

$$\log_{\frac{1}{2}} 4 = -2 \quad \text{b.o.} \quad \left(\frac{1}{2}\right)^{-2} = 4$$

$$\log_8 \frac{1}{2} = -\frac{1}{3} \quad \text{b.o.} \quad 8^{-\frac{1}{3}} = \frac{1}{2}$$

$$\log_{25} \frac{1}{5} = -\frac{1}{2} \quad \text{b.o.} \quad 25^{-\frac{1}{2}} = \frac{1}{5}$$

$$1. \log_a x \cdot y = \log_a x + \log_a y$$

$$\log_2 32 = \log_2 4 \cdot 8 = \underbrace{\log_2 4}_2 + \underbrace{\log_2 8}_3 = 5$$

$$2. \log_a \frac{x}{y} = \log_a x - \log_a y$$

$$3. \log_a x^p = p \cdot \log_a x$$

$$\log_3 9^4 = 4 \cdot \underbrace{\log_3 9}_2 = 4 \cdot 2 = 8$$

$$\log_3 \sqrt{27} = \log_3 27^{\frac{1}{2}} = \frac{1}{2} \cdot \underbrace{\log_3 27}_3 = \frac{1}{2} \cdot 3 = \frac{3}{2}$$

$$\log_2 \sqrt[3]{8} = \log_2 8^{\frac{1}{3}} = \frac{1}{3} \underbrace{\log_2 8}_3 = \frac{1}{3} \cdot 3 = 1$$

$$\log_3 \sqrt[3]{9} = \log_3 9^{\frac{1}{3}} = \frac{1}{3} \cdot \underbrace{\log_3 9}_2 = \frac{1}{3} \cdot 2 = \frac{2}{3}$$

$$\log_5 \sqrt{125} = \log_5 125^{\frac{1}{2}} = \frac{1}{2} \cdot \underbrace{\log_5 125}_3$$

$$\frac{1}{2} \cdot 3 = \frac{3}{2}$$

$$\log_{\frac{1}{2}} \sqrt[5]{16} = \log_{\frac{1}{2}} 16^{\frac{1}{5}} = \frac{1}{5} \log_{\frac{1}{2}} 16 = -\frac{4}{5}$$

$$\log_{\frac{1}{3}} \sqrt[7]{9} = \log_{\frac{1}{3}} 9^{\frac{1}{7}} = \frac{1}{7} \log_{\frac{1}{3}} 9 = \frac{2}{7}$$

Zadanie

$$\log_3 \sqrt[3]{81}$$

$$\log_4 \sqrt[3]{16}$$

$$\log_{\frac{1}{3}} \sqrt[3]{81}$$

$$\log_{\frac{1}{2}} \sqrt[3]{4}$$

$$\log_{\frac{1}{4}} \sqrt[4]{64}$$

$$\log_5 \sqrt[4]{125}$$

