

2年文系・国際 数学Ⅱ (5月11日～5月15日)

<解答>

1. 展開せよ。

$$\begin{aligned}(1) \quad (x-2)^3 &= x^3 + 3 \cdot x^2 \cdot (-2) + 3 \cdot x \cdot (-2)^2 + (-2)^3 \\ &= x^3 + 3 \cdot x^2 \cdot (-2) + 3 \cdot x \cdot 4 + (-8) \\ &= x^3 - 6x^2 + 12x - 8\end{aligned}$$

(別解)

$$\begin{aligned}(x-2)^3 &= x^3 - 3 \cdot x^2 \cdot 2 + 3 \cdot x \cdot 2^2 - 2^3 \\ &= x^3 - 3 \cdot x^2 \cdot 2 + 3 \cdot x \cdot 4 - 8 \\ &= x^3 - 6x^2 + 12x - 8\end{aligned}$$

$$\begin{aligned}(2) \quad (x+3y)^3 &= x^3 + 3 \cdot x^2 \cdot (3y) + 3 \cdot x \cdot (3y)^2 + (3y)^3 \\ &= x^3 + 3 \cdot x^2 \cdot (3y) + 3 \cdot x \cdot (9y^2) + (27y^3) \\ &= x^3 + 9x^2y + 27xy^2 + 27y^3\end{aligned}$$

2. 因数分解せよ。

$$\begin{aligned}(1) \quad x^3 + 8 &= x^3 + 2^3 \\ &= (x+2)(x^2 - x \cdot 2 + 2^2) \\ &= (x+2)(x^2 - 2x + 4)\end{aligned}$$

$$\begin{aligned}(2) \quad 64x^3 - 125y^3 &= (4x)^3 - (5y)^3 \\ &= \{(4x) - (5y)\} \{(4x)^2 + (4x)(5y) + (5y)^2\} \\ &= (4x - 5y)(16x^2 + 20xy + 25y^2)\end{aligned}$$