계산시 참고사항

1. 인수분해 공식을 이용하여 수 계산하기

: 복잡한 수의 계산은 인수분해 공식을 사용할 수 있도록 수의 모양을 변형하면 쉽게 계산할 수 있다.

예 $101^2-1=101^2-1^2=(101+1)(101-1)=102\times100=10200$

$97^2+6\times97+3^2=97^2+2\times97\times3+3^2=(97+3)^2=100^2=10000$

2. 인수분해 공식을 이용하여 식의 값 구하기

: 복잡한 식을 인수분해한 후, 문자의 값을 대입하여 식의 값을 구한다.

수 계산하기

◪ 인수분해 공식을 이용하여 다음을 계산하여라.

1. $75\times65+75\times35$

2. $15\times125-15\times25$

3. 101^2-99^2

4. $\sqrt{52^2-48^2}$

5. $102-4\times102+4$

6. $1^2-2^2+3^2-4^2$

7. $9\times67+9\times33$

8. $11\times26+11\times24$

9. $19\times77-19\times57$

10. $45\times98-45\times96$

11. $25\times8.5+25\times1.5$

12. $125\times3.4-125\times1.4$

13. 102^2-98^2

14. 175^2-25^2

15. 98^2-4

16. $5.5^2-4.5^2$

17. $\sqrt{26^2-24^2}$

18. $\sqrt{41^2-40^2}$

19. $12^2\times5-8^2\times5$

20. $2.5\times16.5^2-2.5\times3.5^2$

21. $95^2+2\times95\times5+5^2$

22. $36^2+2\times36\times4+16$

23. $57^2+6\times57+3^2$

24. $73^2-6\times73+9$

25. $31^2-2\times31+1$

26. $57^2-86\times57+43^2$

27. $104^2-8\times104+16$

28. $24.5^2-9\times24.5+4.5^2$

29. $55^2\times3.14-45^2\times3.14$

30. $22^2+25\times31+25\times9-28^2$

31. $2\times7.75^2-2\times2.25^2$

32. $5\times6.5^2-5\times3.5^2$

33. $5.5^2\times11.5-4.5^2\times11.5$

34. $56^2\times\frac{3}{100}-44^2\times\frac{3}{100}$

35. $(6.5)^2-5\times6.5\times2.5+6\times(2.5)^2$

36. $3\times3.5^2-3\times1.5^2+2\times3^2-2\times4^2$

37. $27.6^2\times\frac{1}{5}-22.4^2\times\frac{1}{5}$

38. $51^2\times\frac{3}{5}-49^2\times\frac{3}{5}$

39. $9\times3.5^2-9\times1.5^2$

40. $98^2-2\times98-8$

41. $\frac{200^2-1}{201}\times99+199$

42. $\frac{65^2+2\times65\times35+35^2}{65^2-35^2}$

43. $\frac{2009^2-1}{2009\times2010+2009+1}$

44. $\dfrac{994^2+8\times 994+12}{998^2-2^2}$

45. $\dfrac{(99.5)^2+99.5+0.25}{(200.5)^2-200.5+0.25}$

46. $1^2-4^2+7^2-10^2+13^2-16^2$

47. $17^2-15^2+13^2-11^2+9^2-7^2+5^2-3^2+1^2$

48. $103^2-97^2+54^2-46^2+16^2-4^2$

49. $12^2-11^2+10^2-9^2+8^2-7^2$

50. $2^2-4^2+6^2-8^2+10^2-12^2+14^2-16^2+18^2-20^2$

식의 값 구하기

◪ 인수분해 공식을 이용하여 다음을 구하여라.

51. $x=98$일 때, x^2+4x+4의 값

52. $x=103$일 때, x^2-6x+9의 값

53. $x=1+\sqrt{3}$일 때, x^2-2x+1의 값

54. $x=-4+\sqrt{2}$일 때, $x^2+8x+16$의 값

55. $x=0.55$, $y=0.45$일 때, x^2-y^2의 값

56. $x=2+\sqrt{3}$, $y=2-\sqrt{3}$일 때, x^2-y^2의 값

57. $x=93$일 때, x^2-6x+9의 값

58. $x=17$일 때, $x^2-5x-14$의 값

59. $x=\sqrt{3}+2$일 때, x^2-4x+4의 값

60. $x=\dfrac{1}{2+\sqrt{3}}$, $y=\dfrac{1}{2-\sqrt{3}}$일 때, x^2-y^2의 값

61. $x=3-\sqrt{6}$일 때, x^2-6x+5의 값

62. $x=-1+\sqrt{5}$일 때, $(x+2)^2-2(x+2)+1$의 값

63. $x=\sqrt{3}+2$, $y=\sqrt{3}-2$일 때, $x^2-2xy+y^2$의 값

64. $x=6.3$, $y=3.7$일 때, $x^2+2xy+y^2$의 값

65. $x=2+\sqrt{5}$, $y=2-\sqrt{5}$ 일 때, x^2-y^2의 값

66. $x=\sqrt{2}+\sqrt{7}$, $y=\sqrt{2}-\sqrt{7}$ 일 때, $x^2+2xy+y^2$의 값

67. $x=\sqrt{3}+\sqrt{5}$, $y=\sqrt{3}-\sqrt{5}$ 일 때, x^2y-xy^2의 값

68. $a=43$, $b=96$일 때, $ab+4a-3b-12$의 값

69. $x=1.7$, $y=0.3$일 때, $x^2-xy-2y^2$의 값

70. $x=\frac{1}{\sqrt{2}-1}$, $y=\frac{1}{\sqrt{2}+1}$일 때, $x^2+2xy+y^2$의 값

71. $x=\frac{1}{2+\sqrt{3}}$, $y=\frac{1}{2-\sqrt{3}}$ 일 때, x^3-xy^2

72. $x=4-\sqrt{5}$ 일 때, $(x-3)^2-2(x-3)+1$

73. $a+b=4$일 때, $a^2+ab+b^2+(a-1)(b-1)$

74. $x+y=\sqrt{5}$, $x-y=\sqrt{3}$ 일 때, $x^2-y^2+5x-5y$

75. $x+y=3$, $x-y=2$일 때, $x^2-y^2+4x-4y$

76. $x=\frac{1}{5+2\sqrt{6}}$ 일 때, $x^2-10x+21$

77. $x+y=9$, $x-y=5$일 때, $x^2-y^2+3x+3y$

78. $x^2-2x-3=0$일 때, $(x-3)(x-1)(x+1)(x-3)$

79. $x=2+\sqrt{5}$ 일 때, $(x-1)^2-2(x-1)-3$

80. $a+b=\sqrt{5}$, $a^2-b^2+2b=25$일 때, $a-b$

81. $x+y=\sqrt{2}+3$, $x-y=\sqrt{2}$ 일 때, $x^2-y^2-3x-3y$

82. $a-b=5$, $ax-bx-2ay+2by=30$일 때, $x^2-4xy+4y^2$

83. $a+b=10$, $ab=5$일 때, $a^2-b^2+4a-4b$

84. $a+b=-4$, $a-b=5$일 때, a^2-b^2-6a+9

85. $x+2y=-4$, $x-2y=\sqrt{3}$ 일 때, x^2-4y^2+6x+9

86. $a=\frac{1}{3-2\sqrt{2}}$, $b=\frac{1}{3+2\sqrt{2}}$ 일 때, $a^2-b^2+5a-5b$

87. $x=\sqrt{2}-2$, $y=2\sqrt{2}$ 일 때, $x^2-2xy+y^2+4x-4y+3$

88. $x=\sqrt{3}+1$, $y=\sqrt{3}-1$ 일 때, $x^2+2xy+y^2$

89. $x+y=2\sqrt{3}$, $xy=2$ 일 때, $x^2y-4x-4y+xy^2$

90. $x=\dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, $y=\dfrac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ 일 때, $x^3-x^2y-xy^2+y^3$

91. $x=\dfrac{1}{3-2\sqrt{2}}$, $y=\dfrac{1}{3+2\sqrt{2}}$ 일 때, $(2x+y)^2-(2x-y)^2$

92. $a=\sqrt{8}+2\sqrt{3}$, $b=\sqrt{12}-2\sqrt{2}$ 일 때, a^4b^4-1

93. $x^2+2x+1-y^2=40$, $x+y=4$ 일 때, $x-y$

94. $x-y=4$ 일 때, $\dfrac{1}{2}(x^2+y^2)-xy$

95. $x=-4+2\sqrt{3}$, $y=-\sqrt{3}+3$ 일 때,
$\dfrac{x^2+3xy+2y^2+x+2y}{x+y+1}$

96. $a=3-2\sqrt{5}, b=\sqrt{5}-1$ 일 때, $\dfrac{a+b+1}{a^2+3ab+2b^2+a+2b}$

정답 및 해설

1) 7500

2) 1500
⇨ (주어진 식)$=15\times(125-25)=15\times100=1500$

3) 400
⇨ (주어진 식)$=(101+99)(101-99)=200\times2=400$

4) 20
⇨ (주어진 식)
$=\sqrt{(52+48)(52-48)}=\sqrt{100\times4}=\sqrt{400}=20$

5) 10000
⇨ (주어진 식)$=(102-2)^2=100^2=10000$

6) -10
⇨ (주어진 식)$=(1+2)(1-2)+(3+4)(3-4)$
$=-(1+2+3+4)=-10$

7) 900
⇨ $9\times67+9\times33=9\times(67+33)=9\times100=900$

8) 550
⇨ $11\times26+11\times24=11\times(26+24)$
$=11\times50=550$

9) 380
⇨ $19\times77-19\times57=19\times(77-57)$
$=19\times20=380$

10) 90
⇨ $45\times98-45\times96=45\times(98-96)=45\times2=90$

11) 250
⇨ $25\times8.5+25\times1.5=25\times(8.5+1.5)$
$=25\times10=250$

12) 250
⇨ $125\times3.4-125\times1.4=125\times(3.4-1.4)$
$=125\times2=250$

13) 800
⇨ $102^2-98^2=(102+98)(102-98)$
$=200\times4=800$

14) 30000
⇨ $175^2-25^2=(175+25)(175-25)$
$=200\times150=30000$

15) 9600
⇨ $98^2-4=(98+2)(98-2)=100\times96=9600$

16) 10
⇨ $5.5^2-4.5^2=(5.5+4.5)(5.5-4.5)=10\times1=10$

17) 10
⇨ $\sqrt{26^2-24^2}=\sqrt{(26+24)(26-24)}$
$=\sqrt{50\times2}=\sqrt{100}=10$

18) 9
⇨ $\sqrt{40^2-40^2}=\sqrt{(41+40)(41-40)}$
$=\sqrt{81\times1}=\sqrt{81}=9$

19) 400
⇨ $12^2\times5-8^2\times5=5\times(12^2-8^2)$
$=5\times(12+8)(12-8)$
$=5\times20\times4=400$

20) 650
⇨ $2.5\times16.5^2-2.5\times3.5^2$
$=2.5\times(16.5^2-3.5^2)$
$=2.5\times(16.5+3.5)(16.5-3.5)$
$=2.5\times20\times13=650$

21) 10000
⇨ $95^2+2\times95\times5+5^2=(95+5)^2=100^2=10000$

22) 1600
⇨ $36^2+2\times4\times36+16=36^2+2\times4\times36+4^2$
$=(36+4)^2=40^2=1600$

23) 3600
⇨ $57^2+6\times57+3^2=57^2+2\times57\times3+3^2$
$=(57+3)^2=60^2=3600$

24) 4900
⇨ $73^2-6\times73+9=73^2-2\times73\times3+3^2$
$=(73-3)^2=70^2=4900$

25) 900
⇨ $31^2-2\times31+1=(31-1)^2=30^2=900$

26) 196
⇨ $57^2-86\times57+43^2=57^2-2\times57\times43+43^2$
$=(57-43)^2=14^2=196$

27) 10000
⇨ $104^2-8\times104+16=104^2-2\times104\times4+4^2$
$=(104-4)^2=100^2=10000$

28) 400
⇨ $24.5^2-9\times24.5+4.5^2$
$=24.5^2-2\times24.5\times4.5+4.5^2$
$=(24.5-4.5)^2=20^2=400$

29) 3140

30) 700

31) 110

32) 150

33) 115

34) 36

35) -1.5

36) 16

37) 52

38) 120

⇨ $51^2\times\frac{3}{5}-49^2\times\frac{3}{5}=\frac{3}{5}(51^2-49^2)$

$=\frac{3}{5}(51+49)(51-49)=\frac{3}{5}\times(100\times2)=120$

39) 90

40) 9400

41) 19900

⇨ (주어진 식)

$=\frac{(200+1)(200-1)}{200+1}\times99+199$

$=199\times99+199=199(99+1)=199\times100=19900$

42) $\frac{10}{3}$

43) $\frac{1004}{1005}$

⇨ $\frac{2009^2-1}{2009\times2010+2009+1}=\frac{(2009+1)(2009-1)}{2009(2009+1)+2009+1}$

$=\frac{2010\times2008}{(2009+1)^2}=\frac{2008}{2010}=\frac{1004}{1005}$

44) 1

⇨ $994=A$라 하면

$\frac{A^2+8A+12}{(998+2)(998-2)}=\frac{(A+6)(A+2)}{1000\times996}$

$=\frac{(994+6)(994+2)}{1000\times996}=1$

45) $\frac{1}{4}$

46) -153

47) 161

⇨ $17^2-15^2+13^2-11^2+9^2-7^2+5^2-3^2+1^2$

$=(17+15)(17-15)+(13+11)(13-11)+\cdots(5+3)(5-3)+1$

$=2(17+15+13+11+9+7+5+3)+1$

$=161$

48) 2240

⇨ $103^2-97^2+54^2-46^2+16^2-4^2$

$=(103+97)(103-97)+(54+46)(54-46)+(16+4)(16-4)$

$=200\times6+100\times8+20\times12=1200+800+240=2240$

49) 57

⇨ $12^2-11^2+10^2-9^2+8^2-7^2$

$=(12+11)(12-11)+(10+9)(10-9)+(8+7)(8-7)$

$=12+11+10+9+8+7=57$

50) -220

⇨ $2^2-4^2+6^2-8^2+\cdots+18^2-20^2$

$=(2+4)(2-4)+(6+8)(6-8)+\cdots+(18+20)(18-20)$

$=-2(2+4+6+8+\cdots18+20)$

$=-2\times(22\times5)=-220$

51) 10000

⇨ $x^2+4x+4=(x+2)^2=(98+2)^2=100^2=10000$

52) 10000

⇨ $x^2-6x+9=(x-3)^2=(103-3)^2=100^2=10000$

53) 3

⇨ $x^2-2x+1=(x-1)^2=(1+\sqrt{3}-1)^2=(\sqrt{3})^2=3$

54) 2

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

55) 0.1

⇨ $x^2-y^2=(x+y)(x-y)$

$=(0.55+0.45)(0.55-0.45)=1\times0.1=0.1$

56) $8\sqrt{3}$

⇨ $x^2-y^2=(x+y)(x-y)$

$=(2+\sqrt{3}+2-\sqrt{3})(2+\sqrt{3}-2+\sqrt{3})$

$=4\times2\sqrt{3}=8\sqrt{3}$

57) 8100

⇨ $x^2-6x+9=(x-3)^2=(93-3)^2=90^2=8100$

58) 190

⇨ $x^2-5x-14=(x-7)(x+2)=(17-7)(17+2)$

$=10\times19=190$

59) 3

⇨ $x^2-4x+4=(x-2)^2$

$=(\sqrt{3}+2-2)^2=(\sqrt{3})^2=3$

60) $-8\sqrt{3}$

⇨ $x=\frac{1}{2+\sqrt{3}}=\frac{2-\sqrt{3}}{(2+\sqrt{3})(2-\sqrt{3})}=2-\sqrt{3}$

$y=\dfrac{1}{2-\sqrt{3}}=\dfrac{2+\sqrt{3}}{(2-\sqrt{3})(2+\sqrt{3})}=2+\sqrt{3}$

$\therefore\ x^2-y^2$
$=(x+y)(x-y)$
$=(2-\sqrt{3}+2+\sqrt{3})(2-\sqrt{3}-2-\sqrt{3})$
$=4\times(-2\sqrt{3})$
$=-8\sqrt{3}$

61) 2

⇨ $x^2-6x+5=(x-5)(x-1)$
$=(3-\sqrt{6}-5)(3-\sqrt{6}-1)$
$=-(2+\sqrt{6})(2-\sqrt{6})$
$=-(4-6)=2$

62) 5

⇨ $(x+2)^2-2(x+2)+1=(x+2-1)^2=(x+1)^2$
$=(-1+\sqrt{5}+1)^2$
$=(\sqrt{5})^2=5$

63) 16

⇨ $x-y=\sqrt{3}+2-(\sqrt{3}-2)=4$이므로
$x^2-2xy+y^2=(x-y)^2=4^2=16$

64) 100

⇨ $x^2+2xy+y^2=(x+y)^2=(6.3+3.7)^2$
$=10^2=100$

65) $8\sqrt{5}$

⇨ $x^2-y^2=(x+y)(x-y)$
$=(2+\sqrt{5}+2-\sqrt{5})(2+\sqrt{5}-2+\sqrt{5})$
$=4\times2\sqrt{5}=8\sqrt{5}$

66) 8

⇨ $x^2+2xy+y^2=(x+y)^2$
$=(\sqrt{2}+\sqrt{7}+\sqrt{2}-\sqrt{7})^2$
$=(2\sqrt{2})^2=8$

67) $-4\sqrt{5}$

⇨ x^2y-xy^2
$=xy(x-y)$
$=(\sqrt{3}+\sqrt{5})(\sqrt{3}-\sqrt{5})(\sqrt{3}+\sqrt{5}-\sqrt{3}+\sqrt{5})$
$=\{(\sqrt{3})^2-(\sqrt{5})^2\}\times2\sqrt{5}$
$=(-2)\times2\sqrt{5}=-4\sqrt{5}$

68) 4000

⇨ $ab+4a-3b-12=a(b+4)-3(b+4)$
$=(a-3)(b+4)$
$=(43-3)(96+4)$
$=40\times100=4000$

69) 2.2

⇨ $x^2-xy-2y^2=(x-2y)(x+y)$
$=(1.7-2\times0.3)(1.7+0.3)$
$=1.1\times2=2.2$

70) 8

⇨ $x=\dfrac{1}{\sqrt{2}-1}=\dfrac{\sqrt{2}+1}{(\sqrt{2}-1)(\sqrt{2}+1)}=\sqrt{2}+1$

$y=\dfrac{1}{\sqrt{2}+1}=\dfrac{\sqrt{2}-1}{(\sqrt{2}+1)(\sqrt{2}-1)}=\sqrt{2}-1$

$\therefore\ x^2+2xy+y^2=(x+y)^2$
$=(\sqrt{2}+1+\sqrt{2}-1)^2$
$=(2\sqrt{2})^2=8$

71) $24-16\sqrt{3}$

⇨ $x=\dfrac{1}{2+\sqrt{3}}=2-\sqrt{3}$, $y=\dfrac{1}{2-\sqrt{3}}=2+\sqrt{3}$

$\therefore\ x^3-xy^2=x(x^2-y^2)=x(x+y)(x-y)$
$=(2-\sqrt{3})\times4\times(-2\sqrt{3})=-16\sqrt{3}+24$

72) 5

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

73) 13

⇨ $a^2+ab+b^2+(a-1)(b-1)$
$=a^2+ab+b^2+ab-a-b+1$
$=a^2+2ab+b^2-a-b+1$
$=(a+b)^2-(a+b)+1$
$=16-4+1=13$

74) $\sqrt{15}+5\sqrt{3}$

⇨ $x^2-y^2+5x-5y=(x+y)(x-y)+5(x-y)$
$=(x-y)(x+y+5)=\sqrt{3}(\sqrt{5}+5)=\sqrt{15}+5\sqrt{3}$

75) 14

⇨ $x^2-y^2+4x-4y=(x+y)(x-y)+4(x-y)$
$=(x-y)(x+y+4)=2\times7=14$

76) 20

⇨ $x=\dfrac{1}{5+2\sqrt{6}}=5-2\sqrt{6}$, $x-5=-2\sqrt{6}$

$\therefore\ x^2-10x+21=(x-5)^2-4=24-4=20$

77) 72

⇨ $x^2-y^2+3x+3y=(x+y)(x-y)+3(x+y)$
$=(x+y)(x-y+3)=9\times8=72$

78) 0

⇨ $x^2-2x-3=0$이므로
$(x-3)(x-1)(x+1)(x-3)$
$=(x-3)(x+1)(x-1)(x-3)$
$=(x^2-2x-3)(x^2-4x+3)=0\times(x^2-4x+3)=0$

79) 1

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

$=(x-4)x=(-2+\sqrt{5})(2+\sqrt{5})=1$

80) $5+6\sqrt{5}$

⇨ $a^2-b^2+2b=25$

$\Rightarrow a^2-b^2+2b-1=25-1$

$\Rightarrow a^2-(b-1)^2=24$

$\Rightarrow (a+b-1)(a-b+1)=24$

$a+b=\sqrt{5}$ 이므로 $(\sqrt{5}-1)(a-b+1)=24$

$a-b+1=\dfrac{24}{\sqrt{5}-1}=6(\sqrt{5}+1)$

$\therefore a-b=6\sqrt{5}+5$

81) -7

⇨ $x^2-y^2-3x-3y=(x+y)(x-y)-3(x+y)$

$=(x+y)(x-y-3)=(\sqrt{2}+3)(\sqrt{2}-3)=-7$

82) 36

⇨ $ax-bx-2ay+2by$

$=(a-b)x-2(a-b)y$

$=(a-b)(x-2y)=30$

$a-b=5$이므로 $x-2y=6$

$\therefore x^2-4xy+4y^2=(x-2y)^2=36$

83) $\pm 56\sqrt{5}$

⇨ $(a-b)^2=(a+b)^2-4ab=80$ $\therefore a-b=\pm 4\sqrt{5}$

$\therefore a^2-b^2+4a-4b=(a+b)(a-b)+4(a-b)$

$=(a-b)(a+b+4)=\pm 4\sqrt{5}\times 14\pm 56\sqrt{5}$

84) -14

⇨ $a^2-b^2-6a+9=(a-3)^2-b^2=(a+b-3)(a-b-3)$

$=-7\times 2=-14$

85) $-3-\sqrt{3}$

86) $44\sqrt{2}$

⇨ $a=\dfrac{1}{3-2\sqrt{2}}=3+2\sqrt{2}$, $b=\dfrac{1}{3+2\sqrt{2}}=3-2\sqrt{2}$

$\therefore a^2-b^2+5a-5b=(a+b)(a-b)+5(a-b)$

$=(a-b)(a+b+5)=4\sqrt{2}\times 11=44\sqrt{2}$

87) 1

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

$=(x-y+3)(x-y+1)=(1-\sqrt{2})(-1-\sqrt{2})=1$

88) 12

⇨ $x^2+2xy+y^2=(x+y)^2=(\sqrt{3}+1+\sqrt{3}-1)^2$

$=(2\sqrt{3})^2=12$

89) $-4\sqrt{3}$

⇨ $x^2y-4x-4y+xy^2=xy(x+y)-4(x+y)$

$=(x+y)(xy-4)=2\sqrt{3}\times(-2)=-4\sqrt{3}$

90) 960

⇨ $x=\dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}=(\sqrt{3}+\sqrt{2})^2=5+2\sqrt{6}$

$y=\dfrac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}=(\sqrt{3}-\sqrt{2})^2=5-2\sqrt{6}$

$\therefore x^3-x^2y-xy^2+y^3=x^2(x-y)-y^2(x-y)$

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

$=(4\sqrt{6})^2\times 10=960$

91) 8

⇨ $x=\dfrac{1}{3-2\sqrt{2}}=3+2\sqrt{2}$, $y=\dfrac{1}{3+2\sqrt{2}}=3-2\sqrt{2}$

$\therefore (2x+y)^2-(2x-y)^2=4x\times 2y=8xy=8$

92) 255

⇨ $a=2\sqrt{2}+2\sqrt{3}$, $b=2\sqrt{3}-2\sqrt{2}$ 이므로,

$ab=(2\sqrt{3}+2\sqrt{2})(2\sqrt{3}-2\sqrt{2})=12-8=4$이다.

$\therefore a^4b^4-1=(ab)^4-1=4^4-1=256-1=255$

93) 7

⇨ $x^2+2x+1-y^2=40$

$(x+1)^2-y^2=40$

$(x+y+1)(x-y+1)=40$

$x-y+1=8$ $\therefore x-y=7$

94) 8

⇨ $\dfrac{1}{2}(x^2+y^2)-xy=\dfrac{1}{2}(x^2-2xy+y^2)$

$=\dfrac{1}{2}(x-y)^2=\dfrac{1}{2}\times 16=8$

95) 2

⇨ (주어진 식)

$=\dfrac{(x+2y)(x+y)+x+2y}{x+y+1}=\dfrac{(x+2y)(x+y+1)}{x+y+1}=x+2y$

$=-4+2\sqrt{3}+2(-\sqrt{3}+3)=-4+2\sqrt{3}-2\sqrt{3}+6=2$

96) 1

⇨ $\dfrac{a+b+1}{(a^2+3ab+2b^2+a+2b)}$

$=\dfrac{a+b+1}{(a+2b)(a+b)+a+2b}=\dfrac{a+b+1}{(a+2b)(a+b+1)}=\dfrac{1}{a+2b}$

$=\dfrac{1}{3-2\sqrt{5}+2\sqrt{5}-2}=\dfrac{1}{1}=1$