

GBM GM, Log

① a) 3 b) 0

c) $\log_{10} 10^{-1} = -1$ d) $\log_2 2^6 = 6$

e) $\log_3 3^{-2} = -2$ f) $\log_2 2^{-10} = -10$

g) $\log (10^3)^{\frac{1}{2}} = \frac{3}{2}$ h) $\log 10^{15} = \frac{1}{5}$

② a) $2^x = 1'048'576$
 $x = \frac{\log 1'048'576}{\log 2} = \underline{\underline{20}}$

b) $5^x = 0.000'012'800$
 $x = \underline{\underline{-7}}$

③ a) $5 \cdot 3^{x+1} = 30$ b) $2^{2x-1} = 0.125$
 $3^{x+1} = 6 / \log$ $(2x-1) \log 2 = \log 0.125$
 $(x+1) \cdot \log 3 = \log 6$ $x = \frac{1}{2} \left(\frac{\log 0.125}{\log 2} + 1 \right)$
 $x+1 = \frac{\log 6}{\log 3}$ $x = \underline{\underline{-1}}$
 $x = \frac{\log 6}{\log 3} - 1 \approx 0.631$

b) $8 \cdot \log x + 4 = 10$
 $\log x = \frac{6}{8} = \frac{3}{4}$
 $x = 10^{\frac{3}{4}} = \sqrt[4]{10^3}$

4

$$a) \log x = 2.5 / 10^x$$

$$10^{\log x} = 10^{2.5}$$

$$x = 10^{2.5} = 10^{5/2} = \sqrt{10^5} \approx \underline{\underline{316.2}}$$

$$b) 8 \cdot \log x + 4 = 10$$

$$8 \cdot \log x = 6$$

$$\log x = \frac{6}{8} = \frac{3}{4}$$

$$x = 10^{3/4} = \sqrt[4]{10^3} \approx \underline{\underline{5.62}}$$

5

$$p = 0.5\%$$

$$120 = 100 (1.005)^x \quad /: 100$$

$$1.2 = 1.005^x \quad / \log$$

$$\log 1.2 = x \cdot \log 1.005$$

$$x = \frac{\log 1.2}{\log 1.005} \approx \underline{\underline{36.567}}$$

6

$$2 = (1+p)^{50} \quad / \sqrt[50]{}$$

$$\sqrt[50]{2} - 1 = p \approx \underline{\underline{1.4\%}}$$

7

$$5908.40 = 5000 \cdot 1.015^n \cdot 1.009^n$$

$$= 5000 \cdot (1.015 \cdot 1.009)^n \quad /: 5000$$

$$\log \frac{5908.40}{5000}$$

$$\log(1.015 \cdot 1.009) = 7 \text{ Jahre}$$