

第1章 数と式 <練習の解答>

[練習1]

- (1) 係数 6, 次数 2 (2) 係数 1, 次数 1
(3) 係数 -1, 次数 4 (4) 係数 -3, 次数 3

[練習2]

- (1) 係数 $2a$, 次数 3 (2) 係数 $3x$, 次数 2
(3) 係数 $-6a$, 次数 3

[練習3]

- (1) $4x^2 + 3x - 1 - 2x^2 - 4x + 6$
 $= (4-2)x^2 + (3-4)x + (-1+6) = 2x^2 - x + 5$
 (2) $3a^2 - 2ab - 4b^2 - 5a^2 + 2ab - 8b^2$
 $= (3-5)a^2 + (-2+2)ab + (-4-8)b^2 = -2a^2 - 12b^2$

[練習4]

- (1) 3次式 (2) 4次式

[練習5]

- (1) 3次式, 定数項 $b^2 + c$
 (2) 2次式, 定数項 $ax^3 + c$
 (3) 3次式, 定数項 c

[練習6]

- (1) x について降べきの順に整理すると
 $(a+2)x + (4a^2 - 3a)$
 (2) x について降べきの順に整理すると
 $2x^2 + (5y-3)x + (3y^2 - 5y - 2)$

[練習7]

- (1) $A+B = (2x^2 + 3x - 1) + (4x^2 - 5x - 6)$
 $= (2+4)x^2 + (3-5)x + (-1-6)$
 $= 6x^2 - 2x - 7$
 $A-B = (2x^2 + 3x - 1) - (4x^2 - 5x - 6)$
 $= (2x^2 + 3x - 1) + (-4x^2 + 5x + 6)$
 $= (2-4)x^2 + (3+5)x + (-1+6)$
 $= -2x^2 + 8x + 5$
 (2) $A+B = (4x^3 - 3x^2 - 2x + 5) + (2x^3 - 3x^2 + 7)$
 $= (4+2)x^3 + (-3-3)x^2 - 2x + (5+7)$
 $= 6x^3 - 6x^2 - 2x + 12$
 $A-B = (4x^3 - 3x^2 - 2x + 5) - (2x^3 - 3x^2 + 7)$
 $= (4x^3 - 3x^2 - 2x + 5) + (-2x^3 + 3x^2 - 7)$
 $= (4-2)x^3 + (-3+3)x^2 - 2x + (5-7)$
 $= 2x^3 - 2x - 2$

[練習8]

- (1) $2a^3 \times 4a^2 = (2 \times 4) \times a^{3+2} = 8a^5$
 (2) $3x^2 y \times (-2x^3 y^2) = \{3 \times (-2)\} \times x^{2+3} \times y^{1+2}$
 $= -6x^5 y^3$
 (3) $(-3x^2 y)^3 = (-3)^3 \times (x^2)^3 \times y^3 = -27x^6 y^3$

[練習9]

- (1) $4x^2(2x^2 - 3x + 5) = 4x^2 \cdot 2x^2 + 4x^2 \cdot (-3x) + 4x^2 \cdot 5$
 $= 8x^4 - 12x^3 + 20x^2$

- (2) $(2x-1)(4x^2+3) = 2x \cdot (4x^2+3) + (-1) \cdot (4x^2+3)$
 $= 8x^3 + 6x - 4x^2 - 3$
 $= 8x^3 - 4x^2 + 6x - 3$

[練習10]

- (1) $(2x^2 + x - 3)(x-2)$
 $= (2x^2 + x - 3)x + (2x^2 + x - 3) \cdot (-2)$
 $= 2x^3 + x^2 - 3x - 4x^2 - 2x + 6 = 2x^3 - 3x^2 - 5x + 6$
 (2) $(x^2 - x + 3)(x^2 - x - 4)$
 $= (x^2 - x + 3)x^2 + (x^2 - x + 3) \cdot (-x)$
 $\quad \quad \quad + (x^2 - x + 3) \cdot (-4)$
 $= x^4 - x^3 + 3x^2 - x^3 + x^2 - 3x - 4x^2 + 4x - 12$
 $= x^4 - 2x^3 + x - 12$

[練習11]

- (1) $2(-x^2 + x - 3) - 3(x^2 + 4x + 2)$
 $= -2x^2 + 2x - 6 - 3x^2 - 12x - 6 = -5x^2 - 10x - 12$
 (2) $(a+1)(a^2+2) - (a^2-a+6)$
 $= (a+1)a^2 + (a+1) \cdot 2 - a^2 + a - 6$
 $= a^3 + a^2 + 2a + 2 - a^2 + a - 6 = a^3 + 3a - 4$

[練習12]

- $A+B+2(A-B) = A+B+2A-2B = 3A-B$
 $= 3(x^2 + 4x - 3) - (2x^2 - x + 4)$
 $= 3x^2 + 12x - 9 - 2x^2 + x - 4$
 $= x^2 + 13x - 13$

[練習13]

- (1) $(2x+5)^2 = (2x)^2 + 2 \cdot 2x \cdot 5 + 5^2 = 4x^2 + 20x + 25$
 (2) $(2x-3y)^2 = (2x)^2 - 2 \cdot 2x \cdot 3y + (3y)^2$
 $= 4x^2 - 12xy + 9y^2$
 (3) $(5x+4y)(5x-4y) = (5x)^2 - (4y)^2 = 25x^2 - 16y^2$
 (4) $(x+1)(x+5) = x^2 + (1+5)x + 1 \cdot 5 = x^2 + 6x + 5$
 (5) $(x-3)(x+8) = x^2 + (-3+8)x + (-3) \cdot 8$
 $= x^2 + 5x - 24$
 (6) $(x-y)(x-4y) = x^2 + (-y-4y)x + (-y) \cdot (-4y)$
 $= x^2 - 5xy + 4y^2$

[練習14]

- (1) $(2x+1)(4x+5) = 2 \cdot 4x^2 + (2 \cdot 5 + 1 \cdot 4)x + 1 \cdot 5$
 $= 8x^2 + 14x + 5$
 (2) $(x+4)(2x-3) = 1 \cdot 2x^2 + \{1 \cdot (-3) + 4 \cdot 2\}x + 4 \cdot (-3)$
 $= 2x^2 + 5x - 12$
 (3) $(x+3y)(2x-y)$
 $= 1 \cdot 2x^2 + \{1 \cdot (-y) + 3y \cdot 2\}x + 3y \cdot (-y)$
 $= 2x^2 + 5xy - 3y^2$
 (4) $(3x-2a)(4x-3a)$
 $= 3 \cdot 4x^2 + \{3 \cdot (-3a) + (-2a) \cdot 4\}x + (-2a) \cdot (-3a)$
 $= 12x^2 - 17ax + 6a^2$

[練習15]

- (1) $(2x-3)(2x+1) = (2x)^2 + \{(-3)+1\} \cdot 2x + (-3) \cdot 1$
 $= 4x^2 - 4x - 3$
 (2) $(2x-3)(2x+3) = (2x)^2 - 3^2 = 4x^2 - 9$
 (3) $(x+8y)^2 = x^2 + 2 \cdot x \cdot 8y + (8y)^2 = x^2 + 16xy + 64y^2$