

解答

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|--------------------------|-------------------------|------------------------|
| 1. (1) 6 | (2) 5 | (3) 3 |
| 2. (1) 1 | (2) $\frac{1}{32}$ | (3) 64 |
| (4) $\frac{1}{256}$ | (5) $\frac{1}{25}$ | (6) 9 |
| (7) 25 | (8) 1458 | (9) $\frac{8}{9}$ |
| 3. (1) $5^{\frac{1}{3}}$ | (2) $3^{\frac{1}{6}}$ | (3) $2^{-\frac{3}{4}}$ |
| 4. (1) $\sqrt[5]{a^3}$ | (2) $\sqrt[5]{a}$ | (3) \sqrt{a} |
| (4) $\sqrt[4]{a}$ | (5) $\sqrt[12]{a^{11}}$ | (6) $\sqrt[3]{a}$ |

解説

1. (1) 与式 = 6 (2) 与式 = $\sqrt[4]{5^3 \times 5} = \sqrt[4]{5^4} = (\sqrt[4]{5})^4 = 5$
 (3) 与式 = $\sqrt[5]{3^2} \sqrt[5]{3^3} = \sqrt[5]{3^2 \times 3^3} = \sqrt[5]{3^5} = (\sqrt[5]{3})^5 = 3$
2. (1) 与式 = 1 (2) 与式 = $\frac{1}{2^5} = \frac{1}{32}$
 (3) 与式 = $4^3 = 64$ (4) 与式 = $\frac{1}{(4^2)^2} = \frac{1}{4^4} = \frac{1}{256}$
 (5) 与式 = $5^{2+(-4)} = 5^{-2} = \frac{1}{25}$ (6) 与式 = $3^{5-3} = 3^2 = 9$
 (7) 与式 = $5^4 \times (5^{-1})^2 = 5^4 \times 5^{-2} = 5^{4-2} = 5^2 = 25$
 (8) 与式 = $(2 \times 3^2)^3 \times 2^{-2} = 2^3 \times 3^6 \times 2^{-2} = 2^{3-2} \times 3^6 = 2 \times 729 = 1458$
 (9) 与式 = $(2^3 \times 3)^2 \times 2^{-3} \times (3^{-1})^4 = 2^6 \times 3^2 \times 2^{-3} \times 3^{-4} = 2^{6-3} \times 3^{2-4} = 2^3 \times 3^{-2} = 8 \times \frac{1}{9} = \frac{8}{9}$
3. (1) 与式 = $5^{\frac{1}{3}}$ (2) 与式 = $(3^{\frac{2}{3}})^{\frac{1}{4}} = 3^{\frac{2}{3} \times \frac{1}{4}} = 3^{\frac{1}{6}}$ (3) 与式 = $\frac{1}{2^{\frac{3}{4}}} = 2^{-\frac{3}{4}}$
4. (1) 与式 = $\sqrt[5]{a^3}$ (2) 与式 = $a^{\frac{2}{10}} = a^{\frac{1}{5}} = \sqrt[5]{a}$
 (3) 与式 = $a^{\frac{1}{3} + \frac{1}{6}} = a^{\frac{1}{2}} = \sqrt{a}$ (4) 与式 = $a^{\frac{3}{4} - \frac{1}{2}} = a^{\frac{1}{4}} = \sqrt[4]{a}$
 (5) 与式 = $a^{\frac{1}{4} + \frac{2}{3}} = a^{\frac{11}{12}} = \sqrt[12]{a^{11}}$ (6) 与式 = $a^{\frac{2}{4} - \frac{1}{6}} = a^{\frac{1}{3}} = \sqrt[3]{a}$