

## Matematika

|               |                          |                      |
|---------------|--------------------------|----------------------|
| $\doteq$      | <code>\doteq</code>      | Přibližně            |
| $\neq$        | <code>\neq</code>        | Nerovná se           |
| $\geq$        | <code>\ge</code>         | Větší nebo rovno     |
| $\leq$        | <code>\le</code>         | Menší nebo rovno     |
| $\sum$        | <code>\sum</code>        | Suma                 |
| $\rightarrow$ | <code>\to</code>         | Do                   |
| $\pm$         | <code>\pm</code>         | Plus mínus           |
| $\sqrt{2}$    | <code>\sqrt{2}</code>    | Odmocnina            |
| $\sqrt[3]{2}$ | <code>\sqrt[3]{2}</code> | N-tá odmocnina       |
| $\lim$        | <code>\lim_{\{}}</code>  | Limita x jdoucí k n. |

## Množiny

|             |                        |                     |
|-------------|------------------------|---------------------|
| $\cap$      | <code>\cap</code>      | Průnik (a současně) |
| $\cup$      | <code>\cup</code>      | Sjednoceno (nebo)   |
| $\in$       | <code>\in</code>       | Náleží              |
| $\emptyset$ | <code>\emptyset</code> | Prázdná množina     |

## Logika

|                   |                              |                                 |
|-------------------|------------------------------|---------------------------------|
| $\wedge$          | <code>\wedge</code>          | Konjunkce (AND)                 |
| $\vee$            | <code>\vee</code>            | Disjunkce (OR)                  |
| $\Rightarrow$     | <code>\Rightarrow</code>     | Implikace (jestliže, pak)       |
| $\Leftrightarrow$ | <code>\Leftrightarrow</code> | Ekvivalence (právě tehdy, když) |
| $\neg$            | <code>\neg</code>            | Negace                          |
| $\forall$         | <code>\forall</code>         | Pro každé                       |
| $\exists$         | <code>\exists</code>         | Existuje                        |

## Zkratky

|  |
|--|
| <code>\newcommand{\mbf}[1]{\mathbf{#1}}</code>     |
| <code>\newcommand{\dlim}{\displaystyle\lim}</code> |
| <code>\newcommand{\hr}{\hrule}</code>              |
| <code>\newcommand{\hl}{\hline}</code>              |

## Odkazy

- Matematický korespondenční seminář MUNI
- Wikipedia - Matematický symbol
- Art of problem solving
- ČVUT Stručný popis
- VŠB Matematické prostředí
- CSTug symbols
- mff.lokiware
- Detexify<sup>2</sup>

| <b>A</b> | <b>B</b> | <b>A <math>\wedge</math> B</b> | <b>A <math>\vee</math> B</b> | <b>A <math>\Rightarrow</math> B</b> | <b>A <math>\Leftrightarrow</math> B</b> |
|----------|----------|--------------------------------|------------------------------|-------------------------------------|---|
| <b>1</b> | <b>1</b> | 1                              | 1                            | 1                                   | 1                                       |
| <b>1</b> | <b>0</b> | 0                              | 1                            | 0                                   | 0                                       |
| <b>0</b> | <b>1</b> | 0                              | 1                            | 1                                   | 0                                       |
| <b>0</b> | <b>0</b> | 0                              | 0                            | 1                                   | 1                                       |

# Diferenciální počet

- $(konst.)' = 0$
- $(x^a)' = a \cdot x^{a-1}$
- $(a^x)' = a^x \cdot \ln(a)$
- $\log_a(x)' = \frac{1}{x \cdot \ln(a)}$
- $(e^x)' = e^x$
- $(\ln x)' = \frac{1}{x}$
- $(u \pm v)' = u' \pm v'$
- $[f(g(x))]' = f'(g(x)) \cdot g'(x)$
- $\sin(x)' = \cos(x)$
- $\cos(x)' = -\sin(x)$
- $\tan(x)' = \frac{1}{\cos^2 x}$
- $\cot(x)' = \frac{1}{\sin^2 x}$
- $(x)' = 1$
- $(\frac{1}{x})' = -\frac{1}{x^2}$
- $(u \cdot v)' = u' \cdot v + v \cdot u'$
- $f(x)^{g(x)} = e^{g(x) \cdot \ln f(x)}$
- $\arcsin(x)' = \frac{1}{\sqrt{1-x^2}}$
- $\arccos(x)' = -\frac{1}{\sqrt{1-x^2}}$
- $\arctan(x)' = \frac{1}{1+x^2}$
- $\operatorname{arccot}(x)' = -\frac{1}{1+x^2}$
- $(\sqrt{x})' = \frac{1}{2 \cdot \sqrt{x}}$
- $(\log x)' = \frac{1}{x \cdot \ln 10}$
- $(\frac{u}{v})' = \frac{u' \cdot v - u \cdot v'}{v^2}$
- $(k \cdot f(x))' = k \cdot f'(x)$

## Goniometrické funkce

|          | 0 | $\frac{\pi}{6}$      | $\frac{\pi}{4}$      | $\frac{\pi}{3}$      | $\frac{\pi}{2}$ | • $\sin(x \pm 2k\pi) = \sin x$ | • $\sin(-x) = -\sin x$ | • $\tan x = \frac{\sin x}{\cos x}$ |
|----------|---|----------------------|----------------------|----------------------|-----------------|--------------------------------|------------------------|------------------------------------|
| $\sin x$ | 0 | $\frac{1}{2}$        | $\frac{\sqrt{2}}{2}$ | $\frac{\sqrt{3}}{2}$ | 1               | • $\cos(x \pm 2k\pi) = \cos x$ | • $\cos(-x) = \cos x$  | • $\cot x = \frac{\cos x}{\sin x}$ |
| $\cos x$ | 1 | $\frac{\sqrt{3}}{2}$ | $\frac{\sqrt{2}}{2}$ | $\frac{1}{2}$        | 0               | • $\tan(x \pm k\pi) = \tan x$  | • $\tan(-x) = -\tan x$ | • $\tan x \cdot \cot x = 1$        |
| $\tan x$ | 0 | $\frac{\sqrt{3}}{3}$ | 1                    | $\sqrt{3}$           | *               | • $\cot(x \pm k\pi) = \cot x$  | • $\cot(-x) = -\cot x$ | • $\sin^2 x \cdot \cos^2 x = 1$    |
| $\cot x$ | * | $\sqrt{3}$           | 1                    | $\frac{\sqrt{3}}{3}$ | 0               |                                |                        |                                    |

## Závorky

- $(a + b)^2 = a^2 + 2ab + b^2$
- $(a - b)^2 = a^2 - 2ab + b^2$
- $a^2 + b^2 = (a + b)(a + b)$
- $a^2 - b^2 = (a + b)(a - b)$
- $(a + b)^3 = a^3b^0 + 3a^2b^1 + 3a^1b^2 + a^0b^3$
- $(a - b)^3 = a^3b^0 - 3a^2b^1 + 3a^1b^2 - a^0b^3$
- $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
- $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

## Mocniny

- $a^{-n} = \frac{1}{a^n}$
- $a^{\frac{m}{n}} = \sqrt[n]{a^m}$
- $(a * b)^n = a^n * b^n$
- $a^m * a^n = a^{m+n}$
- $\frac{a^m}{a^n} = a^{m-n}$
- $(a^m)^n = a^{m*n}$
- $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$

## Odmocniny

- $\sqrt[n]{a} * \sqrt[n]{b} = \sqrt[n]{a * b}$
- $\frac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\frac{a}{b}}$
- $\sqrt[n]{a^m} = \sqrt[n]{a^m}$
- $\sqrt[n]{\sqrt[m]{a}} = \sqrt[n*m]{a}$

## Logaritmy

- $y = \log_a x \Leftrightarrow a^y = x$
- $\log_a \{x_1 * x_2\} = \log_a x_1 + \log_a x_2$
- $\log_a \left(\frac{x_1}{x_2}\right) = \log_a x_1 - \log_a x_2$
- $\log_a x^n = n * \log_a x$