

## 因数分解(難関)①

次の式を因数分解しなさい。

- (1)  $(x + 3)(x - 4) - 3x$
- (2)  $ab - 3a + b - 3$
- (3)  $a^2 - 9b^2 - 4c^2 + 12bc$
- (4)  $x^2z - z^3 - xyz + yz^2$
- (5)  $(x^2 + 2x)^2 - 2(x^2 + 2x - 2) - 7$

### 解答

$$\begin{aligned}(1) \quad & (x + 3)(x - 4) - 3x \\&= x^2 - x - 12 - 3x \\&= x^2 - 4x - 12 \\&\equiv \underline{(x - 6)(x + 2)}\end{aligned}$$

$$\begin{aligned}(4) \quad & x^2z - z^3 - xyz + yz^2 \\&= z(x^2 - z^2) - yz(x - z) \\&= z(x + z)(x - z) - yz(x - z) \\&\equiv \underline{z(x - z)(x - y + z)}\end{aligned}$$

$$\begin{aligned}(2) \quad & ab - 3a + b - 3 \\&= a(b - 3) + (b - 3) \\&\equiv \underline{(a + 1)(b - 3)}\end{aligned}$$

$$(5) \quad (x^2 + 2x)^2 - 2(x^2 + 2x - 2) - 7$$

$x^2 + 2x = M$  とする

$$\begin{aligned}&= M^2 - 2(M - 2) - 7 \\&= M^2 - 2M - 3 \\&= (M - 3)(M + 1) \\&= (x^2 + 2x - 3)(x^2 + 2x + 1) \\&\equiv \underline{(x + 3)(x - 1)(x + 1)^2}\end{aligned}$$

$$\begin{aligned}(3) \quad & a^2 - 9b^2 - 4c^2 + 12bc \\&= a^2 - (9b^2 - 12bc + 4c^2) \\&= a^2 - (3b - 2c)^2 \\&= \{a + (3b - 2c)\}\{a - (3b - 2c)\} \\&\equiv \underline{(a + 3b - 2c)(a - 3b + 2c)}\end{aligned}$$