

1) 0

2) 14

3) 1

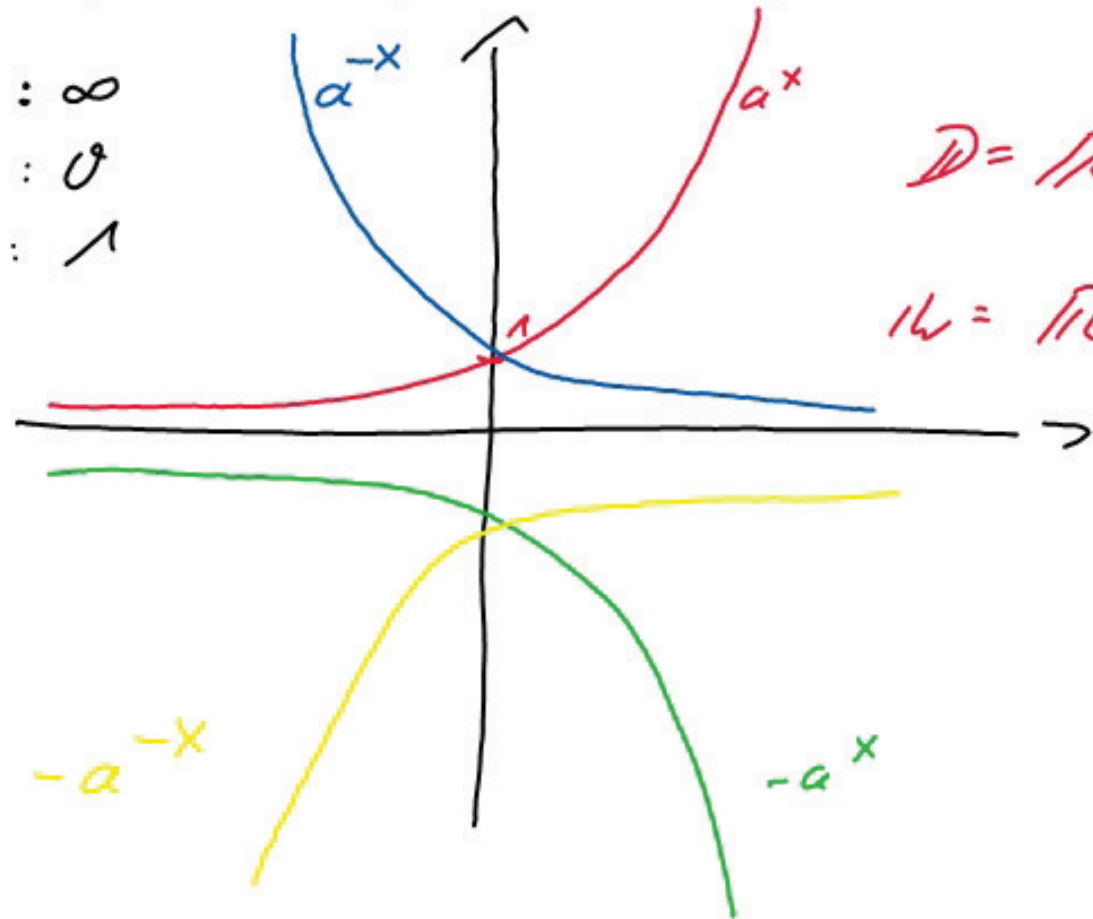
$$4) \frac{2}{3} \cdot (\log 1000 - \frac{1}{2}) - \frac{2}{e^{4.95}} + 2^{3+\log 3} - (10^2)^{\log 3} \\ + \ln\left(\frac{1}{3}\sqrt{e}\right)^2 - 4 \ln \sqrt{2}$$

$$\frac{2}{3} (\log 10^3 - \frac{1}{2}) - \frac{2}{0.15} + 2^3 \cdot 2^{\log 3} - 10^{\log 3^2} \\ + \ln e^{-\frac{2}{3}} - \ln (\sqrt{2})^4$$

$$\frac{2}{3} \cdot (3 - \frac{1}{2}) - 4 + 8 \cdot 3 - 9 - \frac{2}{3} - 2 = 10$$

Exponentialfunktion $f(x) = a^x \quad a \in \mathbb{N}^{>1}$

$$2^x : \begin{array}{l} x \rightarrow \infty : \infty \\ x \rightarrow -\infty : 0 \\ x = 0 : 1 \end{array}$$



$$\mathbb{D} = \mathbb{R}$$

$$\mathbb{W} = \mathbb{R}^{>0}$$

$$a^x = b \quad \log_a b = x$$

Logarithmusfunktion

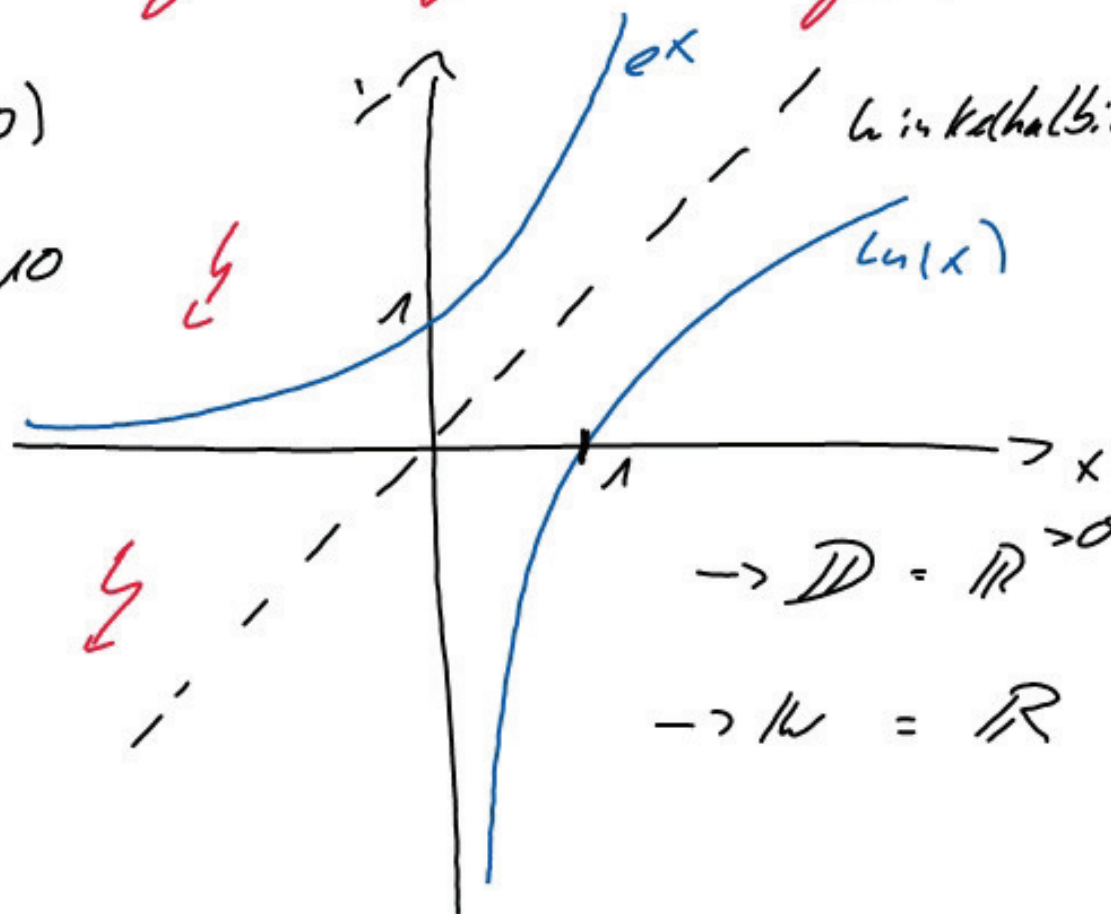
$$f(x) = \ln(x)$$

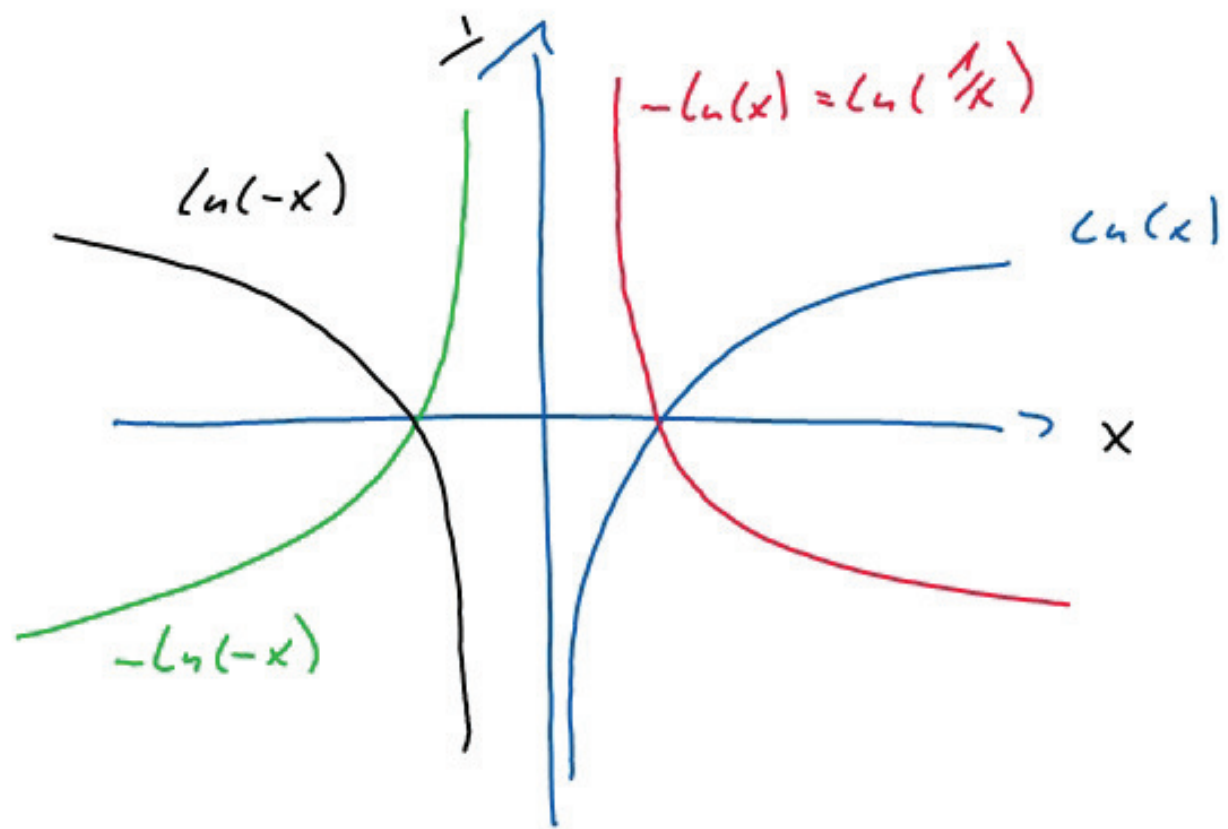
$$x = \log_{10}(-10)$$

$$10^x = -10$$

$$x = \ln(0)$$

$$2^x = 0$$





$$1) \log x^3 - \log \left(\frac{2}{x}\right)^4 - \log (x^{12})^{1/3} = \log 27^{2/3} + \log x^2 - \log 6^2$$

$$\log \frac{x^3 x^4}{16 x^4} = \log \frac{9 x^2}{36} \quad \uparrow 10^x$$

$$\frac{x^3}{16} = \frac{x^2}{4} \quad (\cdot \frac{1}{x^2} \cdot 16)$$

$$x = 4 \quad \Rightarrow \quad \{ \{ 4 \} \}$$

$$2) \ln 4^3 - \ln \frac{4}{x^2} + \ln 64 = \ln x^6 - \ln x^{-2} - \ln \frac{1}{16}$$

$$\ln \frac{4^3 x^2 \cdot 64}{4} = \ln \frac{x^6 \cdot x^2 \cdot 16}{1} \quad 1e^x$$

$$64 x^2 = x^8$$

$$x^6 = 64 \quad x = 2$$

$$f(x) = \frac{2}{5} \underbrace{(-x^2 + 4x - 3)}$$

$$g(x) = -x^2 + 4x - 3 = 0 \Rightarrow x_1 = 1 \vee x_2 = 3$$
$$= -(x^2 - 4x + 3) = -(x-1)(x-3)$$

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