

1 Operations

higher order roots	$\sqrt[m]{x+y} \quad \sqrt[3]{2}$	<code>\sqrt[mn]{x+y} \quad \quad \sqrt[3]{2}</code>
root sign	$\sqrt[x+y]$	<code>\surd[x+y]</code>
force large fraction	$\frac{a+b}{x+\log\frac{Y}{Z}}$	<code>\frac{a+b}{x+\log\dfrac{Y}{Z}}</code>
Continued fraction	$1 + \frac{2}{3 + \frac{4}{5 + \frac{6}{7 + \dots}}} = \frac{1}{\sqrt{e}-1}$	<code>1+\cfrac{2}{3+\cfrac{4}{5+\cfrac{6}{7+\dotsb}}}</code> <code>=</code> <code>\frac{1}{\sqrt{e}-1}</code>
prime	$y'' + y' + y = u$	<code>y'' + y' + y = u</code>
mod	$a \bmod n = b$ $a \equiv b \pmod{n}$ $a \equiv b \mod n$ $a \equiv b \pmod{n}$	<code>\begin{array}{l}</code> <code>a\bmod n = b \\</code> <code>a\equiv b\pmod n \\</code> <code>a\equiv b\mod n \\</code> <code>a\equiv b\pod n</code> <code>\end{array}</code>

2 Subscripts and superscripts

multilevel subscripts	$\sum_{\substack{1 \leq m \leq N, \\ m \text{ odd}}} P(m)$	<code>\sum_{\substack{1 \leq m \leq N, \\ m \text{ odd}}} P(m)</code>
sub- and superscripts before the symbol	${}_nC_k$	<code>{_n C_k}</code>
subscripts and superscripts for large symbols	\sum_c^a	<code>\sideset{^a_b}{'}{\sum}</code>

3 Sums, integrals, and products

contour integral	\oint_C	<code>\oint_C</code>
double and triple integrals	$\iint_S \iiint_S$	<code>\iint_S \quad \iiint_S</code>
even more integrals	$\iiint_S \int \cdots \int_S$	<code>\iiint_S \quad \idotsint_S</code>
integrals with alternative limit placement	$\int_{\alpha}^{\beta} \iint_S$	<code>\int\limits_{\alpha}^{\beta} \quad \iint\limits_S</code>
Unions and intersections	$\bigcup_{\alpha \in S} \bigcap_{V \in \mathfrak{V}}$	<code>\bigcup_{\alpha \in S} \quad \bigcap_{V \in \mathfrak{V}}</code>
Direct sums, co-products, and so on	$\odot \quad \oplus$ $\otimes \quad \sqcup$ $\oplus \quad \coprod$ $\vee \quad \wedge$	<pre> \begin{array}{c} \odot \quad \oplus \\ \otimes \quad \sqcup \\ \oplus \quad \coprod \\ \vee \quad \wedge \end{array} </pre>

4 Brackets

pairing brackets	$(), [], \{ \}$ $, \ \ $ $\lceil \rceil, \lfloor \rfloor$ $\langle \rangle$	<code>(\ ; \), [\ ; \], \{ \ ; \ }</code> <code>\lvert\ ; \rvert, \lVert\ ; \rVert</code> <code>\lceil\ ; \rceil, \lfloor\ ; \rfloor</code>
Bracket size can be specified explicitly	$\Bigl(\bigl(\Bigl(\bigl(\Bigr) \bigr) \Bigr) \bigr)$	<code>\Bigl(\ \bigr(\ \Bigl(\ \bigl(\quad \Bigr) \bigr) \Bigr) \bigr)</code> <code>\Biggr\} \ \biggr\} \ \Bigr\} \ \bigr\}</code>
visually to large	$\left[\sum_j \left \sum_i x_{ij} \right ^2 \right]^{1/2}$	<code>\left[\sum_j \left \sum_i x_{ij} \right ^2 \right]^{1/2}</code>

manually-sized	$\left[\sum_j \left \sum_i x_{ij} \right ^2 \right]^{1/2}$	<pre>\biggl[\sum_j \Bigl \sum_i x_{ij} \Bigr ^2 \biggr]^{1/2}</pre>
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5 Multiline formulas and piecewise functions

piecewise function/cases	$a_k = \begin{cases} k & \text{for } k \leq n/2 \\ n & \text{for } k = n/2 \\ k-1 & \text{otherwise} \end{cases}$	<pre>a_k = \begin{cases} k & \text{\texttt{\text{for } \$k \le n/2\$}} \\ n & \text{\texttt{\text{for } \$k=n/2\$}} \\ k-1 & \text{\texttt{\text{otherwise}}} \end{cases}</pre>
multiline equations(aligned at &)	$\begin{aligned} \tan^2 x &= \sin^2 x / \cos^2 x \\ &= 1 / \cos^2 x - 1 \end{aligned}$	<pre>\begin{split}\tan^2 x &= \sin^2 x / \cos^2 x \\ &= 1 / \cos^2 x - 1 \end{split}</pre>
Systems of equations	$\begin{cases} ax + by = r_1 \\ cx + dy = r_2 \end{cases}$	<pre>\left\{ \begin{array}{l} ax+by=r_1 \\ cx+dy=r_2 \end{array} \right.</pre>