

$$\begin{aligned} \Gamma_{TA1}: \log \sqrt{ab} &= \log(ab)^{\frac{1}{2}} = \frac{1}{2} \log(ab) \\ &= \frac{1}{2}(\log a + \log b) \\ &= \frac{\log a + \log b}{2} \quad \checkmark \end{aligned}$$

$$\begin{aligned} 12.17 \quad \lg \frac{1}{2} + \lg \frac{2}{3} + \lg \frac{3}{4} + \dots + \lg \frac{98}{99} + \lg \frac{99}{100} \\ = \lg \left(\frac{1}{2} \cdot \frac{2}{3} \cdot \frac{3}{4} \cdot \dots \cdot \frac{98}{99} \cdot \frac{99}{100} \right) = \lg \frac{1}{100} = \underline{-2} \quad (10^{-2} = \frac{1}{10^2} = \frac{1}{100}) \end{aligned}$$

teleszkopos - elvonás

$$\begin{aligned} \Gamma_{TA1}: \lg \frac{1}{2} + \lg \frac{2}{3} + \lg \frac{3}{4} + \dots + \lg \frac{98}{99} + \lg \frac{99}{100} \\ = (\lg 1 - \lg 2) + (\lg 2 - \lg 3) + (\lg 3 - \lg 4) + \dots + (\lg 98 - \lg 99) \\ + (\lg 99 - \lg 100) \\ = \lg 1 - \lg 100 = 0 - 2 = -2 \end{aligned}$$

↑
teleszkopos - elvonás

13. logaritmusfeladók

$$\begin{aligned} 13.2 \quad a) \quad \log_8(x+3) &= \frac{1}{3}, \quad x+3 > 0 \quad (\Rightarrow) \underline{x > -3} \\ (\Rightarrow) 8^{\frac{1}{3}} &= x+3 \quad (\Rightarrow) x = 8^{\frac{1}{3}} - 3 = \sqrt[3]{8} - 3 = 2 - 3 = \underline{-1} \quad \checkmark \end{aligned}$$

$$\Gamma_{TA1}: \log_8(x+3) = \frac{1}{3} \quad | \quad 8^{(\quad)}$$

$$(\Rightarrow) 8^{\log_8(x+3)} = 8^{\frac{1}{3}}$$

$$(\Rightarrow) x+3 = 8^{\frac{1}{3}} \quad \dots$$

$$\begin{aligned} b) \quad \log_6 4x^2 - 2 &= 0 \quad \frac{x \neq 0}{(\Rightarrow) \log_6 4x^2 = 2} \quad | \quad 6^{(\quad)} \\ (\Rightarrow) 4x^2 &= 6^2 \quad | :4 \quad (\Rightarrow) x^2 = 9 \quad | \sqrt{\quad} \quad (\Rightarrow) \underline{x = \pm 3} \quad \checkmark \end{aligned}$$

$$\begin{aligned} 13.4 \quad a) \quad \log_6 x &= 1 - \log_6(x-5) \\ (\Rightarrow) \log_6 x + \log_6(x-5) &= 1 \\ (\Rightarrow) \log_6(x(x-5)) &= 1 \quad | \quad 6^{(\quad)} \\ (\Rightarrow) 6^{\log_6(x(x-5))} &= 6^1 \end{aligned}$$

$\left. \begin{array}{l} x > 0 \\ x-5 > 0 \quad (\Rightarrow) x > 5 \end{array} \right\} \Rightarrow \underline{x > 5}$