# MOCNINY

mocnitel

základ mocniny

$$a^n = \underbrace{a \cdot a \cdot \ldots \cdot a}_{n \text{ členů}}$$

$5^6 = 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5$

$10^5 = 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10$

**$a \in R - \{0\} \wedge n \in N$:**

$a^1 = a$ — $3^1 = 3$, $(-10)^1 = -10$

$a^0 = 1$ — $7^0 = 1$, $(-9)^0 = 1$

**$a \in R - \{0\} \wedge n, m \in N$:**

$a^n \cdot a^m = a^{n+m}$ — $2^3 \cdot 2^4 = 2^{3+4} = 2^7$

$a^n : a^m = \frac{a^n}{a^m} = a^{n-m}$ — $2^5 : 2^3 = 2^{5-3} = 2^2$

$(a^m)^n = a^{n \cdot m}$ — $(2^2)^4 = 2^{2 \cdot 4} = 2^8$

$a^{-n} = \frac{1}{a^n}$ — $2^{-3} = \frac{1}{2^3}$

$a^{\frac{m}{n}} = \sqrt[n]{a^m}$ — $2^{\frac{3}{2}} = \sqrt{2^3}$

**$a, b \in R - \{0\} \wedge n \in N$:**

$a^n \cdot b^n = (a \cdot b)^n$ — $3^5 \cdot 2^5 = (3 \cdot 2)^5 = 6^5$

$a^n : b^n = \frac{a^n}{b^n} = \left(\frac{a}{b}\right)^n$ — $6^5 : 2^5 = (6:2)^5 = 3^5$

Některá čísla zapisujme pomocí mocnin ve tvaru $a.10^k$, kde $1 \leq a < 10$, $k \in Z$.

$320\,000 = 3{,}2 \cdot 10^5$

$0{,}000025 = 2{,}5 \cdot 10^{-5}$

| | |
|---|---|
| $1^2 = 1$ | $11^2 = 121$ |
| $2^2 = 4$ | $12^2 = 144$ |
| $3^2 = 9$ | $13^2 = 169$ |
| $4^2 = 16$ | $14^2 = 196$ |
| $5^2 = 25$ | $15^2 = 225$ |
| $6^2 = 36$ | $16^2 = 256$ |
| $7^2 = 49$ | $17^2 = 289$ |
| $8^2 = 64$ | $18^2 = 324$ |
| $9^2 = 81$ | $19^2 = 361$ |
| $10^2 = 100$ | $20^2 = 400$ |

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