

次の式を因数分解しなさい。

$$\begin{matrix} 4 & \times & -1 & \sim & -4 \\ & & -1 & \rightarrow & -4 \end{matrix}$$

$$(1) 4a^4 - 5a^2b^2 + b^4$$

$$= (4a^2 - b^2)(a^2 - b^2)$$

$$= \underline{(2a+b)(2a-b)(a+b)(a-b)}$$

$$(2) x^4 - 13x^2 + 36$$

$$= (x^2 - 9)(x^2 - 4)$$

$$= \underline{(x+3)(x-3)(x+2)(x-2)}$$

$$(3) x^3 + 1$$

$$= \underline{(x+1)(x^2 - x + 1)}$$

$$(4) x^6 - 1$$

$$= (x^3 + 1)(x^3 - 1)$$

$$= (x+1)(x^2 - x + 1)(x-1)(x^2 + x + 1)$$

$$\underline{(x+1)(x-1)(x^2 - x + 1)(x^2 + x + 1)}$$

$$(5) (x^2 - 3x - 3)(x^2 - 3x + 1) - 5$$

$$x^2 - 3x = A$$

$$= (A - 3)(A + 1) - 5$$

$$= A^2 - 2A - 3 - 5$$

$$= A^2 - 2A - 8$$

$$= (A - 4)(A + 2)$$

$$\rightarrow = (x^2 - 3x - 4)(x^2 - 3x + 2)$$

$$= \underline{(x-4)(x+1)(x-1)(x-2)}$$