

# 式の展開と因数分解

年 組 名前

/30

■ 次の式を展開せよ。

①  $a(a-6x+5)$

②  $x(x+a+6)$

③  $(x-2)(x+5)$

④  $(x-7)(x-2)$

⑤  $(a+4)(a+2)$

⑥  $(s+9)(s-1)$

⑦  $(a-8)^2$

⑧  $(x+6)^2$

⑨  $(2a+3)^2$

⑩  $(x+9)(x-9)$

⑪  $(a-1)(a+1)$

⑫  $(4n-1)(4n+1)$

■ 次の式を因数分解せよ。

⑬  $10x^2 + 4xy$

⑭  $ac - bc$

⑮  $x^2 + 2x - 3$

⑯  $x^2 + 14x + 45$

⑰  $x^2 + 6x - 27$

⑱  $x^2 - 14x + 48$

⑲  $a^2 - 8a + 16$

⑳  $x^2 + 14x + 49$

㉑  $9x^2 - 6x + 1$

㉒  $x^2 - 25$

㉓  $x^2 - 4$

㉔  $9y^2 - 4$

■ 次の式を計算しなさい。

㉕  $(a-4)^2 + (a+7)(a+6)$

㉖  $(a+4)(a+2) - 2(-4a-7)$

㉗  $(s-t+6)(s-t-6)$

■ 展開の公式を利用して次の値を求めよ。

㉘  $19^2$

㉙  $42 \times 38$

■ 因数分解の公式を利用して次の値を求めよ。

㉚  $46^2 - 24^2$

## 式の展開と因数分解

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■ 次の式を展開せよ。

$$\begin{aligned} \textcircled{1} \quad a(a-6x+5) \\ = a^2 - 6ax + 5a \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad x(x+a+6) \\ = x^2 + ax + 6x \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad (x-2)(x+5) \\ = x^2 + 3x - 10 \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad (x-7)(x-2) \\ = x^2 - 9x + 14 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad (a+4)(a+2) \\ = a^2 + 6a + 8 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad (s+9)(s-1) \\ = s^2 + 8s - 9 \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad (a-8)^2 \\ = a^2 - 16a + 64 \end{aligned}$$

$$\begin{aligned} \textcircled{8} \quad (x+6)^2 \\ = x^2 + 12x + 36 \end{aligned}$$

$$\begin{aligned} \textcircled{9} \quad (2a+3)^2 \\ = 4a^2 + 12a + 9 \end{aligned}$$

$$\begin{aligned} \textcircled{10} \quad (x+9)(x-9) \\ = x^2 - 81 \end{aligned}$$

$$\begin{aligned} \textcircled{11} \quad (a-1)(a+1) \\ = a^2 - 1 \end{aligned}$$

$$\begin{aligned} \textcircled{12} \quad (4n-1)(4n+1) \\ = 16n^2 - 1 \end{aligned}$$

■ 次の式を因数分解せよ。

$$\begin{aligned} \textcircled{13} \quad 10x^2 + 4xy \\ = 2x(5x + 2y) \end{aligned}$$

$$\begin{aligned} \textcircled{14} \quad ac - bc \\ = c(a - b) \end{aligned}$$

$$\begin{aligned} \textcircled{15} \quad x^2 + 2x - 3 \\ = (x-1)(x+3) \end{aligned}$$

$$\begin{aligned} \textcircled{16} \quad x^2 + 14x + 45 \\ = (x+5)(x+9) \end{aligned}$$

$$\begin{aligned} \textcircled{17} \quad x^2 + 6x - 27 \\ = (x+9)(x-3) \end{aligned}$$

$$\begin{aligned} \textcircled{18} \quad x^2 - 14x + 48 \\ = (x-6)(x-8) \end{aligned}$$

$$\begin{aligned} \textcircled{19} \quad a^2 - 8a + 16 \\ = (a-4)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{20} \quad x^2 + 14x + 49 \\ = (x+7)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{21} \quad 9x^2 - 6x + 1 \\ = (3x-1)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{22} \quad x^2 - 25 \\ = (x+5)(x-5) \end{aligned}$$

$$\begin{aligned} \textcircled{23} \quad x^2 - 4 \\ = (x+2)(x-2) \end{aligned}$$

$$\begin{aligned} \textcircled{24} \quad 9y^2 - 4 \\ = (3y+2)(3y-2) \end{aligned}$$

■ 次の式を計算しなさい。

$$\begin{aligned} \textcircled{25} \quad (a-4)^2 + (a+7)(a+6) \\ = (a-4)^2 + (a+7)(a+6) \\ = (a^2 - 8a + 16) + (a^2 + 13a + 42) \\ = a^2 - 8a + 16 + a^2 + 13a + 42 \\ = 2a^2 + 5a + 58 \end{aligned}$$

$$\begin{aligned} \textcircled{26} \quad (a+4)(a+2) - 2(-4a-7) \\ = (a+4)(a+2) - 2(-4a-7) \\ = (a^2 + 6a + 8) - 2(-4a-7) \\ = a^2 + 6a + 8 + 8a + 14 \\ = a^2 + 14a + 22 \end{aligned}$$

$$\begin{aligned} \textcircled{27} \quad (s-t+6)(s-t-6) \\ s-t = X \text{ とおくと} \\ (X+6)(X-6) \\ = X^2 - 36 \\ = (s-t)^2 - 36 \\ = s^2 - 2st + t^2 - 36 \end{aligned}$$

■ 展開の公式を利用して次の値を求めよ。

$$\begin{aligned} \textcircled{28} \quad 19^2 \\ = (20-1)^2 \\ = 400 - 40 + 1 \\ = 361 \end{aligned}$$

$$\begin{aligned} \textcircled{29} \quad 42 \times 38 \\ = (40+2) \times (40-2) \\ = 40^2 - 2^2 \\ = 1600 - 4 \\ = 1596 \end{aligned}$$

$$\begin{aligned} \textcircled{30} \quad 46^2 - 24^2 \\ = (46+24) \times (46-24) \\ = 70 \times 22 \\ = 1540 \end{aligned}$$