)$

63) $(a+2b+2)(a+2b+3)$
⇨ $a+2b=A$로 치환하면
(주어진 식)$=A^2+5A+6=(A+2)(A+3)$
$=(a+2b+2)(a+2b+3)$

64) $(x+y-3)^2$
⇨ $x+y=A$로 치환하면
(주어진 식)$=A(A-6)+9=A^2-6A+9=(A-3)^2$
$=(x+y-3)^2$

65) $(3x-1)^2$
⇨ $3x-4=A$로 치환하면
(주어진 식)$=A^2+6A+9=(A+3)^2$
$=(3x-4+3)^2=(3x-1)^2$

66) $(a+b-7)^2$
⇨ $a+b=A$로 치환하면
(주어진 식)$=A^2-14A+49=(A-7)^2=(a+b-7)^2$

67) $(x-2y+4)^2$
⇨ $x-2y=A$로 치환하면
(주어진 식)$=A^2+8A+16=(A+4)^2=(x-2y+4)^2$

68) $-(3x+y)(x+5y)$
⇨ $x-2y=A$, $2x+3y=B$로 치환하면
(주어진 식)$=A^2-B^2=(A+B)(A-B)$
$=\{(x-2y)+(2x+3y)\}\{(x-2y)-(2x+3y)\}$
$=(3x+y)(-x-5y)$
$=-(3x+y)(x+5y)$

69) $(x+y-1)(x+y-2)$
⇨ $x+y=A$로 치환하면
(주어진 식)$=A(A-3)+2=A^2-3A+2$
$=(A-1)(A-2)=(x+y-1)(x+y-2)$

70) $(2x+y-3)(2x+y+4)$
⇨ $2x+y=A$로 치환하면
(주어진 식)$=A^2+A-12=(A-3)(A+4)$
$=(2x+y-3)(2x+y+4)$

71) $(x+y+2)(3x+3y+4)$
⇨ $x+y=A$로 치환하면
(주어진 식)$=3A^2+10A+8=(A+2)(3A+4)$
$=(x+y+2)\{3(x+y)+4\}=(x+y+2)(3x+3y+4)$

72) $(2x-1)(2x-3)$
⇨ $2x+1=A$로 치환하면
(주어진 식)$=A^2-6A+8=(A-2)(A-4)$
$=(2x+1-2)(2x+1-4)=(2x-1)(2x-3)$

73) $(x-3y-3)(x-3y-4)$
⇨ $x-3y=A$로 치환하면
(주어진 식)$=A^2-7A+12=(A-3)(A-4)$
$=(x-3y-3)(x-3y-4)$

74) $2(x+y-3)(x+y+4)$
⇨ $x+y=A$로 치환하면
(주어진 식)$=2A(A+1)-24=2A^2+2A-24$
$=2(A^2+A-12)=2(A-3)(A+4)$
$=2(x+y-3)(x+y+4)$

75) $(3x-y)(4x+3y)$

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

76) $(a-3)(x-4)(x+6)$

⇨ $(a-3)x^2+2(a-3)x-24(a-3)$
$=(a-3)(x^2+2x-24)=(a-3)(x-4)(x+6)$

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

⇨ $(x-1)x^2-16(x-1)=(x-1)(x^2-16)$
$=(x-1)(x+4)(x-4)$

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

⇨ $3(x+y)x^2-5xy(x+y)-2y^2(x+y)$
$=(x+y)(3x^2-5xy-2y^2)$
$=(x+y)(x-2y)(3x+y)$

79) $(3x-1)(y+7)(y-2)$

⇨ $(3x-1)y^2+5(3x-1)y-14(3x-1)$
$=(3x-1)(y^2+5y-14)$
$=(3x-1)(y+7)(y-2)$

80) $(x-4)(x+4)$

⇨ $x+1=A$로 치환하면

$(x+1)^2-2(x+1)-15$
$=A^2-2A-15=(A-5)(A+3)$
$=(x+1-5)(x+1+3)=(x-4)(x+4)$

81) $9(x-1)(x+1)$

⇨ $3x+1=A$로 치환하면

$(3x+1)^2-2(3x+1)-8$
$=A^2-2A-8=(A-4)(A+2)$
$=(3x+1-4)(3x+1+2)$
$=(3x-3)(3x+3)=9(x-1)(x+1)$

82) $(2a-3)(a+1)$

⇨ $a-1=A$로 치환하면

$2(a-1)^2+3(a-1)-2$
$=2A^2+3A-2=(2A-1)(A+2)$
$=\{2(a-1)-1\}(a-1+2)$
$=(2a-3)(a+1)$

83) $(2x-1)(3x+7)$

⇨ $x+2=A$로 치환하면

$6(x+2)^2-13(x+2)-5$
$=6A^2-13A-5=(2A-5)(3A+1)$
$=\{2(x+2)-5\}\{3(x+2)+1\}$
$=(2x-1)(3x+7)$

84) $(3x+12y+1)(x+4y-2)$

⇨ $x+4y=A$로 치환하면

$3(x+4y)^2-5(x+4y)-2$
$=3A^2-5A-2$
$=(3A+1)(A-2)$
$=\{3(x+4y)+1\}(x+4y-2)$
$=(3x+12y+1)(x+4y-2)$

85) $(4a-4b+1)(a-b-2)$

⇨ $a-b=A$로 치환하면

$4(a-b)^2-7(a-b)-2$
$=4A^2-7A-2=(4A+1)(A-2)$
$=\{4(a-b)+1\}(a-b-2)$
$=(4a-4b+1)(a-b-2)$

86) $(a+b-8)(a+b+7)$

⇨ $a+b=A$로 치환하면

$(a+b)(a+b-1)-56=A(A-1)-56$
$=A^2-A-56$
$=(A-8)(A+7)$
$=(a+b-8)(a+b+7)$

87) $(x+y-2)(x+y-1)$

⇨ $x+y=A$로 치환하면

$(x+y)(x+y-3)+2=A(A-3)+2$
$=A^2-3A+2$
$=(A-2)(A-1)$
$=(x+y-2)(x+y-1)$

88) $(x-5y+1)^2$

⇨ $x-5y=A$로 치환하면

$(x-5y)(x-5y+2)+1=A(A+2)+1$
$=A(A+2)+1$
$=A^2+2A+1$
$=(A+1)^2$
$=(x-5y+1)^2$

89) $(2a-b-3)(2a-b-2)$

⇨ $2a-b=A$로 치환하면

$(2a-b)(2a-b-5)+6$
$=A(A-5)+6$
$=A^2-5A+6$
$=(A-3)(A-2)$
$=(2a-b-3)(2a-b-2)$

90) $(3a-4b-5)(3a-4b+2)$

⇨ $3a-4b=A$로 치환하면

$(3a-4b)(3a-4b-3)-10$
$=A(A-3)-10$
$=A^2-3A-10$
$=(A-5)(A+2)$
$=(3a-4b-5)(3a-4b+2)$

91) $(7x+2y-8)(7x+2y+2)$

⇨ $7x+2y=A$로 치환하면

$(7x+2y)(7x+2y-6)-16$
$=A(A-6)-16$
$=A^2-6A-16$
$=(A-8)(A+2)$
$=(7x+2y-8)(7x+2y+2)$

92) $(2x+y-5)(2x+y+2)$
⇨ $2x+y=A$라 할 때,
$A(A-3)-10=A^2-3A-10=(A-5)(A+2)$
$=(2x+y-5)(2x+y+2)$

93) $(3x-2)(6x-7)$
⇨ $3x-1=A$라 하면
$2A^2-7A+5=(2A-5)(A-1)=(6x-7)(3x-2)$

94) $(x+2y+1)^2$
⇨ $x+2y=A$로 치환하면
$x^2+4xy+4y^2+1+2x+4y=(x+2y)^2+2(x+2y)+1$
$=A^2+2A+1=(A+1)^2$
$=(x+2y+1)^2$

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

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

97) $(x^2-7x+11)^2$
⇨ $(x-2)(x-3)(x-4)(x-5)+1$
$=(x-2)(x-5)(x-3)(x-4)+1$
$=(x^2-7x+10)(x^2-7x+12)+1$
$=(A+10)(A+12)+1$
$=A^2+22A+120+1$
$=(A+11)^2$
$=(x^2-7x+11)^2$

98) $(x^2+5x+5)^2$
⇨ $(x+1)(x+2)(x+3)(x+4)+1$
$=(x+1)(x+4)(x+2)(x+3)+1$
$=(x^2+5x+4)(x^2+5x+6)+1$
$=(A+4)(A+6)+1=A^2+10A+24+1$
$=(A+5)^2$
$=(x^2+5x+5)^2$

99) $(x+y-3)(x-y+2)$
⇨ $x^2-y^2-x+5y-6=x^2-x-(y^2-5y+6)$
$=x^2-x-(y-3)(y-2)$
$=(x+y-3)(x-y+2)$

100) $(x+y-3)(x-y+4)$
⇨ $x^2-y^2+x+7y-12=x^2+x-(y^2-7y+12)$
$=x^2+x-(y-3)(y-4)=(x+y-3)(x-y+4)$

101) $(x-2y-1)(x-3y+2)$
⇨ (주어진 식)$=x^2+(-5y+1)x+(6y^2-y-2)$
$=x^2+(-5y+1)x+(2y+1)(3y-2)$
$=(x-2y-1)(x-3y+2)$

102) $(x-y+4)(x+y-3)$
⇨ $x^2-y^2+2x+8y-15=x^2+2x-(y^2-8y+15)$
$=x^2+2x-(y-5)(y-3)$
$=(x-y+5)(x+y-3)$

103) $(x+y-1)(x-2y-2)$
⇨ $x^2-2y^2-xy-3x+2$
$=x^2-(y+3)x-2y^2+2$
$=x^2-(y+3)x-2(y-1)(y+1)$
$=(x+y-1)(x-2y-2)$

104) $(x+y+4)(x+y-1)$
⇨ (주어진 식)$=x^2+(2y+3)x+(y^2+3y-4)$
$=x^2+(2y+3)x+(y+4)(y-1)$
$=(x+y+4)(x+y-1)$

105) $(x-y-2)(x-y+1)$
⇨ $x^2+y^2-2xy-x+y-2$
$=x^2-(2y+1)x+(y^2+y-2)$
$=x^2-(2y+1)x+(y+2)(y-1)$
$=(x-y-2)(x-y+1)$

106) $(x+y+2)(x-y+4)$
⇨ $x^2-y^2+6x+2y+8$
$=x^2+6x-(y^2-2y-8)$
$=x^2+6x-(y+2)(y-4)$
$=(x+y+2)(x-y+4)$

107) $(x+y+1)(x-y-3)$
⇨ x^2-2x-y^2-4y-3
$=x^2-2x-(y^2+4y+3)$
$=x^2-2x-(y+1)(y+3)$
$=(x+y+1)(x-y-3)$

108) $(x-y+2)(x+y+1)$
⇨ x^2+3x-y^2+y+2
$=x^2+3x-(y^2-y-2)$
$=x^2+3x-(y+1)(y-2)$
$=(x-y+2)(x+y+1)$

109) $(x+3y-1)(x-y+2)$
⇨ $x^2-3y^2+x+2xy+7y-2$
$=x^2+(2y+1)x-(3y^2-7y+2)$
$=x^2+(2y+1)x-(3y-1)(y-2)$
$=(x+3y-1)(x-y+2)$

110) $(x+y+1)(x-y+3)$
⇨ x^2+4x-y^2+2y+3
$=x^2+4x-(y^2-2y-3)$
$=x^2+4x-(y+1)(y-3)$
$=(x+y+1)(x-y+3)$

111) $(x-3y-8)(x-y+2)$

⇨ $x^2-4xy+3y^2-6x+2y-16$
$=x^2-(4y+6)x+(3y^2+2y-16)$
$=x^2-(4y+6)x+(3y+8)(y-2)$
$=(x-3y-8)(x-y+2)$

112) $(x-y)(x+y-2)$
⇨ x^2-2x-y^2+2y
$=x^2-2x-(y^2-2y)$
$=x^2-2x-y(y-2)$
$=(x-y)(x+y-2)$