

1 次の式を因数分解しなさい。

① $ax^2 + 14ax + 49a$

② $25x^2 + 30xy + 9y^2$

③ $5x^2y - 10xy + 5y$

④ $3ax^2 - 18ax + 27a$

⑤ $2x^2y + 20xy + 50y$

⑥ $xy - x + 2(y - 1)$

⑦ $(x - 2)^2 + 7(x - 2) + 12$

⑧ $4x^2 - 20xy + 25y^2$

⑨ $xy + 3x - 4(y + 3)$

⑩ $(x + 2)^2 - 4(x + 2) - 21$

2 次の式を工夫して計算しなさい。

① $74^2 - 26^2$

② $18^2 - 82^2$

1 次の式を因数分解しなさい。

$$\begin{aligned} \textcircled{1} \quad & ax^2 + 14ax + 49a \\ & = a(x^2 + 14x + 49) \\ & = a(x + 7)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 25x^2 + 30xy + 9y^2 \\ & = (5x)^2 + 2 \times 3y \times 5x + (3y)^2 \\ & = (5x + 3y)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & 5x^2y - 10xy + 5y \\ & = 5y(x^2 - 2x + 1) \\ & = 5y(x - 1)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad & 3ax^2 - 18ax + 27a \\ & = 3a(x^2 - 6x + 9) \\ & = 3a(x - 3)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad & 2x^2y + 20xy + 50y \\ & = 2y(x^2 + 10x + 25) \\ & = 2y(x + 5)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad & xy - x + 2(y - 1) \\ & = x(y - 1) + 2(y - 1) \\ & = (x + 2)(y - 1) \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad & (x - 2)^2 + 7(x - 2) + 12 \\ & = \{ (x - 2) + 4 \} \{ (x - 2) + 3 \} \\ & = (x + 2)(x + 1) \end{aligned}$$

$$\begin{aligned} \textcircled{8} \quad & 4x^2 - 20xy + 25y^2 \\ & = (2x)^2 - 2 \times 5y \times 2x + (5y)^2 \\ & = (2x - 5y)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{9} \quad & xy + 3x - 4(y + 3) \\ & = x(y + 3) - 4(y + 3) \\ & = (x - 4)(y + 3) \end{aligned}$$

$$\begin{aligned} \textcircled{10} \quad & (x + 2)^2 - 4(x + 2) - 21 \\ & = \{ (x + 2) - 7 \} \{ (x + 2) + 3 \} \\ & = (x - 5)(x + 5) \end{aligned}$$

2 次の式を工夫して計算しなさい。

$$\begin{aligned} \textcircled{1} \quad & 74^2 - 26^2 \\ & = (74 + 26)(74 - 26) \\ & = 100 \times 48 \\ & = 4800 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 18^2 - 82^2 \\ & = (18 + 82)(18 - 82) \\ & = 100 \times (-64) \\ & = -6400 \end{aligned}$$