

1 次の式を因数分解しなさい。

① $ax^2 + 8ax + 16a$

② $16x^2 + 40xy + 25y^2$

③ $3x^2y - 12xy + 12y$

④ $2ax^2 - 20ax + 50a$

⑤ $4x^2y + 24xy + 36y$

⑥ $xy + 2x + 3(y + 2)$

⑦ $(x + 4)^2 + 7(x + 4) + 10$

⑧ $9x^2 - 24xy + 16y^2$

⑨ $xy + 2x - (y + 2)$

⑩ $(x + 5)^2 + 2(x + 5) - 8$

2 次の式を工夫して計算しなさい。

① $55^2 - 45^2$

② $90^2 - 80^2$

1 次の式を因数分解しなさい。

$$\begin{aligned} \textcircled{1} \quad & ax^2 + 8ax + 16a \\ &= a(x^2 + 8x + 16) \\ &= a(x + 4)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 16x^2 + 40xy + 25y^2 \\ &= (4x)^2 + 2 \times 5y \times 4x + (5y)^2 \\ &= (4x + 5y)^2 \end{aligned}$$

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

$$\begin{aligned} \textcircled{4} \quad & 2ax^2 - 20ax + 50a \\ &= 2a(x^2 - 10x + 25) \\ &= 2a(x - 5)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad & 4x^2y + 24xy + 36y \\ &= 4y(x^2 + 6x + 9) \\ &= 4y(x + 3)^2 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad & xy + 2x + 3(y + 2) \\ &= x(y + 2) + 3(y + 2) \\ &= (x + 3)(y + 2) \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad & (x + 4)^2 + 7(x + 4) + 10 \\ &= \{ (x + 4) + 5 \} \{ (x + 4) + 2 \} \\ &= (x + 9)(x + 6) \end{aligned}$$

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

$$\begin{aligned} \textcircled{9} \quad & xy + 2x - (y + 2) \\ &= x(y + 2) - (y + 2) \\ &= (x - 1)(y + 2) \end{aligned}$$

$$\begin{aligned} \textcircled{10} \quad & (x + 5)^2 + 2(x + 5) - 8 \\ &= \{ (x + 5) - 2 \} \{ (x + 5) + 4 \} \\ &= (x + 3)(x + 9) \end{aligned}$$

2 次の式を工夫して計算しなさい。

$$\begin{aligned} \textcircled{1} \quad & 55^2 - 45^2 \\ &= (55 + 45)(55 - 45) \\ &= 100 \times 10 \\ &= 1000 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 90^2 - 80^2 \\ &= (90 + 80)(90 - 80) \\ &= 170 \times 10 \\ &= 1700 \end{aligned}$$