$K_6 = 10.000$; $6\,\%$ $\Rightarrow$ $10.000 \cdot 1{,}06^x = K_x$

$10.000 \cdot 1{,}06^x = 15.000$ $\quad$ $1{,}06^x = 1{,}5$

$x = \log_{1{,}06} 1{,}5$

$a^x = b$ $\quad$ $x = \log_a b = \dfrac{\log b}{\log a}$

e^x $\longrightarrow$ $\ln x$ $\quad$ naturalis $= \log_e x$

10^x $\longrightarrow$ $\log x$ $\quad$ 10 er

2^x $\longrightarrow$ $\operatorname{ld} x$ $\quad$ dualis $= \log_2 x$

$$\sqrt{x^2} = (x^2)^{1/2} = x^{2 \cdot 1/2} = x^1 = x$$

$$\sqrt[3]{x^5} = x^{5/3} \qquad (x^{5/3})^{3/5} \longrightarrow \sqrt[5]{x^3}$$

$\log 1000 = \log 10^3 = y \iff 10^y = 10^3$

$y = 3$

$\operatorname{ld} 256 = \operatorname{ld} 2^8 = 8$

$e^{3 \cdot \ln 2} = e^{\ln 8} = y \quad | \ln$

$\ln 8 = \ln y \qquad y = 8$

$\ln\left(\frac{1}{\sqrt{e}}\right) = \ln e^{-1/2} = -1/2$

$2 \cdot \log 10^5 - e^{4 \cdot \ln \sqrt{2}} + \operatorname{ld} \frac{1}{64}$

$\log (10^5)^2 - e^{\ln (\sqrt{2})^4} + \operatorname{ld} 2^{-6} =$

$\log 10^{10} - e^{\ln 4} + \operatorname{ld} 2^{-6} = 10 - 4 - 6 = 0$

1) $3 \cdot \ln x^2 - 4 \cdot \ln \frac{1}{3} - 2 \cdot \ln x = 2 \cdot \ln 9 + \ln x - 3 \ln 6$

$\ln x^6 - \ln \left(\frac{1}{3}\right)^4 - \ln x^2 = \ln 9^2 + \ln x - \ln 6^3$

$\ln \frac{x^6}{\frac{1}{3^4} \cdot x^2} = \ln \frac{9^2 \cdot x}{6^3}$ $\quad | e^{\ldots}$

$\frac{3^4 \cdot x^6}{x^2} = \frac{9^2 \cdot x}{6^3} \quad | : x \; | : 3^4$

$\frac{x^6}{x^2 \cdot x} = \frac{9^2}{6^3 \cdot 3^4}$ $\qquad x^3 = \frac{1}{6^3}$ $\qquad x = \frac{1}{6}$

2) $4 \ln x + 3 \cdot \ln \frac{1}{2} = \frac{1}{2} \ln 64 - \frac{1}{4} \ln x^8$

$\ln x^4 + \ln \frac{1}{8} = \ln 64^{\frac{1}{2}} - \ln (x^8)^{\frac{1}{4}} \Leftrightarrow \ln \frac{x^4}{8} = \ln \frac{8}{x^2}$

3) $3 \ln x - 2 \ln 4 = \frac{1}{2} \ln 81 + \ln x$

$\ln \frac{x^3}{16} = \ln 9x$

$x^2 = 9 \cdot 16$

$x = 12$

$\frac{1}{8} x^4 = \frac{8}{x^2}$

$x^6 = 64$

$x = 2$