

Using  $\log_{\square} \square$  to find the power

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$$2^4 = 16$$

$$2^n = 16, \quad n = ?$$

$$\log_{\substack{\square \\ \text{BASE}}} \substack{\square \\ \text{No.}} = 4$$

5. Express  $\frac{4^2 \times 16^{\frac{1}{2}}}{64^{\frac{2}{3}} \times 4^3}$  in the form  $4^n, n \in \mathbb{Z}$ .

$$n = \log_{\square} \frac{4^2 \times 16^{\frac{1}{2}}}{64^{\frac{2}{3}} \times 4^3} = -2$$

OR

$$\begin{aligned} 4^2 &= 16 \\ 4^3 &= 64 \end{aligned}$$

rewrite

$$\begin{aligned} \frac{4^2 \times 16^{\frac{1}{2}}}{64^{\frac{2}{3}} \times 4^3} &= \frac{4^2 \times (4^2)^{\frac{1}{2}}}{(4^3)^{\frac{2}{3}} \times 4^3} = \frac{4^2 \times 4}{4^2 \times 4^3} \\ &= \frac{4^3}{4^5} = 4^{-2} \end{aligned}$$

$$\Rightarrow n = -2$$