

1 次の式を因数分解しなさい。

① $ax^2 + 16ax + 64a$

② $4x^2 + 20xy + 25y^2$

③ $4x^2y - 40xy + 100y$

④ $3ax^2 - 12ax + 12a$

⑤ $6x^2y + 12xy + 6y$

⑥ $xy - 4x + 3(y - 4)$

⑦ $(x - 6)^2 + 6(x - 6) + 5$

⑧ $16x^2 - 24xy + 9y^2$

⑨ $xy + 2x - 3(y + 2)$

⑩ $(x + 5)^2 - 3(x + 5) - 4$

2 次の式を工夫して計算しなさい。

① $24^2 - 76^2$

② $65^2 - 55^2$

1 次の式を因数分解しなさい。

$$\begin{aligned} \textcircled{1} \quad & ax^2 + 16ax + 64a \\ & = a(x^2 + 16x + 64) \\ & = a(x + 8)^2 \end{aligned}$$

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

$$\begin{aligned} \textcircled{3} \quad & 4x^2y - 40xy + 100y \\ & = 4y(x^2 - 10x + 25) \\ & = 4y(x - 5)^2 \end{aligned}$$

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

$$\begin{aligned} \textcircled{5} \quad & 6x^2y + 12xy + 6y \\ & = 6y(x^2 + 2x + 1) \\ & = 6y(x + 1)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad & xy - 4x + 3(y - 4) \\ & = x(y - 4) + 3(y - 4) \\ & = (x + 3)(y - 4) \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad & (x - 6)^2 + 6(x - 6) + 5 \\ & = \{ (x - 6) + 1 \} \{ (x - 6) + 5 \} \\ & = (x - 5)(x - 1) \end{aligned}$$

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

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

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

2 次の式を工夫して計算しなさい。

$$\begin{aligned} \textcircled{1} \quad & 24^2 - 76^2 \\ & = (24 + 76)(24 - 76) \\ & = 100 \times (-52) \\ & = -5200 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 65^2 - 55^2 \\ & = (65 + 55)(65 - 55) \\ & = 120 \times 10 \\ & = 1200 \end{aligned}$$