

指数の拡張3

数Ⅱ(指数の拡張③)

⑥ 次の計算をしよう。

$$\textcircled{1} (3^2)^{-3} \times 3^3 \div 9^{-2}$$

$$\textcircled{2} 25^{\frac{1}{4}} \times 25^{\frac{1}{3}} \div 25^{\frac{1}{12}}$$

$$\textcircled{3} \sqrt[4]{9} \times \sqrt[6]{27}$$

$$\textcircled{4} \sqrt[3]{-25} \times \sqrt[6]{125} \div \sqrt[6]{5}$$

数Ⅱ(指数の拡張③)

⑥ 次の計算をしよう。

$$\begin{aligned} \textcircled{1} (3^2)^{-3} \times 3^3 \div 9^{-2} &= (3^2)^{-3} \times 3^3 \div (3^2)^{-2} \\ &= 3^{-6} \times 3^3 \div 3^{-4} \\ &= 3^{-6+3+4} = 3 \end{aligned}$$

$$\begin{aligned} \textcircled{2} 25^{\frac{1}{4}} \times 25^{\frac{1}{3}} \div 25^{\frac{1}{12}} &= 25^{\frac{1}{4} + \frac{1}{3} - \frac{1}{12}} \\ &= 25^{\frac{1}{2}} = \sqrt{25} = 5 \end{aligned}$$

$$\textcircled{3} \sqrt[4]{9} \times \sqrt[6]{27}$$

$$\begin{aligned} &= \sqrt[4]{3^2} \times \sqrt[6]{3^3} \\ &= 3^{\frac{1}{2}} \times 3^{\frac{1}{2}} = 3^{\frac{1}{2} + \frac{1}{2}} = 3 \end{aligned}$$

$$\textcircled{4} \sqrt[3]{-25} \times \sqrt[6]{125} \div \sqrt[6]{5}$$

$$\begin{aligned} &= -\sqrt[3]{5^2} \times \sqrt[6]{5^3} \div \sqrt[6]{5} \\ &= -5^{\frac{2}{3}} \times 5^{\frac{1}{2}} \div 5^{\frac{1}{6}} = -5^{\frac{2}{3} + \frac{1}{2} - \frac{1}{6}} = -5 \end{aligned}$$