

解説

$$\begin{aligned} \text{練習 1 4} \quad (1) \quad (3a - b + 2)(3a - b - 2) &= \{(3a - b) + 2\}\{(3a - b) - 2\} = (3a - b)^2 - 2^2 \\ &= 9a^2 - 6ab + b^2 - 4 \end{aligned}$$

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

解説

$$\begin{aligned} \text{練習 1 5} \quad (1) \quad (x^2 + x + 1)(x^2 - x + 1) &= (x^2 + x + 1)x^2 + (x^2 + x + 1) \cdot (-x) + (x^2 + x + 1) \cdot 1 \\ &= x^4 + x^3 + x^2 - x^3 - x^2 - x + x^2 + x + 1 \\ &= x^4 + x^2 + 1 \end{aligned}$$

$$(2) \quad x^2 + 1 = A \text{ とおくと}$$

$$\begin{aligned} (x^2 + x + 1)(x^2 - x + 1) &= (A + x)(A - x) = A^2 - x^2 \\ &= (x^2 + 1)^2 - x^2 = x^4 + 2x^2 + 1 - x^2 \\ &= x^4 + x^2 + 1 \end{aligned}$$

解説

$$\begin{aligned} \text{練習 1 7} \quad (1) \quad (x + 1)^2(x - 1)^2 &= \{(x + 1)(x - 1)\}^2 = (x^2 - 1)^2 \\ &= (x^2)^2 - 2 \cdot x^2 \cdot 1 + 1^2 = x^4 - 2x^2 + 1 \end{aligned}$$

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