

AZONOSSÁGOK

HATVÁNYOZÁS	GYÖKVONÁS	LOGARITMUS
<u>Értelmezés</u> $a^n = a \cdot a \cdot \dots \cdot a$ (n db.)	<u>Értelmezés</u> $\sqrt[n]{a} = b \text{ ha } b^n = a$ $(\sqrt[n]{a})^n = \sqrt[n]{a^n} = a$	<u>Értelmezés</u> $\log_a b = n \text{ ha } a^n = b$ $a^{\log_a b} = b; \log_a a^n = n$
$a^1 = a; a^0 = 1$	$\sqrt[n]{1} = 1; \sqrt[2n+1]{-1} = -1$	$\log_a a = 1; \log_a 1 = 0$
$a^n \cdot a^m = a^{n+m}$	$\sqrt[n]{a} \cdot \sqrt[m]{b} = \sqrt[n \cdot m]{a^m \cdot b^n}$ $\sqrt[n]{a} \cdot \sqrt[n]{a} = \sqrt[n]{a^{n+m}}$	$\log_a (n \cdot m) =$ $= \log_a n + \log_a m$
$\frac{a^n}{a^m} = a^{n-m}$	$\frac{\sqrt[n]{a}}{\sqrt[m]{b}} = \frac{\sqrt[n \cdot m]{a^m}}{\sqrt[n \cdot m]{b^n}} = \sqrt[n \cdot m]{\frac{a^m}{b^n}}$ $\sqrt[n]{a} / \sqrt[m]{a} = \sqrt[n \cdot m]{a^{m-n}}$	$\log_a \frac{n}{m} = \log_a n - \log_a m$
$(a^n)^m = a^{n \cdot m} = (a^m)^n$	$\sqrt[n]{\sqrt[m]{a}} = \sqrt[n \cdot m]{a} = \sqrt[m]{\sqrt[n]{a}}$	$n \cdot \log_a k = \log_a k^n$
$\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}; \sqrt[n]{a^n} = \sqrt[n]{a^n} = a$	$\sqrt[m]{a^n} = a^{\frac{n}{m}}; \sqrt[n]{a^m} = a^{\frac{m}{n}} = a$ $a \cdot \sqrt[n]{b} = \sqrt[n]{a^n \cdot b}$	$\log_a \sqrt[n]{k} = \frac{\log_a k}{n}$
$a^n \cdot b^n = (a \cdot b)^n$	$\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{a \cdot b}$	$\log_a b = \log_{a^n} b^n$
$\frac{a^n}{b^n} = \left(\frac{a}{b}\right)^n$	$\frac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\frac{a}{b}}$	$\log_a b = \log_{\sqrt[n]{a}} \sqrt[n]{b}$
$a^{-n} = \frac{1}{a^n}; \frac{1}{a^{-n}} = a^n$	$\sqrt[n]{\frac{1}{a}} = \frac{1}{\sqrt[n]{a}}; \sqrt[n]{\frac{1}{a^n}} = \frac{1}{\sqrt[n]{a^n}} = \frac{1}{a}$	$\log_a b = \frac{\log_c b}{\log_c a}$ $\log_b a = \frac{1}{\log_a b}$