

## LOGARITMIEN LASKUSÄÄNNÖT

$$\log(xy) = \log x + \log y \quad \left( \begin{array}{l} \lg 200 = \lg 2 \cdot 100 = \lg 2 + \lg 100 \\ \lg 2 + \lg 5 = \lg(2 \cdot 5) = \lg 10 = 1 \end{array} \right) \quad \begin{array}{l} = \lg 2 + 2 \\ = 1 \end{array}$$

$$\log \frac{x}{y} = \log x - \log y$$

$$\log x^r = r \cdot \log x$$

$$\text{Kantaluvun vaihto} \quad \log_a x = \frac{\log_b x}{\log_b a}$$

$$\text{ESIM 1} \rightarrow \log_5 50 - 2 \log_5 2 + \log_5 10$$

yhdistetään

$$\begin{aligned} & \log_5 50 - \log_5 2^2 + \log_5 10 \\ &= \log_5 \frac{50 \cdot 10}{2^2} \\ &= \log_5 \frac{500}{4} \\ &= \log_5 125 \\ &= 3 \end{aligned}$$

erotellaan :  $\begin{array}{l} 50 = 2 \cdot 25 \\ 10 = 2 \cdot 5 \end{array}$

$$\begin{aligned} & \log_5 2 \cdot 25 - 2 \log_5 2 + \log_5 2 \cdot 5 \\ &= \log_5 2 + 2 - 2 \log_5 2 + \log_5 2 + 1 \\ &= 3 \end{aligned}$$

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