

P 3 7 1 章の章末問題

1.

$$(1) 6c\left(-\frac{1}{2}a + \frac{2}{3}b\right) = -3ac - 4bc \quad (2) \frac{2}{3}x(15x - 9y + 6) = 10x^2 - 6xy + 4x$$

$$(3) (2x^2y - 12xy^2) \div 3xy = \frac{2x^2y}{3xy} - \frac{12xy^2}{3xy} = \frac{2x}{3} - 4y$$

$$(4) (9a^2b - 3ab) \div \left(-\frac{3}{2}a\right) = (9a^2b - 3ab) \times \left(-\frac{2}{3a}\right) \\ = -6ab + 2b$$

2.

$$(1) (-5x + 4y)^2 = 25x^2 - 40xy + 16y^2$$

$$(2) \left(2x - \frac{1}{3}\right)^2 = 4x^2 - \frac{4}{3}x + \frac{1}{9} \quad (3) \left(x - \frac{1}{4}\right)\left(x + \frac{1}{4}\right) = x^2 - \frac{1}{16}$$

$$(4) (7x - 2)(7x + 2) = 49x^2 - 4 \quad (5) (x + 3)(x - 7) = x^2 - 4x - 21$$

$$(6) (2x + 5)(2x + 9) = 4x^2 + 28x + 45 \quad 2x \text{ を } X \text{ として}$$

$$(7) (2x + 3y - 1)(2x - 1) = 4x^2 - 2x + 6xy - 3y - 2x + 1 \\ = 4x^2 - 4x + 6xy - 3y + 1$$

$$(8) (a + b)(a + b - c) = a^2 + ab - ac + ab + b^2 - bc \\ = a^2 + 2ab - ac + b^2 - bc$$

3.

$$(1) (a + b)^2 + (a - b)^2 = a^2 + 2ab + b^2 + a^2 - 2ab + b^2 \\ = 2a^2 + 2b^2$$

$$(2) (x - 1)(x + 2) - (x - 3)(x - 5) \\ = x^2 + x - 2 - (x^2 - 8x + 15) = x^2 + x - 2 - x^2 + 8x - 15 = 9x - 17$$

$$(3) (x + 3)^2 - (x + 2)(x + 4) = x^2 + 6x + 9 - (x^2 + 6x + 8) \\ = x^2 + 6x + 9 - x^2 - 6x - 8 = 1$$

$$(4) (2x + 1)(2x - 1) - (x - 5)(x + 2) = 4x^2 - 1 - (x^2 - 3x - 10) \\ = 4x^2 - 1 - x^2 + 3x + 10$$

4.

$$(1) 10x^2 + 25x = 5x(2x + 5) \quad (2) x^2 - \frac{1}{4}y^2 = \left(x + \frac{1}{2}y\right)\left(x - \frac{1}{2}y\right)$$

$$(3) x^2 + 10x + 24 = (x + 4)(x + 6)$$

$$(4) x^2 + x + \frac{1}{4} = \left(x + \frac{1}{2}\right)^2$$

$$(5) x^2 - 9x + 20 = (x - 4)(x - 5)$$

$$(6) xy^2 + xyz - 4xy = xy(y + z - 4)$$

$$(7) 25a^2 - 30a + 9 = (5a - 3)^2$$

$$(8) a^2 - 2a - 15 = (a - 5)(a + 3)$$

$$(9) -10x + 9 + x^2 = x^2 - 10x + 9 = (x - 9)(x - 1)$$

項の並び替え

5.

$$(1) -x^2 + 5x + 6 = -(x^2 - 5x - 6) = -(x - 6)(x + 1)$$

$$(2) (x - 2)^2 - 3(x - 2) + 2 = M^2 - 3M + 2 = (M - 2)(M - 1) \\ = (x - 2 - 2)(x - 2 - 1) = (x - 4)(x - 3)$$

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

$$(4) (x - y)^2 + 4(x - y) - 5 = M^2 + 4M - 5 = (M + 5)(M - 1) = (x - y + 5)(x - y - 1)$$

6.

(1)  $x = 198$  の時  $x^2 + 4x + 4 = (x + 2)^2 = (198 + 2)^2 = 200^2 = 40000$

(2)  $x = 3.75, y = 2.25$   $x^2 - y^2 = (x + y)(x - y)$   
 $= (3.75 + 2.25)(3.75 - 2.25) = 6 \times 1.5 = 9$

(3)  $a = 17, b = 4$   $(a + b)^2 - 2(a + b) + 1 = M^2 - 2M + 1$   
 $= (M - 1)^2 = (a + b - 1)^2 = (17 + 4 - 1)^2$   
 $= 20^2 = 400$

7.

$$\begin{array}{r} 2 \ ) \ 96 \\ 2 \ ) \ 48 \\ 2 \ ) \ 24 \\ 2 \ ) \ 12 \\ 2 \ ) \ 6 \\ \quad 3 \end{array}$$

$$96 = (2 \times 2) \times (2 \times 2) \times (2 \quad ) \times (3 \quad )$$

カップルを作れ あと2と3が欲しい

6をかけると良い。

8 連続する二つの整数  $n, n + 1$

$$\begin{aligned} (n + 1)^2 - n^2 &= n^2 + 2n + 1 - n^2 \\ &= 2n + 1 = (n + 1) + n \\ &\quad \text{元の二数の和} \end{aligned}$$

9. ア  $364 \times 366$

イ  $363 \times 367$

よく似た式で表しましょう。

$$\text{ア } 364 \times 366 = (365 - 1)(365 + 1) = 365^2 - 1^2$$

$$\text{イ } 363 \times 367 = (365 - 2)(365 + 2) = 365^2 - 2^2$$

アが大きくなる

10.

$$(1) 21^2 - 20^2 + 19^2 - 18^2 + 17^2 - 16^2$$

$$= (21 + 20)(21 - 20) + (19 + 18)(19 - 18) + (17 + 16)(17 - 16)$$

$$= 42 + 37 + 33 = 112$$

$$(2) 8^2 - 10^2 + 12^2 = 8^2 + 12^2 - 10^2$$

$$= 64 + (12 + 10)(12 - 10)$$

$$= 64 + 22 \times 2 = 64 + 44 = 108$$