



次の式を因数分解しなさい。

(1) $x^4 + x^2 + 1$

$$\begin{aligned}\text{5式} &= \underline{x^4 + 2x^2 + 1} - x^2 \\ &= (x^2 + 1)^2 - x^2 \\ &= (x^2 + 1 - x)(x^2 + 1 + x) \\ &= \underline{(x^2 - x + 1)(x^2 + x + 1)}\end{aligned}$$

(2) $4x^4 + 1$

$$\begin{aligned}\text{5式} &= 4x^4 + 4x^2 + 1 - 4x^2 \\ &= (2x^2 + 1)^2 - 4x^2 \\ &= (2x^2 + 1 - 2x)(2x^2 + 1 + 2x) \\ &= \underline{(2x^2 - 2x + 1)(2x^2 + 2x + 1)}\end{aligned}$$

(3) $x^4 - 7x^2 + 1$

$$\begin{aligned}\text{5式} &= x^4 + 2x^2 + 1 - 9x^2 \\ &= (x^2 + 1)^2 - 9x^2 \\ &= (x^2 + 1 - 3x)(x^2 + 1 + 3x) \\ &= \underline{(x^2 - 3x + 1)(x^2 + 3x + 1)}\end{aligned}$$