

式の展開と因数分解

年 組 名前

/30

■ 次の式を展開せよ。

① $y(x-y)$

② $5y(x+y)$

③ $(x-9)(x+5)$

④ $(a-2)(a-1)$

⑤ $(s+6)(s+9)$

⑥ $(a+2)(a-8)$

⑦ $(a-5)^2$

⑧ $(n+4)^2$

⑨ $(2x+1)^2$

⑩ $(x+2)(x-2)$

⑪ $(x-3)(x+3)$

⑫ $(4x+1)(4x-1)$

■ 次の式を因数分解せよ。

⑬ $2a^2 - 2ab$

⑭ $5xz - 25yz$

⑮ $x^2 + 7x - 8$

⑯ $x^2 - 9x + 14$

⑰ $x^2 + 5x - 36$

⑱ $x^2 + 5x + 4$

⑲ $x^2 + 14x + 49$

⑳ $x^2 - 2x + 1$

㉑ $36y^2 - 12y + 1$

㉒ $a^2 - 64$

㉓ $a^2 - 81$

㉔ $4x^2 - 25$

■ 次の式を計算しなさい。

㉕ $-9(-4a-7) + (a-2)(a-3)$

㉖ $(a+2)(a-6) - 3(a+3)(a-5)$

㉗ $(a+b+c)^2$

■ 展開の公式を利用して次の値を求めよ。

㉘ 48^2

㉙ 53×47

■ 因数分解の公式を利用して次の値を求めよ。

㉚ $22^2 - 12^2$

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■ 次の式を展開せよ。

$$\begin{aligned} \textcircled{1} \quad & y(x-y) \\ & =xy-y^2 \\ \textcircled{2} \quad & 5y(x+y) \\ & =5xy+5y^2 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & (x-9)(x+5) \\ & =x^2-4x-45 \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad & (a-2)(a-1) \\ & =a^2-3a+2 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad & (s+6)(s+9) \\ & =s^2+15s+54 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad & (a+2)(a-8) \\ & =a^2-6a-16 \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad & (a-5)^2 \\ & =a^2-10a+25 \end{aligned}$$

$$\begin{aligned} \textcircled{8} \quad & (n+4)^2 \\ & =n^2+8n+16 \end{aligned}$$

$$\begin{aligned} \textcircled{9} \quad & (2x+1)^2 \\ & =4x^2+4x+1 \end{aligned}$$

$$\begin{aligned} \textcircled{10} \quad & (x+2)(x-2) \\ & =x^2-4 \end{aligned}$$

$$\begin{aligned} \textcircled{11} \quad & (x-3)(x+3) \\ & =x^2-9 \end{aligned}$$

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

■ 次の式を因数分解せよ。

$$\begin{aligned} \textcircled{13} \quad & 2a^2-2ab \\ & =2a(a-b) \\ \textcircled{14} \quad & 5xz-25yz \\ & =5z(x-5y) \end{aligned}$$

$$\begin{aligned} \textcircled{15} \quad & x^2+7x-8 \\ & =(x-1)(x+8) \end{aligned}$$

$$\begin{aligned} \textcircled{16} \quad & x^2-9x+14 \\ & =(x-7)(x-2) \end{aligned}$$

$$\begin{aligned} \textcircled{17} \quad & x^2+5x-36 \\ & =(x+9)(x-4) \end{aligned}$$

$$\begin{aligned} \textcircled{18} \quad & x^2+5x+4 \\ & =(x+1)(x+4) \end{aligned}$$

$$\begin{aligned} \textcircled{19} \quad & x^2+14x+49 \\ & =(x+7)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{20} \quad & x^2-2x+1 \\ & =(x-1)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{21} \quad & 36y^2-12y+1 \\ & =(6y-1)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{22} \quad & a^2-64 \\ & =(a+8)(a-8) \end{aligned}$$

$$\begin{aligned} \textcircled{23} \quad & a^2-81 \\ & =(a+9)(a-9) \end{aligned}$$

$$\begin{aligned} \textcircled{24} \quad & 4x^2-25 \\ & =(2x+5)(2x-5) \end{aligned}$$

■ 次の式を計算しなさい。

$$\begin{aligned} \textcircled{25} \quad & -9(-4a-7)+(a-2)(a-3) \\ & =-9(-4a-7)+(a-2)(a-3) \\ & =-9(-4a-7)+(a^2-5a+6) \\ & =36a+63+a^2-5a+6 \\ & =a^2+31a+69 \end{aligned}$$

$$\begin{aligned} \textcircled{26} \quad & (a+2)(a-6)-3(a+3)(a-5) \\ & =(a+2)(a-6)-3(a+3)(a-5) \\ & =(a^2-4a-12)-3(a^2-2a-15) \\ & =a^2-4a-12-3a^2+6a+45 \\ & =-2a^2+2a+33 \end{aligned}$$

$$\begin{aligned} \textcircled{27} \quad & (a+b+c)^2 \\ & a+b=X \text{ とおくと} \\ & (X+c)^2 \\ & =X^2+2cX+c^2 \\ & =(a+b)^2+2c(a+b)+c^2 \\ & =a^2+2ab+b^2+2ac+2bc+c^2 \end{aligned}$$

■ 展開の公式を利用して次の値を求めよ。

$$\begin{aligned} \textcircled{28} \quad & 48^2 \\ & =(50-2)^2 \\ & =2500-200+4 \\ & =2304 \end{aligned}$$

$$\begin{aligned} \textcircled{29} \quad & 53 \times 47 \\ & =(50+3) \times (50-3) \\ & =50^2-3^2 \\ & =2500-9 \\ & =2491 \end{aligned}$$

$$\begin{aligned} \textcircled{30} \quad & 22^2-12^2 \\ & =(22+12) \times (22-12) \\ & =34 \times 10 \\ & =340 \end{aligned}$$