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Greek Letters η and μ
 Fraction $\frac{a}{ab}$
 Power a^b
 Subscript $a_b, \mu_{max}, \mu_{min}$
 Derivate $\frac{\partial y}{\partial t}$
 Vector \vec{n}
 Bold **n**
 To time differential \dot{F}
 Funktionaler Bereich: $\forall x \in X, \quad \exists y \leq \epsilon$
 Greek letters: $\alpha, A, \beta, B, \gamma, \Gamma, \pi, \Pi, \phi, \varphi, \mu, \Phi$
 Operator:

$$\cos(2\theta) = \cos^2 \theta - \sin^2 \theta$$

$$\lim_{x \rightarrow \infty} f(x) = 0$$

Power and indices: $k_{n+1} = n^2 + k_n^2 - k_{n-1}$

$$f(n) = n^5 + 4n^2 + 2|_{n=17}$$

Fractions and Binomials:

$$\frac{n!}{k!(n-k)!} = \binom{n}{k}$$

$$\frac{\frac{1}{x} + \frac{1}{y}}{y - z} = x^{\frac{1}{2}}$$

$$\sqrt[n]{1+x+x^2+x^3+\frac{x}{2}+\ldots}$$

Sums and integrals:

$$\sum_{i=1}^{10} t_i$$

$$\int_0^\infty \mathrm{e}^{-x} \, \mathrm{d}x$$

$$\sum_{\substack{0\leq i\leq m\\ 0\leq j\leq n}}P(i,j)$$

Automatic sizing

$$\left(\frac{x^2}{y^3}\right)$$

$$P\left(A=2\left|\frac{A^2}{B}>4\right.\right)$$

$$\left.\frac{x^3}{3}\right|_0^1$$

Typesetting intervals

$$x\in[-1,1]$$

Matrix (lcr here means left, center or right for each column)

$$\left[\begin{array}{lll} a1 & b22 & c333 \\ a2 & b23 & f6 \end{array}\right]$$

$$A_{m,n}=\begin{pmatrix} a_{1,1} & a_{1,2} & \cdots & a_{1,n} \\ a_{2,1} & a_{2,2} & \cdots & a_{2,n} \\ \vdots & \vdots & \vdots & \vdots \\ a_{m,1} & a_{m,2} & \cdots & a_{m,n} \end{pmatrix}$$

$$M=\overset{x}{A}\overset{y}{B}\begin{pmatrix}1&0\\0&1\end{pmatrix}$$

A matrix in text must be set smaller: $\left(\begin{smallmatrix} a & b \\ c & d \end{smallmatrix}\right)$ to not increase leading in a portion of text.

Equations(here & is the symbol for aligning different rows)

$$a+b=c \tag{1}$$

$$d=e+f+g \tag{2}$$

Controlling horizontal spacing:

$$f(n)=\begin{cases} n/2 & \text{if } n \text{ is even} \\ -(n+1)/2 & \text{if } n \text{ is odd} \end{cases}$$

$$\begin{cases} a+b=c \\ d=e+f+g \end{cases}$$