

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 $3bc^3$, 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 $by^2 + c$
(2) 2次式, 定数項 $ax^3 + c$
(3) 3次式, 定数項 c

[練習6]

- (1) $(a+2)x + (4a^2 - 3a)$
(2) $2x^2 + (5y-3)x + (3y^2 - 5y - 2)$

[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) $A+2B = (x^2+4x-3) + 2(2x^2-x+4)$
 $= x^2+4x-3+4x^2-2x+8$
 $= (1+4)x^2 + (4-2)x + (-3+8)$
 $= 5x^2 + 2x + 5$
(2) $2A-3B = 2(x^2+4x-3) - 3(2x^2-x+4)$
 $= 2x^2+8x-6-6x^2+3x-12$
 $= (2-6)x^2 + (8+3)x + (-6-12)$
 $= -4x^2 + 11x - 18$
(3) $A+B+2(A-B) = A+B+2A-2B$
 $= 3A-B$
 $= 3(x^2+4x-3) - (2x^2-x+4)$
 $= 3x^2+12x-9-2x^2+x-4$
 $= (3-2)x^2 + (12+1)x + (-9-4)$
 $= x^2 + 13x - 13$

[練習9]

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

[練習10]

- (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) $(2x-1)(4x^2+3) = (2x-1) \cdot 4x^2 + (2x-1) \cdot 3$
 $= 8x^3 - 4x^2 + 6x - 3$
(3) $(2x^2+x-3)(x-2)$
 $= (2x^2+x-3)x + (2x^2+x-3) \cdot (-2)$
 $= 2x^3 + x^2 - 3x - 4x^2 - 2x + 6$
 $= 2x^3 - 3x^2 - 5x + 6$
(4) $(2x^2+3)(x^2-4x-1)$
 $= (2x^2+3)x^2 + (2x^2+3) \cdot (-4x) + (2x^2+3) \cdot (-1)$
 $= 2x^4 + 3x^2 - 8x^3 - 12x - 2x^2 - 3$
 $= 2x^4 - 8x^3 + x^2 - 12x - 3$

[練習11]

- (1) $(x^2+ax-1)(x+a)$
 $= (x^2+ax-1)x + (x^2+ax-1)a$
 $= x^3 + ax^2 - x + ax^2 + a^2x - a$
 $= x^3 + 2ax^2 + (a^2-1)x - a$
(2) $(ax+b)(cx+d) = (ax+b)cx + (ax+b)d$
 $= acx^2 + bcx + adx + bd$
 $= acx^2 + (ad+bc)x + bd$