

式の展開と因数分解

年 組 名前

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■ 次の式を展開せよ。

① $ab(a-2b+7)$

② $4x(x+y)$

③ $(x+1)(x+8)$

④ $(y-2)(y+7)$

⑤ $(a+6)(a-3)$

⑥ $(x-9)(x-1)$

⑦ $(x+1)^2$

⑧ $(s-5)^2$

⑨ $(2x-5)^2$

⑩ $(x-2)(x+2)$

⑪ $(x+3)(x-3)$

⑫ $(5x+1)(5x-1)$

■ 次の式を因数分解せよ。

⑬ $10ab - 12b^2$

⑭ $ac - bc$

⑮ $x^2 + 10x + 21$

⑯ $a^2 - 5a - 6$

⑰ $a^2 + 4a - 5$

⑱ $a^2 - 14a + 48$

⑲ $n^2 - 14n + 49$

⑳ $x^2 + 18x + 81$

㉑ $9x^2 + 6x + 1$

㉒ $x^2 - 36$

㉓ $x^2 - 64$

㉔ $36a^2 - 1$

■ 次の式を計算しなさい。

㉕ $(x-8)(x+3) + 5(9x-1)$

㉖ $(a+6)(a+3) + (a-8)(a-7)$

㉗ $(x+y+z)^2$

■ 展開の公式を利用して次の値を求めよ。

㉘ 82^2

㉙ 21×19

■ 因数分解の公式を利用して次の値を求めよ。

㉚ $43^2 - 23^2$

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■ 次の式を展開せよ。

$$\begin{aligned} \textcircled{1} \ ab(a-2b+7) \\ = a^2b - 2ab^2 + 7ab \end{aligned}$$

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

$$\begin{aligned} \textcircled{3} \ (x+1)(x+8) \\ = x^2 + 9x + 8 \end{aligned}$$

$$\begin{aligned} \textcircled{4} \ (y-2)(y+7) \\ = y^2 + 5y - 14 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \ (a+6)(a-3) \\ = a^2 + 3a - 18 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \ (x-9)(x-1) \\ = x^2 - 10x + 9 \end{aligned}$$

$$\begin{aligned} \textcircled{7} \ (x+1)^2 \\ = x^2 + 2x + 1 \end{aligned}$$

$$\begin{aligned} \textcircled{8} \ (s-5)^2 \\ = s^2 - 10s + 25 \end{aligned}$$

$$\begin{aligned} \textcircled{9} \ (2x-5)^2 \\ = 4x^2 - 20x + 25 \end{aligned}$$

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

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

$$\begin{aligned} \textcircled{12} \ (5x+1)(5x-1) \\ = 25x^2 - 1 \end{aligned}$$

■ 次の式を因数分解せよ。

$$\begin{aligned} \textcircled{13} \ 10ab - 12b^2 \\ = 2b(5a - 6b) \end{aligned}$$

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

$$\begin{aligned} \textcircled{15} \ x^2 + 10x + 21 \\ = (x+3)(x+7) \end{aligned}$$

$$\begin{aligned} \textcircled{16} \ a^2 - 5a - 6 \\ = (a+1)(a-6) \end{aligned}$$

$$\begin{aligned} \textcircled{17} \ a^2 + 4a - 5 \\ = (a-1)(a+5) \end{aligned}$$

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

$$\begin{aligned} \textcircled{19} \ n^2 - 14n + 49 \\ = (n-7)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{20} \ x^2 + 18x + 81 \\ = (x+9)^2 \end{aligned}$$

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

$$\begin{aligned} \textcircled{22} \ x^2 - 36 \\ = (x+6)(x-6) \end{aligned}$$

$$\begin{aligned} \textcircled{23} \ x^2 - 64 \\ = (x+8)(x-8) \end{aligned}$$

$$\begin{aligned} \textcircled{24} \ 36a^2 - 1 \\ = (6a+1)(6a-1) \end{aligned}$$

■ 次の式を計算しなさい。

$$\begin{aligned} \textcircled{25} \ (x-8)(x+3) + 5(9x-1) \\ = (x-8)(x+3) + 5(9x-1) \\ = (x^2 - 5x - 24) + 5(9x-1) \\ = x^2 - 5x - 24 + 45x - 5 \\ = x^2 + 40x - 29 \end{aligned}$$

$$\begin{aligned} \textcircled{26} \ (a+6)(a+3) + (a-8)(a-7) \\ = (a+6)(a+3) + (a-8)(a-7) \\ = (a^2 + 9a + 18) + (a^2 - 15a + 56) \\ = a^2 + 9a + 18 + a^2 - 15a + 56 \\ = 2a^2 - 6a + 74 \\ \textcircled{27} \ (x+y+z)^2 \\ x+y = A \text{ とおくと} \\ (A+z)^2 \\ = A^2 + 2zA + z^2 \\ = (x+y)^2 + 2z(x+y) + z^2 \\ = x^2 + 2xy + y^2 + 2xz + 2yz + z^2 \end{aligned}$$

■ 展開の公式を利用して次の値を求めよ。

$$\begin{aligned} \textcircled{28} \ 82^2 \\ = (80+2)^2 \\ = 6400 + 320 + 4 \\ = 6724 \end{aligned}$$

$$\begin{aligned} \textcircled{29} \ 21 \times 19 \\ = (20+1) \times (20-1) \\ = 20^2 - 1^2 \\ = 400 - 1 \\ = 399 \end{aligned}$$

$$\begin{aligned} \textcircled{30} \ 43^2 - 23^2 \\ = (43+23) \times (43-23) \\ = 66 \times 20 \\ = 1320 \end{aligned}$$