



◇ 「콘텐츠산업 진흥법 시행령」 제33조에 의한 표시

1) 제작연월일 : 2016-02-16

2) 제작자 : 교육지대(주)

3) 이 콘텐츠는 「콘텐츠산업 진흥법」에 따라 최초 제작일부터 5년간 보호됩니다.

◇ 「콘텐츠산업 진흥법」 외에도 「저작권법」에 의하여 보호되는 콘텐츠의 경우, 그 콘텐츠의 전부 또는 일부를 무단으로 복제하거나 전송하는 것은 콘텐츠산업 진흥법 외에도 저작권법에 의한 법적 책임을 질 수 있습니다.

계산시 참고사항

1. 다항식의 덧셈과 뺄셈

(1) 덧셈: 괄호가 있으면 괄호를 풀고, 동류항끼리 모아서 간단히 한다.

예) $A + (B + C) = A + B + C$, $A + (B - C) = A + B - C$

(2) 뺄셈: 빼는 식의 각 항의 부호를 바꾸어 덧셈과 같이 계산한다.

예) $A - (B + C) = A - B - C$, $A - (B - C) = A - B + C$

2. 이차식의 덧셈과 뺄셈

(1) 덧셈: 괄호가 있으면 괄호를 풀고, 동류항끼리 모아서 간단히 한다.

(2) 뺄셈: 빼는 식의 각 항의 부호를 바꾸어 덧셈과 같이 계산한다.

3. 여러가지 괄호가 있는 식의 계산

: 소괄호 () → 중괄호 { } → 대괄호 [] 순으로 괄호를 풀어서 계산한다.

4. 계수가 분수인 식의 계산

: 분모의 최소공배수로 통분하여 계산한다.

참고

● 동류항

: 문자와 차수가 각각 같은항을 말한다.

● 이차식

: 다항식의 각 항의 차수 중에서 가장 높은 항의 차수가 2인 다항식



다항식의 덧셈과 뺄셈

▣ 다음 식을 간단히 하여라.

1. $(a + 3b) + (3a - 4b)$

2. $(2x + 5y) + (4x + y)$

3. $(3a + 6b) + (4a + 8b)$

4. $(6a + 10b) + (a - 4b)$

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

6. $(5x - 4y) + (4x + 3y)$

7. $(x - 6y) + (3x + 9y)$

8. $(2a - 3b) + (4a - 5b)$

9. $(8a - 2b) + (2a - 5b)$

10. $2(3x - 4y) + (5x + 3y)$

11. $(5x + 4y) + (3x - 2y)$

12. $(4x - 2y) + (2x + 5y)$

13. $(4a - 3b) + 2(3a + b)$

14. $3(-6x+2y)+(4x-5y)$

15. $(3x+2y-6)+(2x-4y-5)$

16. $(3a+b+5c)+(2a+3b+4c)$

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

18. $(2x+5y+2)+(3x+4y-9)$

19. $(5a-b+6c)+(2a-3b+4c)$

20. $(3x-4y-7z)+(6x+y+5z)$

21. $(4x-2y-3)+(3x-6y-4)$

22. $(6a+5b-8)+(5a-9b+2)$

23. $(7a-3b+6c)+(5a-6b-c)$

▣ 다음 식을 간단히 하여라.

24. $(8x+5y)-(3x+y)$

25. $(3x+7y)-(x-4y)$

26. $(6x+y)-(2x-7y)$

27. $(6x-7y)-(4x+5y)$

28. $(a-5b)-(7a+2b)$

29. $(5a-3b)-(8a-7b)$

30. $(5x+6y)-(3x+4y)$

31. $(4x-5y)-(2x+3y)$

32. $(-5a+4b)-3(a-2b)$

33. $(4a+5b)-(3a+2b)$

34. $(3x-4y+6)-(-4x-5y+7)$

35. $(5a+3b+6c)-(3a+b+5c)$

36. $(x-2y+6)-(4x-y-7)$

37. $(2x-5y-9)-(8x+4y+1)$

38. $(6a-b+2c)-(3a-7b+5c)$

39. $(2x-3y-8z)-(7x+y-4z)$

40. $(5x-3y-1)-(5x-4y-6)$

41. $(3a+2b-5)-(4a-6b+7)$

42. $(4a-6b+5c)-(2a+8b-3c)$



이차식의 덧셈과 뺄셈

■ 다음 식이 이차식이면 ○표, 아니면 ×표를 하여라.

43. $3x+2y-7$ ()

44. $5x^2-1$ ()

45. $2x^3-x^2-2x^3+5$ ()

46. x^3+2x-1 ()

■ 다음 식을 간단히 하여라.

47. $(2a^2+3a+4)+(a^2-2a-3)$

48. $(2a^2-3a+5)+(-a^2-3a+1)$

49. $(4x^2-x+3)+(2x^2-6x+9)$

50. $(3a^2-6a-4)+(-4a^2+3a+12)$

51. $(-8a^2+2a-7)+(7a^2-4a-4)$

52. $(6x^2-4x)+(-6x^2+4x+6)$

53. $(4a^2-4)+(a^2+3a+8)$

54. $(a^2+4a-3)+(a^2+6a-9)$

55. $4(a^2-5a+3)+2(-3a^2+6a-2)$

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

57. $(-a^2+3a)+(2a^2-a)$

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

59. $(y^2+3y+5)+(y^2-2y-3)$

60. $(-2x^2+5x-4)+(4x^2-6x+3)$

61. $(3a^2+2a-1)-(a^2+3a+4)$

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

63. $(5x^2-3x+1)+(-x^2+2x-3)$

64. $(2a^2-7a+1)+(6a^2+7a-4)$

65. $(-a^2+4a+3)+(2a^2-9a-5)$

66. $(3x^2+2)+(-3x^2+4x-8)$

67. $(5x^2-3x+4)+(7x^2+3x-1)$

68. $(a^2+3a-5)+(-6a^2+9)$

69. $(a^2-2a+7)+(3a^2+3a-1)$

70. $(-3a^2+5)+(-7a^2-5)$

■ 다음 식을 간단히 하여라.

$$71. (5x^2 - x - 7) - (3x^2 + 4x - 5)$$

$$72. (8x^2 + 3x - 4) - (3x^2 - 2x + 4)$$

$$73. (6a^2 - 2a + 3) - (2a^2 + a - 7)$$

$$74. (4a^2 + a + 3) - (-4a^2 - 5a - 9)$$

$$75. (3a^2 + 2a - 1) - (5a^2 + a + 4)$$

$$76. (-8x^2 + 4x - 1) - (-7x^2 + 5x - 4)$$

$$77. (7x^2 - 3x) - (5x^2 - x + 8)$$

$$78. (-6a^2 - 2) - (-3a^2 + 7a + 1)$$

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

$$80. (-4x^2 - 9) - (-7x^2 - 3)$$

$$81. (6x^2 + 3x - 2) - (2x^2 - 4x + 3)$$

$$82. (4a^2 - a + 3) - (-a^2 + 2a)$$

$$83. (7x^2 + 4x - 5) - (5x^2 - 3x - 2)$$

$$84. (-2a^2 + 3a + 1) - (2a^2 - 4a - 3)$$

$$85. (4a^2 - 3) - (-2a^2 + 3a - 5)$$

$$86. (2x^2 - 3x + 9) - (5x^2 - 3x + 3)$$

$$87. (a^2 - 7a + 8) - (-3a^2 - 3)$$

$$88. (8x^2 + 5x - 3) - (4x^2 + 4x - 5)$$



괄호가 있는 식의 계산

■ 다음 식을 간단히 하여라.

$$89. 2a + b - \{b - (2a - 3b)\}$$

$$90. 5x + \{2y - (2x - 3y)\}$$

$$91. a + \{2b - (4a + b)\}$$

$$92. 3x + \{2x - 5y - (x - y)\}$$

$$93. x - 3y - \{x - (2x + 7y)\}$$

$$94. a + 2b - \{b - (7a - 6b)\}$$

$$95. 2x + 5y - \{3x - (4x - y)\}$$

96. $6b - \{3a - (5a + 4b)\}$

97. $a - [2b - \{5a - 4b - (3a - 7b)\}]$

98. $x - [4y - \{2x + (3x - y)\}]$

99. $2b - [3a - b + \{a - 2b - (6a - 4b)\}]$

100. $a - 7b + [a - \{4a - (6a + 2b)\}]$

101. $3x + 5y - [2x - \{x + 2y - (4x + 3y)\}]$

102. $2x - \{5x + (3x - y) + 8y\}$

103. $-3x - \{4x + y - (2x - 7y)\}$

104. $5a - \{a - 4b - (-2a + b) - 6\}$

105. $3x^2 + 2x - \{5x - (6x^2 - 4x)\}$

106. $-a - [3b - \{9a - 4b - (2a - 3b)\}]$

107. $2x^2 - [4x - \{3x^2 + 2x - (3x - 2) + 4\}]$

108. $3x^2 - [2x^2 - \{5x^2 - (3x - 4)\}]$

109. $2b^2 - [7b - 5 + \{b^2 - 3b - (4b + 1)\}]$

110. $4x^2 + [2x^2 - 3x - \{5x^2 + 4x - (2x^2 - 7x)\}]$

111. $3x^2 - [5 - \{-4x^2 - (x^2 - 4) + 6x\}]$

112. $-[3x^2 - \{-7x - (6 - 9x) - 2x^2\}]$

113. $5a^2 - 3a - 2 - [4a - \{3a^2 + a + 1 - (5a^2 - 2a + 4)\}]$

114. $5x^2 - [x - 2x^2 - \{2x - 3x^2 + (-4x + 2x^2)\} - 2x]$



계수가 분수 또는 소수인 식의 계산

■ 다음 식을 간단히 하여라.

115. $\left(\frac{1}{2}x + \frac{1}{4}y\right) + \left(\frac{4}{3}x - \frac{1}{2}y\right)$

116. $\frac{3x+y}{4} + \frac{x-y}{2}$

$$117. \frac{2x+5y}{4} - \frac{x+y}{6}$$

$$118. \frac{2}{3}(6a-12) + \frac{1}{2}(4-2a)$$

$$119. \frac{2}{5}(10x-5) + \frac{1}{2}(8-4x)$$

$$120. \frac{4a+b}{3} + \frac{a-b}{2}$$

$$121. 2a - \frac{8a+3}{5}$$

$$122. \frac{1}{6}(4a+b) - \frac{2}{3}(a-b)$$

$$123. \frac{2(2a+b)}{3} - \frac{a-3b}{5}$$

$$124. \frac{4a-2b}{7} - \frac{a-3b}{2}$$

$$125. \frac{a+3}{2} - \frac{a+5}{3}$$

$$126. \left(\frac{4}{3}x - \frac{5}{4}y\right) - \left(-\frac{1}{2}x - \frac{3}{2}y\right)$$

$$127. \left(\frac{5}{4}x - \frac{1}{3}y\right) - \left(\frac{11}{6}x + \frac{1}{4}y\right)$$

$$128. \frac{2x-y}{3} - \frac{3x-y}{5}$$

$$129. \frac{3}{5}\left(5x^2 - \frac{1}{3}x\right) + 2\left(6x^2 - \frac{1}{2}x\right)$$

$$130. \left(\frac{2}{3}a^2 - \frac{1}{2}a + 2\right) - \left(\frac{7}{3}a^2 + a - 5\right)$$

$$131. \frac{1}{4}(2x^2 - x + 1) - \frac{2}{3}(x^2 + 3x - 7)$$

정답 및 해설



1) $4a - b$

2) $6x + 6y$

3) $7a + 14b$

4) $7a + 6b$

5) $8x - 2y$

6) $9x - y$

7) $4x + 3y$

8) $6a - 8b$

9) $10a - 7b$

10) $11x - 5y$

11) $8x + 2y$

12) $6x + 3y$

13) $10a - b$

14) $-14x + y$

15) $5x - 2y - 11$

16) $5a + 4b + 9c$

17) $6x + 5y - 3$

18) $5x + 9y - 7$

19) $7a - 4b + 10c$

20) $9x - 3y - 2z$

21) $7x - 8y - 7$

22) $11a - 4b - 6$

23) $12a - 9b + 5c$

24) $5x + 4y$

25) $2x + 11y$

26) $4x + 8y$

27) $2x - 12y$

28) $-6a - 7b$

29) $-3a + 4b$

30) $2x + 2y$

31) $2x - 8y$

$$\begin{aligned} \Rightarrow (4x - 5y) - (2x + 3y) \\ = 4x - 5y - 2x - 3y \\ = 4x - 2x - 5y - 3y \\ = (4 - 2)x + (-5 - 3)y = 2x - 8y \end{aligned}$$

32) $-8a + 10b$

33) $a + 3b$

34) $7x + y - 1$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= 3x - 4y + 6 + 4x + 5y - 7 \\ &= 7x + y - 1 \end{aligned}$$

35) $2a + 2b + c$

36) $-3x - y + 13$

37) $-6x - 9y - 10$

38) $3a + 6b - 3c$

39) $-5x - 4y - 4z$

40) $y + 5$

41) $-a + 8b - 12$

42) $2a - 14b + 8c$

43) \times

44) \bigcirc

45) \bigcirc

46) \times

47) $3a^2 + a + 1$

48) $a^2 - 6a + 6$

$$\begin{aligned} \Rightarrow (2a^2 - 3a + 5) + (-a^2 - 3a + 1) \\ = 2a^2 - 3a + 5 - a^2 - 3a + 1 \\ = a^2 - 6a + 6 \end{aligned}$$

49) $6x^2 - 7x + 12$

$$\begin{aligned} \Rightarrow (4x^2 - x + 3) + (2x^2 - 6x + 9) \\ = 4x^2 - x + 3 + 2x^2 - 6x + 9 \\ = 6x^2 - 7x + 12 \end{aligned}$$

50) $-a^2 - 3a + 8$

$$\begin{aligned} \Rightarrow (3a^2 - 6a - 4) + (-4a^2 + 3a + 12) \\ = 3a^2 - 6a - 4 - 4a^2 + 3a + 12 = -a^2 - 3a + 8 \end{aligned}$$

51) $-a^2-2a-11$

$$\begin{aligned} \Rightarrow & (-8a^2+2a-7)+(7a^2-4a-4) \\ & = -8a^2+2a-7+7a^2-4a-4 \\ & = -a^2-2a-11 \end{aligned}$$

52) 6

$$\begin{aligned} \Rightarrow & (6x^2-4x)+(-6x^2+4x+6) \\ & = 6x^2-4x-6x^2+4x+6=6 \end{aligned}$$

53) $5a^2+3a+4$

$$\begin{aligned} \Rightarrow & (4a^2-4)+(a^2+3a+8) \\ & = 4a^2-4+a^2+3a+8=5a^2+3a+4 \end{aligned}$$

54) $2a^2+10a-12$

$$\begin{aligned} \Rightarrow & (a^2+4a-3)+(a^2+6a-9) \\ & = a^2+4a-3+a^2+6a-9=2a^2+10a-12 \end{aligned}$$

55) $-2a^2-8a+8$

$$\begin{aligned} \Rightarrow & 4(a^2-5a+3)+2(-3a^2+6a-2) \\ & = 4a^2-20a+12-6a^2+12a-4 \\ & = 4a^2-6a^2-20a+12a+12-4 \\ & = -2a^2-8a+8 \end{aligned}$$

56) $3x^2-x+1$

57) a^2+2a

58) $3x^2-9$

59) $2y^2+y+2$

$$\begin{aligned} \Rightarrow & (y^2+3y+5)+(y^2-2y-3) \\ & = y^2+3y+5+y^2-2y-3 \\ & = y^2+y^2+3y-2y+5-3 \\ & = 2y^2+y+2 \end{aligned}$$

60) $2x^2-x-1$

61) $2a^2-a-5$

$$\begin{aligned} \Rightarrow & (3a^2+2a-1)-(a^2+3a+4) \\ & = 3a^2+2a-1-a^2-3a-4 \\ & = 3a^2-a^2+2a-3a-1-4 \\ & = 2a^2-a-5 \end{aligned}$$

62) $-x^2+x$

63) $4x^2-x-2$

64) $8a^2-3$

65) a^2-5a-2

66) $4x-6$

67) $12x^2+3$

68) $-5a^2+3a+4$

69) $4a^2+a+6$

70) $-10a^2$

$$\begin{aligned} \Rightarrow & (-3a^2+5)+(-7a^2-5) \\ & = -3a^2+5-7a^2-5=-10a^2 \end{aligned}$$

71) $2x^2-5x-2$

$$\begin{aligned} \Rightarrow & (\text{주어진 식})=5x^2-x-7-3x^2-4x+5 \\ & = 2x^2-5x-2 \end{aligned}$$

72) $5x^2+5x-8$

$$\begin{aligned} \Rightarrow & (8x^2+3x-4)-(3x^2-2x+4) \\ & = 8x^2+3x-4-3x^2+2x-4=5x^2+5x-8 \end{aligned}$$

73) $4a^2-3a+10$

$$\begin{aligned} \Rightarrow & (6a^2-2a+3)-(2a^2+a-7) \\ & = 6a^2-2a+3-2a^2-a+7 \\ & = 4a^2-3a+10 \end{aligned}$$

74) $8a^2+6a+12$

$$\begin{aligned} \Rightarrow & (4a^2+a+3)-(-4a^2-5a-9) \\ & = 4a^2+a+3+4a^2+5a+9=8a^2+6a+12 \end{aligned}$$

75) $-2a^2+a-5$

$$\begin{aligned} \Rightarrow & (\text{주어진 식})=3a^2+2a-1-5a^2-a-4 \\ & = -2a^2+a-5 \end{aligned}$$

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

$$\begin{aligned} \Rightarrow & (-8x^2+4x-1)-(-7x^2+5x-4) \\ & = -8x^2+4x-1+7x^2-5x+4=-x^2-x+3 \end{aligned}$$

77) $2x^2-2x-8$

$$\begin{aligned} \Rightarrow & (7x^2-3x)-(5x^2-x+8) \\ & = 7x^2-3x-5x^2+x-8=2x^2-2x-8 \end{aligned}$$

78) $-3a^2-7a-3$

$$\begin{aligned} \Rightarrow & (-6a^2-2)-(-3a^2+7a+1) \\ & = -6a^2-2+3a^2-7a-1=-3a^2-7a-3 \end{aligned}$$

79) $-6a^2+3a-10$

$$\begin{aligned} \Rightarrow & (-3a^2+a-5)-(3a^2-2a+5) \\ & = -3a^2+a-5-3a^2+2a-5=-6a^2+3a-10 \end{aligned}$$

80) $3x^2-6$

$$\begin{aligned} \Rightarrow & (-4x^2-9)-(-7x^2-3) \\ & = -4x^2-9+7x^2+3=3x^2-6 \end{aligned}$$

81) $4x^2+7x-5$

82) $5a^2 - 3a + 3$

83) $2x^2 + 7x - 3$

84) $-4a^2 + 7a + 4$

85) $6a^2 - 3a + 2$

86) $-3x^2 + 6$

87) $4a^2 - 7a + 11$

88) $4x^2 + x + 2$

89) $4a - 3b$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= 2a + b - (b - 2a + 3b) \\ &= 2a + b - (4b - 2a) \\ &= 2a + b - 4b + 2a \\ &= 4a - 3b \end{aligned}$$

90) $3x + 5y$

91) $-3a + b$

$$\begin{aligned} \Rightarrow a + \{2b - (4a + b)\} &= a + (2b - 4a - b) \\ &= a + (-4a + b) \\ &= a - 4a + b = -3a + b \end{aligned}$$

92) $4x - 4y$

$$\begin{aligned} \Rightarrow 3x + \{2x - 5y - (x - y)\} &= 3x + (2x - 5y - x + y) \\ &= 3x + (x - 4y) \\ &= 3x + x - 4y = 4x - 4y \end{aligned}$$

93) $2x + 4y$

$$\begin{aligned} \Rightarrow x - 3y - \{x - (2x + 7y)\} &= x - 3y - (x - 2x - 7y) \\ &= x - 3y - (-x - 7y) \\ &= x - 3y + x + 7y = 2x + 4y \end{aligned}$$

94) $8a - 5b$

$$\begin{aligned} \Rightarrow a + 2b - \{b - (7a - 6b)\} &= a + 2b - (b - 7a + 6b) \\ &= a + 2b - (-7a + 7b) \\ &= a + 2b + 7a - 7b = 8a - 5b \end{aligned}$$

95) $3x + 4y$

$$\begin{aligned} \Rightarrow 2x + 5y - \{3x - (4x - y)\} &= 2x + 5y - (3x - 4x + y) \\ &= 2x + 5y - (-x + y) \\ &= 2x + 5y + x - y = 3x + 4y \end{aligned}$$

96) $2a + 10b$

$$\begin{aligned} \Rightarrow 6b - \{3a - (5a + 4b)\} &= 6b - (3a - 5a - 4b) \\ &= 6b - (-2a - 4b) \\ &= 6b + 2a + 4b \\ &= 2a + 10b \end{aligned}$$

97) $3a + b$

$$\begin{aligned} \Rightarrow a - [2b - \{5a - 4b - (3a - 7b)\}] \\ &= a - \{2b - (5a - 4b - 3a + 7b)\} \\ &= a - \{2b - (2a + 3b)\} \\ &= a - (2b - 2a - 3b) \\ &= a - (-2a - b) \end{aligned}$$

$$= a + 2a + b = 3a + b$$

98) $6x - 5y$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= x - \{4y - (2x + 3x - y)\} \\ &= x - \{4y - (5x - y)\} \\ &= x - (-5x + 5y) \\ &= x + 5x - 5y = 6x - 5y \end{aligned}$$

99) $2a + b$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= 2b - \{3a - b + (a - 2b - 6a + 4b)\} \\ &= 2b - \{3a - b + (-5a + 2b)\} \\ &= 2b - (3a - b - 5a + 2b) \\ &= 2b - (-2a + b) = 2a + b \end{aligned}$$

100) $4a - 5b$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= a - 7b + \{a - (4a - 6a - 2b)\} \\ &= a - 7b + \{a - (-2a - 2b)\} \\ &= a - 7b + (a + 2a + 2b) \\ &= a - 7b + 3a + 2b = 4a - 5b \end{aligned}$$

101) $-2x + 4y$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= 3x + 5y - \{2x - (x + 2y - 4x - 3y)\} \\ &= 3x + 5y - \{2x - (-3x - y)\} \\ &= 3x + 5y - (2x + 3x + y) \\ &= 3x + 5y - (5x + y) = -2x + 4y \end{aligned}$$

102) $-6x - 7y$

103) $-5x - 8y$

104) $2a + 5b + 6$

105) $9x^2 - 7x$

106) $6a - 4b$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= -a - \{3b - (9a - 4b - 2a + 3b)\} \\ &= -a - (3b - 7a + b) \\ &= -a - 4b + 7a \\ &= 6a - 4b \end{aligned}$$

107) $5x^2 - 5x + 6$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= 2x^2 - \{4x - (3x^2 + 2x - 3x + 2 + 4)\} \\ &= 2x^2 - (4x - 3x^2 + x - 6) \\ &= 2x^2 + 3x^2 - 5x + 6 \\ &= 5x^2 - 5x + 6 \end{aligned}$$

108) $6x^2 - 3x + 4$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= 3x^2 - \{2x^2 - (5x^2 - 3x + 4)\} \\ &= 3x^2 - (2x^2 - 5x^2 + 3x - 4) \\ &= 3x^2 - (-3x^2 + 3x - 4) = 6x^2 - 3x + 4 \end{aligned}$$

109) $b^2 + 6$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= 2b^2 - \{7b - 5 + (b^2 - 3b - 4b - 1)\} \\ &= 2b^2 - (7b - 5 + b^2 - 7b - 1) \\ &= 2b^2 - (b^2 - 6) = b^2 + 6 \end{aligned}$$

110) $3x^2 - 14x$

$$\Rightarrow (\text{주어진 식})$$

$$\begin{aligned}
 &= 4x^2 + \{2x^2 - 3x - (5x^2 + 4x - 2x^2 + 7x)\} \\
 &= 4x^2 + (2x^2 - 3x - 3x^2 - 11x) \\
 &= 4x^2 + (-x^2 - 14x) = 3x^2 - 14x
 \end{aligned}$$

$$\begin{aligned}
 111) & -2x^2 + 6x - 1 \\
 \Rightarrow & 3x^2 - [5 - \{-4x^2 - (x^2 - 4) + 6x\}] \\
 &= 3x^2 - \{5 - (-4x^2 - x^2 + 4 + 6x)\} \\
 &= 3x^2 - (5 + 5x^2 - 6x - 4) \\
 &= -2x^2 + 6x - 1
 \end{aligned}$$

$$112) -5x^2 + 2x - 6$$

$$\begin{aligned}
 113) & 3a^2 - 4a - 5 \\
 \Rightarrow & \text{(주어진 식)} \\
 &= 5a^2 - 3a - 2 - \{4a - (3a^2 + a + 1 - 5a^2 + 2a - 4)\} \\
 &= 5a^2 - 3a - 2 - \{4a - (-2a^2 + 3a - 3)\} \\
 &= 5a^2 - 3a - 2 - (4a + 2a^2 - 3a + 3) \\
 &= 5a^2 - 3a - 2 - (2a^2 + a + 3) \\
 &= 3a^2 - 4a - 5
 \end{aligned}$$

$$114) 6x^2 - x$$

$$\begin{aligned}
 115) & \frac{11}{6}x - \frac{1}{4}y \\
 \Rightarrow & \text{(주어진 식)} = \frac{1}{2}x + \frac{4}{3}x + \frac{1}{4}y - \frac{1}{2}y = \frac{11}{6}x - \frac{1}{4}y
 \end{aligned}$$

$$\begin{aligned}
 116) & \frac{5x-y}{4} \\
 \Rightarrow & \text{(주어진 식)} = \frac{3x+y+2(x-y)}{4} = \frac{5x-y}{4}
 \end{aligned}$$

$$\begin{aligned}
 117) & \frac{4x+13y}{12} \\
 \Rightarrow & \text{(주어진 식)} = \frac{3(2x+5y) - 2(x+y)}{12} \\
 &= \frac{6x+15y-2x-2y}{12} = \frac{4x+13y}{12}
 \end{aligned}$$

$$118) 3a - 6$$

$$\begin{aligned}
 119) & 2x + 2 \\
 \Rightarrow & \frac{2}{5}(10x-5) + \frac{1}{2}(8-4x) = 4x - 2 + 4 - 2x = 2x + 2
 \end{aligned}$$

$$\begin{aligned}
 120) & \frac{11a-b}{6} \\
 \Rightarrow & \text{(주어진 식)} = \frac{8a+2b+3a-3b}{6} = \frac{11a-b}{6}
 \end{aligned}$$

$$\begin{aligned}
 121) & \frac{2a-3}{5} \\
 \Rightarrow & \text{(주어진 식)} = \frac{10a-8a-3}{5} = \frac{2a-3}{5}
 \end{aligned}$$

$$122) \frac{5}{6}b$$

$$\begin{aligned}
 123) & \frac{17a+19b}{15} \\
 \Rightarrow & \frac{2(2a+b)}{3} - \frac{a-3b}{5} \\
 &= \frac{10(2a+b) - 3(a-3b)}{15} \\
 &= \frac{20a+10b-3a+9b}{15} \\
 &= \frac{17a+19b}{15}
 \end{aligned}$$

$$\begin{aligned}
 124) & \frac{a+17b}{14} \\
 \Rightarrow & \text{(주어진 식)} = \frac{2(4a-2b) - 7(a-3b)}{14} \\
 &= \frac{8a-4b-7a+21}{14} = \frac{a+17b}{14}
 \end{aligned}$$

$$\begin{aligned}
 125) & \frac{a-1}{6} \\
 \Rightarrow & \text{(주어진 식)} = \frac{3(a+3) - 2(a+5)}{6} \\
 &= \frac{3a+9-2a-10}{6} = \frac{a-1}{6}
 \end{aligned}$$

$$\begin{aligned}
 126) & \frac{11}{6}x + \frac{1}{4}y \\
 \Rightarrow & \text{(주어진 식)} = \frac{4}{3}x - \frac{5}{4}y + \frac{1}{2}x + \frac{3}{2}y \\
 &= \frac{11}{6}x + \frac{1}{4}y
 \end{aligned}$$

$$\begin{aligned}
 127) & -\frac{7}{12}x - \frac{7}{12}y \\
 \Rightarrow & \text{(주어진 식)} = \frac{5}{4}x - \frac{11}{6}x - \frac{1}{3}y - \frac{1}{4}y = -\frac{7}{12}x - \frac{7}{12}y
 \end{aligned}$$

$$\begin{aligned}
 128) & \frac{x-2y}{15} \\
 \Rightarrow & \text{(주어진 식)} = \frac{10x-5y-9x+3y}{15} = \frac{x-2y}{15}
 \end{aligned}$$

$$\begin{aligned}
 129) & 15x^2 - \frac{6}{5}x \\
 \Rightarrow & \frac{3}{5}\left(5x^2 - \frac{1}{3}x\right) + 2\left(6x^2 - \frac{1}{2}x\right) \\
 &= 3x^2 - \frac{1}{5}x + 12x^2 - x = 15x^2 - \frac{6}{5}x
 \end{aligned}$$

$$130) -\frac{5}{3}a^2 - \frac{3}{2}a + 7$$

$$\begin{aligned}\Rightarrow (\text{주어진 식}) &= \frac{2}{3}a^2 - \frac{1}{2}a + 2 - \frac{7}{3}a^2 - a + 5 \\ &= -\frac{5}{3}a^2 - \frac{3}{2}a + 7\end{aligned}$$

$$131) -\frac{1}{6}x^2 - \frac{9}{4}x + \frac{59}{12}$$

$$\begin{aligned}\Rightarrow & \frac{1}{4}(2x^2 - x + 1) - \frac{2}{3}(x^2 + 3x - 7) \\ &= \frac{1}{2}x^2 - \frac{1}{4}x + \frac{1}{4} - \frac{2}{3}x^2 - 2x + \frac{14}{3} \\ &= \frac{3}{6}x^2 - \frac{4}{6}x^2 - \frac{1}{4}x - \frac{8}{4}x + \frac{3}{12} + \frac{56}{12} \\ &= -\frac{1}{6}x^2 - \frac{9}{4}x + \frac{59}{12}\end{aligned}$$