$a^{\log_a x} = x$, $x>0$

$2^{\log_2 5} = 5$

$7 = 3^{?}$ $\quad ? = \log_3 7$

$7 = 3^{\log_3 7}$

$\frac{1}{63} = 2^{\log_2 \frac{1}{63}}$

$\log_a x = \frac{\log_b x}{\log_b a}$ $\quad 1 \neq a > 0$ $\quad x>0$ $\quad 1 \neq b > 0$

$\log_a x = \frac{1}{\log_x a}$ $\quad 0 < a, x \neq 1$

$3^{\log_{27} 125} = 3^{\frac{1}{3}\log_3 125} = 3^{\log_3 (125^{\frac{1}{3}})} =$

$= 3^{\log_3 5} = 5$

$3^{\log_{27} 125} = \left(27^{\frac{1}{3}}\right)^{\log_{27} 125} =$

$= \left(27^{\log_{27} 125}\right)^{\frac{1}{3}} = 125^{\frac{1}{3}} = 5$

$\left(27^{\frac{1}{3}}\right)^{\log_{27} 125} = 27^{\frac{1}{3}\log_{27} 125} =$

$= 27^{\log_{27} (125)^{\frac{1}{3}}} = 125^{\frac{1}{3}} = 5$

$27^{\frac{1}{3}} = 3$ $\quad \sqrt[3]{27} = 3$

$27^{?} = 3^3$

$27 = 3^3$

$x^3 = 125$

$125^{\frac{1}{3}} = \sqrt[3]{125} = x = 5$

$(a^b)^c = (a^c)^b$

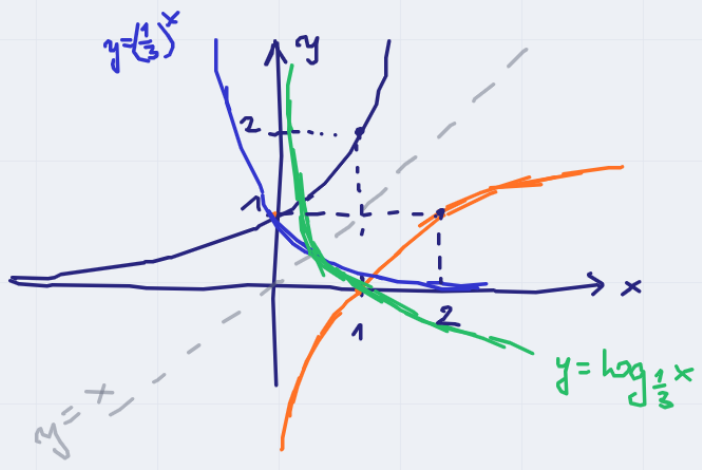
$\log_{a^c} x = \frac{\log_a x}{\log_a a^c} = \frac{\log_a x}{c} = \frac{1}{c}\log_a x$

$(a^b)^c = a^{b \cdot c}$

$5^{\frac{\log 5}{\log 25}} = 5^{\log_{25} 5} = 5^{\frac{1}{2}} = \sqrt{5}$ ✓

$\log_a b = \frac{\log_c b}{\log_c a}$

$y = f(x)$ – różnowartościowa $\Rightarrow$ istnieje do niej f-a odwrotna



np. $y = 2^x$

$y = \log_2 x$