

1 次の式を因数分解しなさい。

① $ax^2 + 14ax + 49a$

② $4x^2 + 12xy + 9y^2$

③ $5x^2y - 30xy + 45y$

④ $ax^2 - 6ax + 9a$

⑤ $3x^2y + 24xy + 48y$

⑥ $xy + 4x + (y + 4)$

⑦ $(x + 2)^2 + 5(x + 2) + 6$

⑧ $25x^2 - 20xy + 4y^2$

⑨ $xy + 3x - (y + 3)$

⑩ $(x + 1)^2 - 3(x + 1) - 18$

2 次の式を工夫して計算しなさい。

① $64^2 - 36^2$

② $98^2 - 2^2$

1 次の式を因数分解しなさい。

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

$$\begin{aligned} \textcircled{2} \quad & 4x^2 + 12xy + 9y^2 \\ & = (2x)^2 + 2 \times 3y \times 2x + (3y)^2 \\ & = (2x + 3y)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & 5x^2y - 30xy + 45y \\ & = 5y(x^2 - 6x + 9) \\ & = 5y(x - 3)^2 \end{aligned}$$

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

$$\begin{aligned} \textcircled{5} \quad & 3x^2y + 24xy + 48y \\ & = 3y(x^2 + 8x + 16) \\ & = 3y(x + 4)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad & xy + 4x + (y + 4) \\ & = x(y + 4) + (y + 4) \\ & = (x + 1)(y + 4) \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad & (x + 2)^2 + 5(x + 2) + 6 \\ & = \{ (x + 2) + 3 \} \{ (x + 2) + 2 \} \\ & = (x + 5)(x + 4) \end{aligned}$$

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

$$\begin{aligned} \textcircled{9} \quad & xy + 3x - (y + 3) \\ & = x(y + 3) - (y + 3) \\ & = (x - 1)(y + 3) \end{aligned}$$

$$\begin{aligned} \textcircled{10} \quad & (x + 1)^2 - 3(x + 1) - 18 \\ & = \{ (x + 1) - 6 \} \{ (x + 1) + 3 \} \\ & = (x - 5)(x + 4) \end{aligned}$$

2 次の式を工夫して計算しなさい。

$$\begin{aligned} \textcircled{1} \quad & 64^2 - 36^2 \\ & = (64 + 36)(64 - 36) \\ & = 100 \times 28 \\ & = 2800 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 98^2 - 2^2 \\ & = (98 + 2)(98 - 2) \\ & = 100 \times 96 \\ & = 9600 \end{aligned}$$