2.110g

$\log_{0,0016} S = c \iff 0{,}0016^c = S$

$\left(\frac{16}{10000}\right)^c = S$

$S^{-4c} = \left(\frac{2}{10}\right)^{4c} = S^1$

$-4c = 1$

$c = -\frac{1}{4}$

$\sqrt{a} = a^{\frac{1}{2}}$

2.109g $\log_{\sqrt{3}} \sqrt[3]{9} = c$

$\sqrt{3}^c = \sqrt[3]{9}$

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

$3^{\frac{1}{2}c} = 3^{\frac{2}{3}}$

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

$c = \frac{4}{3}$

$a^b \cdot a^c = a^{b+c}$ $(a>0)$

$a>0 \; b>0 \; c>0$

$\log_b c = a \iff a^b = c$

Tożsamości z logarytmami

$a>0 \; a \neq 1 \; b>0 \; b>0 \; c>0$

1) $\log_a b_1 + \log_a b_2 = \log_a (b_1 b_2)$

2) $\log_a b_1 - \log_a b_2 = \log_a \left(\frac{b_1}{b_2}\right)$

3) $\log_a b^m = m \log_a b$

4) $\log_{a^n} b = \frac{1}{n} \log_a b$

5) $\log_a b = \frac{\log_c b}{\log_c a}$ $c>0$ $c \neq 1$

6) $\log_a b = \frac{1}{\log_b a}$ $\left[\begin{array}{l} a>0 \\ b \neq 1 \end{array}\right.$

$\frac{1}{\log_b a} = \log_a b$

7) $\log_a a \cdot \log_a b = \log_a b$

8) $a^{\log_a b} = b$

OZNACZENIE

$\log_a^2 b = (\log_a b)^2 = \log_a b \cdot \log_a b$

$\log_a^n b = (\log_a b)^n = \underbrace{\log_a b \cdot \log_a b \cdots \log_a b}_{n}$

$\log_a b^2 = 2 \log_a b$

OZNACZENIE

! $\log b = \log_{10} b$

! $\ln b = \log_e b$ - log naturalny

$e \approx 2{,}71\ldots$

KALKULATOR

ad 1) $\log_a b^n = n \log_a b$

$\log_a b_1 + \log_a b_2 = \log_a (b_1 b_2)$

2.110e, 6

2.110e) $L_T = 3\log 3 + 2\log 2 - \log 6 =$

$\log 3^3 + \log 2^2 - \log 6 =$

$\log(3^3 \cdot 2^2) - \log 6 = \log \frac{3^3 \cdot 2^2}{3 \cdot 2} = \log(3^2 \cdot 2) =$

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

$\log 18 = P_T$ cnd//

2.110b

T: $\log_5 12 = 2\log_5 2 + \log_5 3$

Dow.:

$P_T = 2\log_5 2 + \log_5 3 = \log_5 2^2 + \log_5 3 =$

$\log_5(2^2 \cdot 3) = \log_5(12) = L_T$