

1 次の式を因数分解しなさい。

①  $ax^2 + 12ax + 36a$

②  $9x^2 + 42xy + 49y^2$

③  $7x^2y - 42xy + 63y$

④  $2ax^2 - 24ax + 72a$

⑤  $5x^2y + 40xy + 80y$

⑥  $xy - 2x + 4(y - 2)$

⑦  $(x - 5)^2 + 9(x - 5) + 14$

⑧  $9x^2 - 24xy + 16y^2$

⑨  $xy + 4x - 2(y + 4)$

⑩  $(x + 1)^2 - (x + 1) - 30$

2 次の式を工夫して計算しなさい。

①  $48^2 - 52^2$

②  $77^2 - 23^2$

1 次の式を因数分解しなさい。

$$\begin{aligned} \textcircled{1} \quad & ax^2 + 12ax + 36a \\ & = a(x^2 + 12x + 36) \\ & = a(x + 6)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 9x^2 + 42xy + 49y^2 \\ & = (3x)^2 + 2 \times 7y \times 3x + (7y)^2 \\ & = (3x + 7y)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & 7x^2y - 42xy + 63y \\ & = 7y(x^2 - 6x + 9) \\ & = 7y(x - 3)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad & 2ax^2 - 24ax + 72a \\ & = 2a(x^2 - 12x + 36) \\ & = 2a(x - 6)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad & 5x^2y + 40xy + 80y \\ & = 5y(x^2 + 8x + 16) \\ & = 5y(x + 4)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad & xy - 2x + 4(y - 2) \\ & = x(y - 2) + 4(y - 2) \\ & = (x + 4)(y - 2) \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad & (x - 5)^2 + 9(x - 5) + 14 \\ & = \{ (x - 5) + 2 \} \{ (x - 5) + 7 \} \\ & = (x - 3)(x + 2) \end{aligned}$$

$$\begin{aligned} \textcircled{8} \quad & 9x^2 - 24xy + 16y^2 \\ & = (3x)^2 - 2 \times 4y \times 3x + (4y)^2 \\ & = (3x - 4y)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{9} \quad & xy + 4x - 2(y + 4) \\ & = x(y + 4) - 2(y + 4) \\ & = (x - 2)(y + 4) \end{aligned}$$

$$\begin{aligned} \textcircled{10} \quad & (x + 1)^2 - (x + 1) - 30 \\ & = \{ (x + 1) - 6 \} \{ (x + 1) + 5 \} \\ & = (x - 5)(x + 6) \end{aligned}$$

2 次の式を工夫して計算しなさい。

$$\begin{aligned} \textcircled{1} \quad & 48^2 - 52^2 \\ & = (48 + 52)(48 - 52) \\ & = 100 \times (-4) \\ & = -400 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 77^2 - 23^2 \\ & = (77 + 23)(77 - 23) \\ & = 100 \times 54 \\ & = 5400 \end{aligned}$$