

第1章 式の計算

1 多項式の計算

p2

例1

① $6x^2 - 8xy$ ② $-20a^2 - 12ab^2$

解説

① $2x(3x - 4y) = 6x^2 - 8xy$ ② $(5a + 3b^2) \times (-4a) = -20a^2 - 12ab^2$

練習1

① $20x^3 + 15x^2y$ ② $-6a^2b + 12ab^3$ ③ $\frac{2}{3}x^3y - 2xy$
 ④ $-8a^2b - 18ab^3$ ⑤ $-6x^2y^2 + 18x^3y^3$ ⑥ $-\frac{1}{6}a^4b + \frac{1}{4}a^3b^2$

例2

① $\frac{5}{2}x^2 - y$ ② $6 + \frac{3b^2}{2a}$

解説

① $(15x^2y - 6y^2) \div 6y = 15x^2y \div 6y - 6y^2 \div 6y = \frac{15x^2y}{6y} - \frac{6y^2}{6y} = \frac{5}{2}x^2 - y$
 ② $(4a + b^2) \div \frac{2}{3}a = 4a \times \frac{3}{2a} + b^2 \times \frac{3}{2a} = 6 + \frac{3b^2}{2a}$

練習1

① $3x - 2y$ ② $\frac{3a^2}{2b} - 1$ ③ $\frac{8xy}{3} - \frac{12y}{x}$

p3

例3

① $8xy$ ② $3x^2 - 23xy + 6y^2$

解説

① $6x^2 - 2x(3x - 4y) = 6x^2 - 6x^2 + 8xy = 8xy$
 ② $3x(x - 5y) - 2y(4x - 3y) = 3x^2 - 15xy - 8xy + 6y^2 = 3x^2 - 23xy + 6y^2$

練習1

① $-x^2 + 5xy$ ② $12x^2 + 14xy + 21y^2$
 ③ $21x^2 - 14xy$ ④ $-6x^2 - 7xy - 20y^2$

例4

① $6ac + 15ad - 8bc - 20bd$ ② $4x^2 - 21xy + 5y^2$
 ③ $2x^2 + 7xy - 8x - 15y^2 + 38y - 24$

解説

① $(3a - 4b)(2c + 5d) = 6ac + 15ad - 8bc - 20bd$
 ② $(x - 5y)(4x - y) = 4x^2 - xy - 20xy + 5y^2 = 4x^2 - 21xy + 5y^2$
 ③ $(2x - 3y + 4)(x + 5y - 6) = 2x^2 + 10xy - 12x - 3xy - 15y^2 + 18y + 4x + 20y - 24 = 2x^2 + 7xy - 8x - 15y^2 + 38y - 24$

練習1

① $2ac + 5ad - 8bc - 20bd$ ③ $x^2 + 10x + 24$
 ② $6ab - 21a - 8b + 28$ ④ $6x^2 - x - 15$ ⑤ $4x^2 - 25$ ⑥ $9a^2 - 6a - 8$
 ⑦ $x^2 - 7xy + 12y^2$ ⑧ $2a^2 + 7ab + 5b^2$ ⑨ $12x^2 + 7xy - 10y^2$

p4

⑩ $x^3 - 10x + 3$ ⑪ $a^3 + 8$
 ⑫ $2a^3 + a^2 - 5a - 4$ ⑬ $3x^3 + x^2 + 11x + 20$
 ⑭ $ax - ay + az + bx - by + bz - cx + cy - cz$
 ⑮ $x^2 + xy - x - 6y^2 - 23y - 20$
 ⑯ $a^2 + 8ab - 3a + 16b^2 - 12b - 10$
 ⑰ $x^2 - 2xy + y^2 - 64$

例5

① $2a^2 + 45a - 28$ ② $10x^2 - 40x - 120$

解説

① $(3a - 1)(2a + 4) - (a - 8)(4a - 3) = 6a^2 + 12a - 2a - 4 - (4a^2 - 3a - 32a + 24) = 6a^2 + 12a - 2a - 4 - 4a^2 + 3a + 32a - 24 = 2a^2 + 45a - 28$
 ② $5(2x + 4)(x - 6) = 5(2x^2 - 12x + 4x - 24) = 5(2x^2 - 8x - 24) = 10x^2 - 40x - 120$

練習1

① $10x^2 - 2x - 7$ ② $a^2 + 27ab - 7b^2$
 ③ $24x^2 + 66x - 63$ ④ $-6x^2 + 10xy + 4y^2$

確認問題 A

p5

1 ① $6x^3 - 12x^2y$ ② $-6a^2b - 8a^2b^3$ ③ $\frac{3}{2}x^2y^2 - \frac{9}{2}xy$
2 ① $3x - 2y^2$ ② $\frac{2a^2}{b} - \frac{3}{2}$ ③ $3xy - \frac{9y^2}{2}$
3 ① $-x^2 + 5xy$ ② $12x^2 + 14xy + 21y^2$
4 ① $3ax + 4bx - 3ay - 4by$
 ② $6ab - 14a - 15b + 35$ ③ $x^2 + 10x + 16$
 ④ $15x^2 + 2x - 8$ ⑤ $x^2 - 5xy + 6y^2$ ⑥ $6a^2 + 27ab + 12b^2$
 ⑦ $x^3 + x^2 + 2x + 8$ ⑧ $a^3 - 27$
 ⑨ $2a^2 + 3ab + ac - 2b^2 + 7bc - 3c^2$
5 ① $13x^2 + 3x - 11$
 ② $-a^2 + 26ab + 3b^2$
 ③ $24x^2 + 2x - 126$

確認問題 B

p6

1 ① $-4x^3 + 5x^2y^2$ ② $-a^3b^2 + 6a^2b^3$ ③ $\frac{10}{3}xy^2 - \frac{5}{2}y^3$
2 ① $2x^2 - \frac{3}{2}xy$ ② $\frac{a^2}{4b} - 1$ ③ $\frac{16}{3}x^2 - 8xy$
3 ① $-xy$ ② $-2x^2 + 10xy + 3y^2$
4 ① $2ax + 10bx - ay - 5by$
 ② $12ab - 3a - 20b + 5$ ③ $x^2 - 36$
 ④ $12x^2 - 11x - 15$ ⑤ $4x^2 - 8xy + 3y^2$ ⑥ $2a^2 + 11ab + 15b^2$
 ⑦ $x^3 + 8$ ⑧ $a^3 + a^2 - 10a + 8$
 ⑨ $9a^2 - 4b^2 + 4bc - c^2$
5 ① $22x^2 + x - 11$
 ② $-a^2 + 6ab - 18b^2$
 ③ $-47x + 46$