

# 式の展開

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■ 次の式を展開しなさい。

①  $(a-b+c)(a-b-c)$

②  $(x+y+6)^2$

③  $(m+n+1)(m-n+1)$

④  $(a-b-9)(a-b+4)$

⑤  $(x+y-2)(x+y+2)$

⑥  $(x-y+7)(x-y-3)$

⑦  $(x-y-z)^2$

⑧  $(x+y-z)(x-y-z)$

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①  $(a-b+c)(a-b-c)$

$$\begin{aligned} a-b &= X \text{とおくと} \\ (X+c)(X-c) \\ &= X^2 - c^2 \\ &= (a-b)^2 - c^2 \end{aligned}$$

$$a^2 - 2ab + b^2 - c^2$$

②  $(x+y+6)^2$

$$\begin{aligned} x+y &= A \text{とおくと} \\ (A+6)^2 \\ &= A^2 + 12A + 36 \\ &= (x+y)^2 + 12(x+y) + 36 \end{aligned}$$

$$x^2 + 2xy + y^2 + 12x + 12y + 36$$

③  $(m+n+1)(m-n+1)$

$$\begin{aligned} m+1 &= X \text{とおくと} \\ (X+n)(X-n) \\ &= X^2 - n^2 \\ &= (m+1)^2 - n^2 \end{aligned}$$

$$m^2 + 2m + 1 - n^2$$

④  $(a-b-9)(a-b+4)$

$$\begin{aligned} a-b &= X \text{とおくと} \\ (X-9)(X+4) \\ &= X^2 - 5X - 36 \\ &= (a-b)^2 - 5(a-b) - 36 \end{aligned}$$

$$a^2 - 2ab + b^2 - 5a + 5b - 36$$

⑤  $(x+y-2)(x+y+2)$

$$\begin{aligned} x+y &= A \text{とおくと} \\ (A-2)(A+2) \\ &= A^2 - 4 \\ &= (x+y)^2 - 4 \end{aligned}$$

$$x^2 + 2xy + y^2 - 4$$

⑥  $(x-y+7)(x-y-3)$

$$\begin{aligned} x-y &= A \text{とおくと} \\ (A+7)(A-3) \\ &= A^2 + 4A - 21 \\ &= (x-y)^2 + 4(x-y) - 21 \end{aligned}$$

$$x^2 - 2xy + y^2 + 4x - 4y - 21$$

⑦  $(x-y-z)^2$

$$\begin{aligned} x-y &= A \text{とおくと} \\ (A-z)^2 \\ &= A^2 - 2zA + z^2 \\ &= (x-y)^2 - 2z(x-y) + z^2 \end{aligned}$$

$$x^2 - 2xy + y^2 - 2xz + 2yz + z^2$$

⑧  $(x+y-z)(x-y-z)$

$$\begin{aligned} x-z &= A \text{とおくと} \\ (A+y)(A-y) \\ &= A^2 - y^2 \\ &= (x-z)^2 - y^2 \end{aligned}$$

$$x^2 - 2xz + z^2 - y^2$$