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Supported Functions

This is a list of TeX functions supported by KaTeX. It is sorted into logical groups.

There is a similar [Support Table](#), sorted alphabetically, that lists both supported and un-supported functions.

Accents

$a'$ <code>a'</code>	$\tilde{a}$ <code>\tilde{a}</code>	$\mathring{g}$ <code>\mathring{g}</code>
$a''$ <code>a''</code>	$\widetilde{ac}$ <code>\widetilde{ac}</code>	$\overgroup{AB}$ <code>\overgroup{AB}</code>
$a^{\prime}$ <code>a^{\prime}</code>	$\utilde{AB}$ <code>\utilde{AB}</code>	$\undergroup{AB}$ <code>\undergroup{AB}</code>
$\acute{a}$ <code>\acute{a}</code>	$\vec{F}$ <code>\vec{F}</code>	$\overrightarrow{AB}$ <code>\overrightarrow{AB}</code>
$\bar{y}$ <code>\bar{y}</code>	$\overleftarrow{AB}$ <code>\overleftarrow{AB}</code>	$\overrightarrow{AB}$ <code>\overrightarrow{AB}</code>
$\breve{a}$ <code>\breve{a}</code>	$\underleftarrow{AB}$ <code>\underleftarrow{AB}</code>	$\underrightarrow{AB}$ <code>\underrightarrow{AB}</code>
$\check{a}$ <code>\check{a}</code>	$\overleftharpoonup{ac}$ <code>\overleftharpoonup{ac}</code>	$\overrightarrow{ac}$ <code>\overrightarrow{ac}</code>
$\dot{a}$ <code>\dot{a}</code>	$\overleftrightharpoonup{AB}$ <code>\overleftrightharpoonup{AB}</code>	$\overbrace{AB}$ <code>\overbrace{AB}</code>
$\ddot{a}$ <code>\ddot{a}</code>	$\underleftrightharpoonup{AB}$ <code>\underleftrightharpoonup{AB}</code>	$\underbrace{AB}$ <code>\underbrace{AB}</code>
$\grave{a}$ <code>\grave{a}</code>	$\overline{AB}$ <code>\overline{AB}</code>	$\overline{\hspace{0.5em}AB}$ <code>\overline{\hspace{0.5em}AB}</code>
$\hat{\theta}$ <code>\hat{\theta}</code>	$\underline{AB}$ <code>\underline{AB}</code>	$\underline{\hspace{0.5em}AB}$ <code>\underline{\hspace{0.5em}AB}</code>
$\widehat{ac}$ <code>\widehat{ac}</code>	$\widecheck{ac}$ <code>\widecheck{ac}</code>	$\underline{X}$ <code>\underline{X}</code>

Accent functions inside \text{...}

$\acute{a}$ <code>\'{a}</code>	$\tilde{a}$ <code>\~{a}</code>	$\grave{a}$ <code>\.`{a}</code>	$\breve{a}$ <code>\H{a}</code>
$\grave{a}$ <code>\`{a}</code>	$\bar{a}$ <code>\={a}</code>	$\breve{a}$ <code>\" {a}</code>	$\breve{a}$ <code>\v{a}</code>
$\hat{a}$ <code>\^{a}</code>	$\breve{a}$ <code>\u{a}</code>	$\breve{a}$ <code>\r{a}</code>	

See also [letters](#)

Delimiters

$()$ <code>()</code>	$()$ <code>\lparen \rparen</code>	$[]$ <code>[]</code>	$\lceil \rceil$ <code>\lceil \rceil</code>	$\uparrow$ <code>\uparrow</code>
$[\ ]$ <code>[\ ]</code>	$[\ ]$ <code>\lbrack \rbrack</code>	$[\ ]$ <code>[\ ]</code>	$\lfloor \rfloor$ <code>\lfloor \rfloor</code>	$\downarrow$ <code>\downarrow</code>
$\{ \}$ <code>\{ \}</code>	$\{ \}$ <code>\lbrace \rbrace</code>	$\int \int$ <code>\int \int</code>	$\int \int$ <code>\lmoustache \rmoustache</code>	$\updownarrow$ <code>\updownarrow</code>
$\langle \rangle$ <code>\langle \rangle</code>	$\langle \rangle$ <code>\langle \rangle</code>	$()$ <code>\langle \rangle</code>	$()$ <code>\lgroup \rgroup</code>	$\Uparrow$ <code>\Uparrow</code>
$   $ <code>   </code>	$ $ <code>\vert</code>	$\lceil \rceil$ <code>\lceil \rceil</code>	$\lceil \rceil$ <code>\ulcorner \urcorner</code>	$\Downarrow$ <code>\Downarrow</code>
$\  \backslash$ <code>\  \backslash</code>	$\ $ <code>\Vert</code>	$\llcorner \lrcorner$ <code>\llcorner \lrcorner</code>	$\llcorner \lrcorner$ <code>\llcorner \lrcorner</code>	$\Updownarrow$ <code>\Updownarrow</code>
$\  \backslash \vert$ <code>\  \backslash \vert</code>	$\  \backslash \Vert$ <code>\  \backslash \Vert</code>	$\left. \right.$ <code>\left. \right.</code>	$\right. \right.$ <code>\right. \right.</code>	$\backslash$ <code>\backslash</code>
$\langle \rangle$ <code>\lang \rang</code>	$< >$ <code>\lt \gt</code>	$[\ ]$ <code>[\ ]</code>	$[\ ]$ <code>\llbracket \rrbracket</code>	$\{ \}$ <code>\lBrace \rBrace</code>

Delimiter Sizing

$(AB)$  `\left(\LARGE{AB}\right)`

$((((($  `( \big( \Big( \Bigg(`

<code>\left</code>	<code>\big</code>	<code>\bigl</code>	<code>\bigm</code>	<code>\bigr</code>
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<code>\right</code>	<code>\bigg</code>	<code>\biggl</code>	<code>\biggm</code>	<code>\biggr</code>
	<code>\Bigg</code>	<code>\Biggl</code>	<code>\Biggm</code>	<code>\Biggr</code>

## Environments

$\begin{matrix} a & b \\ c & d \end{matrix}$	<pre>\begin{matrix} a &amp; b \\ c &amp; d \end{matrix}</pre>	$\begin{matrix} a & b \\ c & d \end{matrix}$	<pre>\begin{array}{cc} a &amp; b \\ c &amp; d \end{array}</pre>
$\begin{pmatrix} a & b \\ c & d \end{pmatrix}$	<pre>\begin{pmatrix} a &amp; b \\ c &amp; d \end{pmatrix}</pre>	$\begin{bmatrix} a & b \\ c & d \end{bmatrix}$	<pre>\begin{bmatrix} a &amp; b \\ c &amp; d \end{bmatrix}</pre>
$\begin{vmatrix} a & b \\ c & d \end{vmatrix}$	<pre>\begin{vmatrix} a &amp; b \\ c &amp; d \end{vmatrix}</pre>	$\begin{Vmatrix} a & b \\ c & d \end{Vmatrix}$	<pre>\begin{Vmatrix} a &amp; b \\ c &amp; d \end{Vmatrix}</pre>
$\left\{ \begin{matrix} a & b \\ c & d \end{matrix} \right\}$	<pre>\begin{Bmatrix} a &amp; b \\ c &amp; d \end{Bmatrix}</pre>	$\begin{array}{ccc ccc} a & b & c & & & \\ \hline d & e & f & & & \\ \hdashline g & h & i & & & \end{array}$	<pre>\def\arraystretch{1.5} \begin{array}{c:c:c} a &amp; b &amp; c \\ \hline d &amp; e &amp; f \\ \hdashline g &amp; h &amp; i \end{array}</pre>
$x = \begin{cases} a & \text{if } b \\ c & \text{if } d \end{cases}$	<pre>x = \begin{cases} a &amp; \text{\text{if } b} \\ c &amp; \text{\text{if } d} \end{cases}</pre>	$\begin{cases} a & \text{if } b \\ c & \text{if } d \end{cases} \Rightarrow \dots$	<pre>\begin{rcases} a &amp; \text{\text{if } b} \\ c &amp; \text{\text{if } d} \end{rcases} \Rightarrow \dots</pre>
$\begin{smallmatrix} a & b \\ c & d \end{smallmatrix}$	<pre>\begin{smallmatrix} a &amp; b \\ c &amp; d \end{smallmatrix}</pre>	$\sum_{\substack{i \in \Lambda \\ 0 < j < n}}$	<pre>\sum_{ \begin{subarray}{l} i \in \Lambda \\ 0 &lt; j &lt; n \end{subarray}} \end{subarray}}</pre>

The auto-render extension will render the following environments even if they are not inside math delimiters such as `$$...$$`. They are display-mode only.

$\begin{aligned} a &= b + c \\ &= e + f \end{aligned} \quad (1)$	<pre>\begin{equation} \begin{split} a &amp;= b + c \\ &amp;= e + f \end{split} \end{equation}</pre>	$\begin{aligned} a &= b + c & (2) \\ d + e &= f & (3) \end{aligned}$	<pre>\begin{align} a &amp;= b + c \\ d + e &amp;= f \end{align}</pre>
$\begin{aligned} a &= b & (4) \\ e &= b + c & (5) \end{aligned}$	<pre>\begin{gather} a = b \\ e = b + c \end{gather}</pre>	$\begin{aligned} 10x + 3y &= 2 & (6) \\ 3x + 13y &= 4 & (7) \end{aligned}$	<pre>\begin{alignat}{2} 10x + 3y &amp;= 2 &amp; (6) \\ 3x + 13y &amp;= 4 &amp; (7) \end{alignat}</pre>
$\begin{array}{ccc} A & \xrightarrow{a} & B \\ b \downarrow & & \uparrow c \\ C & \xlongequal{\quad} & D \end{array}$	<pre>\begin{CD} A @&gt;a&gt;&gt; B \\ @VbVV @AAcA \\ C @= D \end{CD}</pre>		

## Other KaTeX Environments

Environments	How they differ from those shown above
<code>darray</code> , <code>dcases</code> , <code>drcases</code>	... apply <code>displaystyle</code>
<code>matrix*</code> , <code>pmatrix*</code> , <code>bmatrix*</code> , <code>Bmatrix*</code> , <code>vmatrix*</code> , <code>Vmatrix*</code>	... take an optional argument to set column alignment, as in <code>\begin{matrix*}[r]</code>
<code>equation*</code> , <code>gather*</code> , <code>align*</code> , <code>alignat*</code>	... have no automatic numbering.
<code>gathered</code> , <code>aligned</code> , <code>alignedat</code>	... do not need to be in display mode. ... have no automatic numbering. ... must be inside math delimiters in

Acceptable line separators include: `\\`, `\cr`, `\\[distance]`, and `\cr[distance]`. *Distance* can be written with any of the [KaTeX units](#).

The `{array}` environment supports `|` and `:` vertical separators.

The `{array}` environment does not yet support `\cline` or `\multicolumn`.

`\tag` can not yet be applied to individual environment rows.

## HTML

The following "raw HTML" features are potentially dangerous for untrusted inputs, so they are disabled by default, and attempting to use them produces the command names in red (which you can configure via the `errorColor` option). To fully trust your LaTeX input, you need to pass an option of `trust: true`; you can also enable just some of the commands or for just some URLs via the `trust` option.

$\text{K}\text{T}\text{E}\text{X}$	<code>\href{https://katex.org/}{\KaTeX}</code>
<a href="https://katex.org/">https://katex.org/</a>	<code>\url{https://katex.org/}</code>
	<code>\includegraphics[height=0.8em, totalheight=0.9em, width=0.9em, alt=KA logo]{https://katex.org/img/khan-academy.png}</code>
$x \dots \text{<span id="bar" class="enclosing">...x...</span>...}$	<code>\htmlId{bar}{x}</code>
$x \dots \text{<span class="enclosing foo">...x...</span>...}$	<code>\htmlClass{foo}{x}</code>
$\textcolor{red}{x} \dots \text{<span style="color: red;" class="enclosing">...x...</span>...}$	<code>\htmlStyle{color: red;}{x}</code>
$x \dots \text{<span data-foo="a" data-bar="b" class="enclosing">...x...</span>...}$	<code>\htmlData{foo=a, bar=b}{x}</code>

`\includegraphics` supports `height`, `width`, `totalheight`, and `alt` in its first argument. `height` is required.

HTML extension (`\html`-prefixed) commands are non-standard, so loosening `strict` option for `htmlExtension` is required.

## Letters and Unicode

### Greek Letters

Direct Input:  $\text{A}\text{B}\text{G}\text{D}\text{E}\text{Z}\text{H}\text{O}\text{I}\text{K}\text{A}\text{M}\text{N}\text{Ξ}\text{O}\text{Π}\text{P}\text{Σ}\text{Τ}\text{Υ}\text{Φ}\text{X}\text{Ψ}\text{Ω}$   $\alpha\beta\gamma\delta\epsilon\zeta\eta\theta\iota\kappa\lambda\mu\nu\xi\omicron\pi\rho\sigma\tau\upsilon\phi\chi\psi\omega\varepsilon\vartheta\varrho\varsigma\varphi$

$\text{A}$ <code>\Alpha</code>	$\text{B}$ <code>\Beta</code>	$\text{Γ}$ <code>\Gamma</code>	$\Delta$ <code>\Delta</code>
$\text{E}$ <code>\Epsilon</code>	$\text{Z}$ <code>\Zeta</code>	$\text{H}$ <code>\Eta</code>	$\Theta$ <code>\Theta</code>
$\text{I}$ <code>\Iota</code>	$\text{K}$ <code>\Kappa</code>	$\Lambda$ <code>\Lambda</code>	$\text{M}$ <code>\Mu</code>
$\text{N}$ <code>\Nu</code>	$\Xi$ <code>\Xi</code>	$\text{O}$ <code>\Omicron</code>	$\Pi$ <code>\Pi</code>
$\text{P}$ <code>\Rho</code>	$\Sigma$ <code>\Sigma</code>	$\text{T}$ <code>\Tau</code>	$\Upsilon$ <code>\Upsilon</code>
$\Phi$ <code>\Phi</code>	$\text{X}$ <code>\Chi</code>	$\Psi$ <code>\Psi</code>	$\Omega$ <code>\Omega</code>
$\Gamma$ <code>\varGamma</code>	$\Delta$ <code>\varDelta</code>	$\Theta$ <code>\varTheta</code>	$\Lambda$ <code>\varLambda</code>
$\Xi$ <code>\varXi</code>	$\Pi$ <code>\varPi</code>	$\Sigma$ <code>\varSigma</code>	$\Upsilon$ <code>\varUpsilon</code>
$\Phi$ <code>\varPhi</code>	$\Psi$ <code>\varPsi</code>	$\Omega$ <code>\varOmega</code>	
$\alpha$ <code>\alpha</code>	$\beta$ <code>\beta</code>	$\gamma$ <code>\gamma</code>	$\delta$ <code>\delta</code>
$\epsilon$ <code>\epsilon</code>	$\zeta$ <code>\zeta</code>	$\eta$ <code>\eta</code>	$\theta$ <code>\theta</code>
$\iota$ <code>\iota</code>	$\kappa$ <code>\kappa</code>	$\lambda$ <code>\lambda</code>	$\mu$ <code>\mu</code>
$\nu$ <code>\nu</code>	$\xi$ <code>\xi</code>	$\omicron$ <code>\omicron</code>	$\pi$ <code>\pi</code>
$\rho$ <code>\rho</code>	$\sigma$ <code>\sigma</code>	$\tau$ <code>\tau</code>	$\upsilon$ <code>\upsilon</code>
$\phi$ <code>\phi</code>	$\chi$ <code>\chi</code>	$\psi$ <code>\psi</code>	$\omega$ <code>\omega</code>
$\varepsilon$ <code>\varepsilon</code>	$\varkappa$ <code>\varkappa</code>	$\vartheta$ <code>\vartheta</code>	$\vartheta$ <code>\thetasym</code>
$\varpi$ <code>\varpi</code>	$\varrho$ <code>\varrho</code>	$\varsigma$ <code>\varsigma</code>	$\varphi$ <code>\varphi</code>

$\mathbb{Z}$ \imathmath	$\nabla$ \nablala	$\Im$ \Im	$\mathbb{R}$ \Reals	$\mathbb{E}$ \text{\OE}
$\mathcal{J}$ \jmath	$\partial$ \partialpartial	$\mathfrak{S}$ \image	$\wp$ \wp	$\emptyset$ \text{\o}
$\aleph$ \aleph	$\mathcal{G}$ \Game	$\mathbb{k}$ \Bbbk	$\wp$ \weierp	$\emptyset$ \text{\0}
$\alef$ \alef	$\mathcal{F}$ \Finv	$\mathbb{N}$ \N	$\mathbb{Z}$ \Z	$\beta$ \text{\ss}
$\alefsym$ \alefsym	$\mathbb{C}$ \cnums	$\mathbb{N}$ \natnums	$\mathring{a}$ \text{\aa}	$\mathfrak{i}$ \text{\i}
$\beth$ \beth	$\mathbb{C}$ \Complex	$\mathbb{R}$ \R	$\mathring{A}$ \text{\AA}	$\mathfrak{j}$ \text{\j}
$\gimel$ \gimel	$\ell$ \ell	$\Re$ \Re	$\mathfrak{ae}$ \text{\ae}	
$\daleth$ \daleth	$\hbar$ \hbar	$\Re$ \real	$\mathfrak{AE}$ \text{\AE}	
$\eth$ \eth	$\hslash$ \hslash	$\mathbb{R}$ \reals	$\mathfrak{oe}$ \text{\oe}	

Item	Range	Item	Range
Bold	<b>A-Z a-z 0-9</b>	Double-struck	A-Z k
Italic	<i>A-Z a-z</i>	Sans serif	A-Z a-z 0-9
Bold Italic	<b><i>A-Z a-z</i></b>	Sans serif bold	<b>A-Z a-z 0-9</b>
Script	<i>Œ ™</i>	Sans serif italic	<i>A-Z a-z</i>
Fraktur	Œ ™ a-z	Monospace	A-Z a-z 0-9

$\cancel{5}$	$\overbrace{a+b+c}^{\text{note}}$
$\bcancel{5}$	$\underbrace{a+b+c}_{\text{note}}$
<del>ABC</del> $\xcancel{ABC}$	$\neq$
<del>abc</del> $\sout{abc}$	$\boxed{\pi = \frac{c}{d}}$
$a_{\overline{n}}$ $\$a_{\angl n}$	$a_{\overline{n}}$ $a_{\angln}$
$\angle -78^\circ$ $\phase{-78^\circ}$	

$$\tag*{hi} \quad x+y^{\{2x\}}$$

## Line Breaks

KaTeX 0.10.0+ will insert automatic line breaks in inline math after relations or binary operators such as “=” or “+”. These can be suppressed by `\nobreak` or by placing math inside a pair of braces, as in `{F=ma}`. `\allowbreak` will allow automatic line breaks at locations other than relations or operators.

Hard line breaks are `\\` and `\newline`.

In display math, KaTeX does not insert automatic line breaks. It ignores display math hard line breaks when rendering option `strict: true`.

## Vertical Layout

$x_n$	<code>x_n</code>	$\stackrel{!}{=}$	<code>\stackrel{!}{=}</code>	$\frac{a}{b}$	<code>a \atop b</code>
$e^x$	<code>e^x</code>	$\overset{!}{=}$	<code>\overset{!}{=}</code>	$a^b c$	<code>a\raisebox{0.25em}{\$b\$}c</code>
${}_u^o$	<code>{}_u^o</code>	$\underset{!}{=}$	<code>\underset{!}{=}</code>	$a + \left(\frac{a}{c}\right)$	<code>a+\left(\vcenter{\hbox{\$\frac{a}{c}\$}}\right)</code>
				$\sum_{0 < i < m, 0 < j < n}$	<code>\sum_{\substack{0 &lt; i &lt; m \\ 0 &lt; j &lt; n}}</code>

`\raisebox` and `\hbox` put their argument into text mode. To raise math, nest `$_$` delimiters inside the argument as shown above.

`\vcenter` can be written without an `\hbox` if the `strict` rendering option is *false*. In that case, omit the nested `$_$` delimiters.

## Overlap and Spacing

$\neq$	<code>\mathllap{/}</code>	$(x^2)$	<code>\left(x^{\smash{2}}\right)</code>
$\neq$	<code>\mathrlap{/}</code>	$\sqrt{y}$	<code>\sqrt{\smash[b]{y}}</code>

$$\sum_{1 \leq i \leq j \leq n} x_{ij} \quad \text{\texttt{\code{\sum_{\mathclap{1 \le i \le j \le n}}} x_{\{ij\}}}}$$

KaTeX also supports `\llap`, `\rlap`, and `\clap`, but they will take only text, not math, as arguments.

## Spacing

Function	Produces	Function	Produces
<code>\,</code>	$\frac{1}{8}$ em space	<code>\kern{distance}</code>	space, width = <i>distance</i>
<code>\thinspace</code>	$\frac{1}{8}$ em space	<code>\mkern{distance}</code>	space, width = <i>distance</i>
<code>\&gt;</code>	$\frac{1}{8}$ em space	<code>\mskip{distance}</code>	space, width = <i>distance</i>
<code>\:</code>	$\frac{1}{8}$ em space	<code>\hskip{distance}</code>	space, width = <i>distance</i>
<code>\medspace</code>	$\frac{1}{8}$ em space	<code>\hspace{distance}</code>	space, width = <i>distance</i>
<code>\;</code>	$\frac{1}{8}$ em space	<code>\hspace*{distance}</code>	space, width = <i>distance</i>
<code>\thickspace</code>	$\frac{5}{8}$ em space	<code>\phantom{content}</code>	space the width and height of content
<code>\enspace</code>	$\frac{1}{2}$ em space	<code>\hphantom{content}</code>	space the width of content
<code>\quad</code>	1 em space	<code>\vphantom{content}</code>	a strut the height of content
<code>\qquad</code>	2 em space	<code>\!</code>	– $\frac{1}{8}$ em space
<code>\sim</code>	non-breaking space	<code>\negthinspace</code>	– $\frac{1}{8}$ em space
<code>\&lt;space&gt;</code>	space	<code>\negmedspace</code>	– $\frac{1}{8}$ em space
<code>\nobreakspace</code>	non-breaking space	<code>\negthickspace</code>	– $\frac{5}{8}$ em space
<code>\space</code>	space	<code>\mathstrut</code>	<code>\vphantom{ }</code>

### Notes:

`distance` will accept any of the [KaTeX units](#).

## Logic and Set Theory

$\forall$ \forallforall	$\complement$ \complement	$\therefore$ \therefore	$\emptyset$ \emptyset
$\exists$ \existsexists	$\subset$ \subset	$\because$ \because	$\emptyset$ \emptyset
$\exists$ \exist	$\supset$ \supset	$\mapsto$ \mapsto	$\varnothing$ \varnothing
$\nexists$ \nexists	$\mid$ \mid	$\rightarrow$ \to	$\implies$ \implies
$\in$ \in	$\wedge$ \wedge	$\leftarrow$ \leftarrow	$\impliedby$ \impliedby
$\in$ \isin	$\vee$ \vee	$\leftrightarrow$ \leftrightarrow	$\iff$ \iff
$\notin$ \notin	$\ni$ \ni	$\nrightarrow$ \nrightarrow	$\neg$ \neg or \not

## Macros

$x^2 + x^2$	<code>\def\foo{x^2} \foo + \foo</code>
$y^2 + y^2$	<code>\gdef\bar#1{x^2} \bar{y} + \bar{y}</code>
	<code>\edef\macroname#1#2...{definition to be expanded}</code>
	<code>\xdef\macroname#1#2...{definition to be expanded}</code>
	<code>\let\foo=\bar</code>
	<code>\futurelet\foo\bar x</code>
	<code>\global\def\macroname#1#2...{definition}</code>
	<code>\newcommand\macroname[numargs]{definition}</code>
	<code>\renewcommand\macroname[numargs]{definition}</code>
	<code>\providecommand\macroname[numargs]{definition}</code>

Macros accept up to nine arguments: #1, #2, etc.

KaTeX has no `\par`, so all macros are long by default and `\long` will be ignored.

Available functions include:

@ is a valid character for commands, as if \makeatletter were in effect.

## Operators

## Big Operators

$\sum$ \sum	$\prod$ \prod	$\bigotimes$ \bigotimes	$\bigvee$ \bigvee
$\int$ \int	$\coprod$ \coprod	$\bigoplus$ \bigoplus	$\bigwedge$ \bigwedge
$\iint$ \iint	$\int$ \intop	$\odot$ \odot	$\bigcap$ \bigcap
$\iiint$ \iiint	$\int$ \smallint	$\biguplus$ \biguplus	$\bigcup$ \bigcup
$\oint$ \oint	$\oiint$ \oiint	$\oiint$ \oiint	$\bigsqcup$ \bigsqcup

## Binary Operators

$\dot{+}$	<code>\cdot</code>	$\gtrdot$	$x \pmod a$
$\dot{-}$	<code>\cdot</code>	$\intercal$	$x \pmod a$

$\amalg$	$\circledast$	$\cdot$	$\rtimes$
$\And$	$\circledcirc$	$\vee$	$\setminus$
$\ast$	$\circledR$	$\lessdot$	$\smallsetminus$
$\barwedge$	$\cup$	$\lhd$	$\sqcap$
$\bigcirc$	$\cup$	$\ltimes$	$\sqcup$
$\bmod$	$\curlyvee$	$x \bmod a$	$\times$
$\boxdot$	$\curlywedge$	$\mp$	$\unlhd$
$\boxminus$	$\div$	$\odot$	$\unrhd$
$\boxplus$	$\divideontimes$	$\ominus$	$\uplus$
$\boxtimes$	$\dotplus$	$\oplus$	$\vee$
$\bullet$	$\doublebarwedge$	$\otimes$	$\veebar$
$\Cap$	$\doublecap$	$\oslash$	$\wedge$
$\cap$	$\doublecup$	$\pm$ or $\pm$	$\wr$

Direct Input:  $+ - / * \cdot \pm \times \div \mp \pm \wedge \vee \cap \cup \wr \oplus \otimes \oslash \odot \ominus \ominus \bigcirc$

Fractions and Binomials

$\frac{a}{b}$	$\tfrac{a}{b}$	$\left(\frac{a}{a+1}\right)$
$\frac{a}{b}$ {a over b}	$\dfrac{a}{b}$	$\frac{a}{b+1}$ {a above 2pt b+1}
$a/b$ a/b		$\frac{a}{1 + \frac{1}{b}}$

$\binom{n}{k}$	$\dbinom{n}{k}$	$\{n\}_k$
$\binom{n}{k}$ {n choose k}	$\tbinom{n}{k}$	$[n]_k$

Math Operators

$\arcsin$	$\operatorname{cosec}$	$\deg$	$\sec$
$\arccos$	$\cosh$	$\dim$	$\sin$
$\arctan$	$\cot$	$\exp$	$\sinh$
$\operatorname{arctg}$	$\cotg$	$\operatorname{hom}$	$\operatorname{sh}$
$\operatorname{arctg}$	$\coth$	$\ker$	$\tan$
$\arg$	$\csc$	$\lg$	$\tanh$
$\operatorname{ch}$	$\operatorname{ctg}$	$\ln$	$\operatorname{tg}$
$\cos$	$\operatorname{cth}$	$\log$	$\operatorname{th}$
$\operatorname{f}$			
$\operatorname{argmax}$	$\operatorname{injlim}$	$\min$	$\varinjlim$
$\operatorname{argmin}$	$\lim$	$\operatorname{plim}$	$\varliminf$
$\det$	$\liminf$	$\operatorname{Pr}$	$\varlimsup$
$\gcd$	$\limsup$	$\operatorname{projlim}$	$\varprojlim$
$\inf$	$\max$	$\sup$	
$\operatorname{f}$	$\operatorname{f}$		

Functions in the bottom six rows of this table can take  $\operatorname{limits}$ .

$\sqrt{x}$

$\sqrt{x}$

$\sqrt[3]{x}$

$\stackrel{!}{=} \backslash\text{stackrel}\{\!\!\!=\}$ 

$\approx$	$\dot{=}$	$\lesssim$	$\smile$
$\lessgtr$	$\eqcirc$	$\lesseqgtr$	$\sqsubset$
$\gtr$	$\colon$ or $\minuscolon$	$\lesseqqgtr$	$\sqsubseteq$
$\gtrdot$	$\colon$ or $\minuscoloncolon$	$\lessgtr$	$\sqsupset$
$\approx$	$\eqcolon$ or $\equalscolon$	$\lesssim$	$\sqsupseteq$
$\approxeq$	$\Eqqcolon$ or $\Equalscoloncolon$	$\ll$	$\Subset$
$\approxcoloncolon$	$\eqsim$	$\lll$	$\subset$ or $\sub$
$\approxeq$	$\gtrslantgtr$	$\llless$	$\subsetset$ or $\sube$
$\asymp$	$\gtrslantless$	$\lt$	$\subseteq$
$\backepsilon$	$\equiv$	$\mid$	$\succ$
$\backsimeq$	$\fallingdotseq$	$\models$	$\succapprox$
$\backsimeq$	$\frown$	$\multimap$	$\succcurlyeq$
$\between$	$\ge$	$\origo$	$\succeq$
$\bowtie$	$\geq$	$\owns$	$\succsim$
$\bumpeq$	$\geqq$	$\parallel$	$\supset$
$\Bumpeq$	$\geqslant$	$\perp$	$\supset$
$\circeq$	$\gg$	$\pitchfork$	$\supseteq$ or $\supe$
$\colonapprox$	$\ggg$	$\prec$	$\supseteqq$
$\Colonapprox$ or $\coloncolonapprox$	$\gggtr$	$\precapprox$	$\thickapprox$
$\coloneq$ or $\colonminus$	$\gt$	$\preccurlyeq$	$\thicksim$
$\Coloneq$ or $\coloncolonminus$	$\gtrapprox$	$\preceq$	$\triangleleft$
$\coloneqq$ or $\colonequals$	$\gtreqless$	$\precsim$	$\triangle$
$\Coloneqq$ or $\coloncolonlonequals$	$\gtreqqless$	$\propto$	$\triangleright$
$\colonsim$	$\gtrless$	$\risingdotseq$	$\varpropto$
$\Colonsim$ or $\coloncolonlonsim$	$\gtrsim$	$\shortmid$	$\vartriangle$
$\cong$	$\imageof$	$\shortparallel$	$\vartriangleleft$
$\curlyeqprec$	$\in$ or $\isin$	$\sim$	$\vartriangleright$
$\curlyeqsucc$	$\Join$	$\simcolon$	$\vcntcolon$ or $\ratio$
$\dashv$	$\le$	$\simcoloncolon$	$\vdash$
$\dblcolon$ or $\coloncolon$	$\leq$	$\simeq$	$\Vdash$
$\doteq$	$\leqq$	$\smallfrown$	$\Vdash$
$\Doteq$	$\leslant$	$\smallsmile$	$\Vvdash$

[illegible]

## Negated Relations



$\approx$ <code>\napprox</code>	$\ngeqslant$ <code>\ngeqslant</code>	$\nsubseteq$ <code>\nsubseteq</code>	$\nprecneq$ <code>\nprecneq</code>
$\gneq$ <code>\gneq</code>	$\ngtr$ <code>\ngtr</code>	$\nsubseteqq$ <code>\nsubseteqq</code>	$\nprecnsim$ <code>\nprecnsim</code>
$\gneqq$ <code>\gneqq</code>	$\nleq$ <code>\nleq</code>	$\nsucc$ <code>\nsucc</code>	$\subsetneq$ <code>\subsetneq</code>
$\gnsim$ <code>\gnsim</code>	$\nleqq$ <code>\nleqq</code>	$\nsucceq$ <code>\nsucceq</code>	$\subsetneqq$ <code>\subsetneqq</code>
$\gvertneqq$ <code>\gvertneqq</code>	$\nleqslant$ <code>\nleqslant</code>	$\nsupseteq$ <code>\nsupseteq</code>	$\succapprox$ <code>\succapprox</code>
$\lnapprox$ <code>\lnapprox</code>	$\nless$ <code>\nless</code>	$\nsupseteqq$ <code>\nsupseteqq</code>	$\succneqq$ <code>\succneqq</code>
$\lneq$ <code>\lneq</code>	$\nmid$ <code>\nmid</code>	$\ntriangleleft$ <code>\ntriangleleft</code>	$\succsim$ <code>\succsim</code>
$\lneqq$ <code>\lneqq</code>	$\notin$ <code>\notin</code>	$\ntrianglelefteq$ <code>\ntrianglelefteq</code>	$\supsetneq$ <code>\supsetneq</code>
$\lnsim$ <code>\lnsim</code>	$\notni$ <code>\notni</code>	$\ntriangleright$ <code>\ntriangleright</code>	$\supsetneqq$ <code>\supsetneqq</code>
$\lvertneqq$ <code>\lvertneqq</code>	$\nparallel$ <code>\nparallel</code>	$\ntrianglerighteq$ <code>\ntrianglerighteq</code>	$\varsubsetneq$ <code>\varsubsetneq</code>
$\ncong$ <code>\ncong</code>	$\nprec$ <code>\nprec</code>	$\nvdash$ <code>\nvdash</code>	$\varsubsetneqq$ <code>\varsubsetneqq</code>
$\ne$ <code>\ne</code>	$\npreceq$ <code>\npreceq</code>	$\nvdash$ <code>\nvdash</code>	$\varsupsetneq$ <code>\varsupsetneq</code>
$\neq$ <code>\neq</code>	$\nshortmid$ <code>\nshortmid</code>	$\nVDash$ <code>\nVDash</code>	$\varsupsetneqq$ <code>\varsupsetneqq</code>
$\ngeq$ <code>\ngeq</code>	$\nshortparallel$ <code>\nshortparallel</code>	$\nVdash$ <code>\nVdash</code>	
$\ngeqq$ <code>\ngeqq</code>	$\nsim$ <code>\nsim</code>	$\nprecnapprox$ <code>\nprecnapprox</code>	

Direct Input:  $\approx \ngeqslant \nsubseteq \nprecneq \gneq \ngtr \nsubseteqq \nprecnsim \gneqq \nleq \nsucc \subsetneq \gnsim \nleqq \nsucceq \subsetneqq \gvertneqq \nleqslant \nsupseteq \succapprox \lnapprox \nless \nsupseteqq \succneqq \lneq \nmid \ntriangleleft \succsim \lneqq \notin \ntrianglelefteq \supsetneq \lnsim \notni \ntriangleright \supsetneqq \lvertneqq \nparallel \ntrianglerighteq \varsubsetneq \ncong \nprec \nvdash \varsubsetneqq \ne \npreceq \nvdash \varsupsetneq \neq \nshortmid \nVDash \varsupsetneqq \ngeq \nshortparallel \nVdash \nprecnapprox$

## Arrows

$\circlearrowleft$ <code>\circlearrowleft</code>	$\leftharpoonup$ <code>\leftharpoonup</code>	$\Rightarrow$ <code>\rArr</code>
$\circlearrowright$ <code>\circlearrowright</code>	$\leftleftarrows$ <code>\leftleftarrows</code>	$\rightarrow$ <code>\rarr</code>
$\curvearrowleft$ <code>\curvearrowleft</code>	$\leftrightarrow$ <code>\leftrightharpoonup</code>	$\restriction$ <code>\restriction</code>
$\curvearrowright$ <code>\curvearrowright</code>	$\Leftrightarrow$ <code>\Leftrightarrow</code>	$\rightarrow$ <code>\rightarrow</code>
$\Darr$ <code>\Darr</code>	$\leftrightharpoons$ <code>\leftrightharpoons</code>	$\Rightarrow$ <code>\Rightarrow</code>
$\dArr$ <code>\dArr</code>	$\leftrightharpoons$ <code>\leftrightharpoons</code>	$\rightarrowtail$ <code>\rightarrowtail</code>
$\darr$ <code>\darr</code>	$\leftrightsquigarrow$ <code>\leftrightsquigarrow</code>	$\rightharpoonup$ <code>\rightharpoonup</code>
$\dashleftarrow$ <code>\dashleftarrow</code>	$\Lleftarrow$ <code>\Lleftarrow</code>	$\rightarrowtail$ <code>\rightarrowtail</code>
$\dashrightarrow$ <code>\dashrightarrow</code>	$\Longleftarrow$ <code>\Longleftarrow</code>	$\rightleftarrows$ <code>\rightleftarrows</code>
$\downarrow$ <code>\downarrow</code>	$\Longleftarrow$ <code>\Longleftarrow</code>	$\rightleftharpoons$ <code>\rightleftharpoons</code>
$\Downarrow$ <code>\Downarrow</code>	$\longleftrightarrow$ <code>\longleftrightarrow</code>	$\rightrightarrows$ <code>\rightrightarrows</code>
$\downdownarrows$ <code>\downdownarrows</code>	$\Longleftrightarrow$ <code>\Longleftrightarrow</code>	$\rightsquigarrow$ <code>\rightsquigarrow</code>
$\downharpoonleft$ <code>\downharpoonleft</code>	$\longmapsto$ <code>\longmapsto</code>	$\Rightarrow$ <code>\Rightarrow</code>
$\downharpoonright$ <code>\downharpoonright</code>	$\longrightarrow$ <code>\longrightarrow</code>	$\Rsh$ <code>\Rsh</code>
$\gets$ <code>\gets</code>	$\Longrightarrow$ <code>\Longrightarrow</code>	$\searrow$ <code>\searrow</code>
$\Harr$ <code>\Harr</code>	$\looparrowleft$ <code>\looparrowleft</code>	$\swarrow$ <code>\swarrow</code>
$\hArr$ <code>\hArr</code>	$\looparrowright$ <code>\looparrowright</code>	$\rightarrow$ <code>\rightarrow</code>
$\harr$ <code>\harr</code>	$\Lrarr$ <code>\Lrarr</code>	$\twoheadleftarrow$ <code>\twoheadleftarrow</code>
$\hookleftarrow$ <code>\hookleftarrow</code>	$\LrArr$ <code>\LrArr</code>	$\twoheadrightarrow$ <code>\twoheadrightarrow</code>
$\hookrightarrow$ <code>\hookrightarrow</code>	$\lrarr$ <code>\lrarr</code>	$\Uarr$ <code>\Uarr</code>
$\iff$ <code>\iff</code>	$\Lsh$ <code>\Lsh</code>	$\Uarr$ <code>\Uarr</code>
$\impliedby$ <code>\impliedby</code>	$\mapsto$ <code>\mapsto</code>	$\Uarr$ <code>\Uarr</code>
$\implies$ <code>\implies</code>	$\nearrow$ <code>\nearrow</code>	$\Uparrow$ <code>\Uparrow</code>
$\Larr$ <code>\Larr</code>	$\nleftarrow$ <code>\nleftarrow</code>	$\Uparrow$ <code>\Uparrow</code>
$\LArr$ <code>\LArr</code>	$\nLeftarrow$ <code>\nLeftarrow</code>	$\Uparrow$ <code>\Uparrow</code>
$\larr$ <code>\larr</code>	$\nleftrightharpoonup$ <code>\nleftrightharpoonup</code>	$\Uparrow$ <code>\Uparrow</code>
$\leadsto$ <code>\leadsto</code>	$\nLeftrightarrow$ <code>\nLeftrightarrow</code>	$\upharpoonleft$ <code>\upharpoonleft</code>
$\leftarrow$ <code>\leftarrow</code>	$\rightarrow$ <code>\rightarrow</code>	$\upharpoonright$ <code>\upharpoonright</code>
$\Leftarrow$ <code>\Leftarrow</code>	$\Rightarrow$ <code>\Rightarrow</code>	$\Uparrow$ <code>\Uparrow</code>

## Extensible Arrows

$\xleftarrow{abc}$	$\xrightarrow[under]{over}$
$\xLeftarrow{abc}$	$\xRightarrow{abc}$
$\xleftrightarrow{abc}$	$\xLeftrightarrow{abc}$
$\xhookrightarrow{abc}$	$\xhookrightarrow{abc}$
$\xtwoheadleftarrow{abc}$	$\xtwoheadrightarrow{abc}$
$\xleftharpoonup{abc}$	$\xrightharpoonup{abc}$
$\xleftharpoondown{abc}$	$\xrightharpoondown{abc}$
$\xleftrightharpoons{abc}$	$\xrightleftharpoons{abc}$
$\xrightarrowfrom{abc}$	$\xmapsto{abc}$
$\xlongequal{abc}$	

## Special Notation

$\langle \phi  $	$ \psi\rangle$	$\langle \phi   \psi \rangle$
$\langle \phi  $	$ \psi\rangle$	

### Class Assignment

**Color**

Note that `\color` acts like a switch. Other color functions expect the content to be a function argument:

Note that, as in LaTeX, `\colorbox` & `\fcolorbox` renders its third argument as text, so you may want to switch back to math mode with `$` as in the examples above.

## Font

$\mathrm{Ab0}$	$\mathbf{Ab0}$	$\mathit{Ab0}$
$\mathnormal{Ab0}$	$\textbf{Ab0}$	$\textit{Ab0}$
$\textrm{Ab0}$	$\bf Ab0$	$\it Ab0$
$\rm Ab0$	$\boldsymbol{Ab0}$	$\textup{Ab0}$
$\textnormal{Ab0}$	$\boldsymbolsymbol{Ab}$	$\mathbb{Bb}\{AB\}$
$\text{Ab0}$	$\bm{Ab0}$	$\mathbb{B}\mathbb{b}\{AB\}$
$\mathsf{Ab0}$	$\textmd{Ab0}$	$\mathfrak{Ab0}$
$\textsf{Ab0}$	$\mathtt{Ab0}$	$\mathfrak{Ab0}$

	<code>ABO \let ABO</code>	<code>ABO \let ABO</code>
		<code>AB \mathscr{AB}</code>

One can stack font family, font weight, and font shape by using the `\textXX` versions of the font functions. So `\textsf{\textbf{H}}` will produce **H**. The other versions do not stack, e.g., `\mathsf{\mathbf{H}}` will produce **H**.

In cases where KaTeX fonts do not have a bold glyph, `\pmb` can simulate one. For example, `\pmb{\mu}` renders as : **μ**

Size

<code>AB \huge AB</code>	<code>AB \normalsize AB</code>
<code>AB \huge AB</code>	<code>AB \small AB</code>
<code>AB \LARGE AB</code>	<code>AB \footnotesize AB</code>
<code>AB \Large AB</code>	<code>AB \scriptsize AB</code>
<code>AB \large AB</code>	<code>AB \tiny AB</code>

























Style

<code>\sum_{i=1}^n \displaystyle \sum_{i=1}^n</code>
<code>\sum_{i=1}^n \textstyle \sum_{i=1}^n</code>
<code>x \scriptstyle x</code> (The size of a first sub/superscript)
<code>x \scriptscriptstyle x</code> (The size of subsequent sub/superscripts)
<code>\lim_x \lim \limits_x</code>
<code>\lim_x \lim \nolimits_x</code>
<code>x^2 \verb!x^2!</code>

`\text{...}` will accept nested `$...$` fragments and render them in math mode.

Symbols and Punctuation

<code>% comment</code>	<code>... \dots</code>	<code>KaTeX \KaTeX</code>
<code>%_0 \%</code>	<code>... \cdots</code>	<code>LaTeX \LaTeX</code>
<code># \#</code>	<code>... \ddots</code>	<code>TeX \TeX</code>
<code>&amp; \&amp;</code>	<code>... \ldots</code>	<code>\nabla \nabla</code>
<code>- \_</code>	<code>... \vdots</code>	<code>\infty \infty</code>
<code>- \text{\textunderscore}</code>	<code>... \dotsb</code>	<code>\infin \infin</code>
<code>- \text{\text{--}}</code>	<code>... \dotsc</code>	<code>\checkmark \checkmark</code>
<code>- \text{\textendash}</code>	<code>... \dotso</code>	<code>\dag \dag</code>
<code>- \text{\text{---}}</code>	<code>... \dotsm</code>	<code>\dagger \dagger</code>
<code>- \text{\textemdash}</code>	<code>... \dotso</code>	<code>\text{\textdagger} \text{\textdagger}</code>
<code>~ \text{\textasciitilde}</code>	<code>... \sdot</code>	<code>\ddag \ddag</code>
<code>^ \text{\textasciicircum}</code>	<code>... \mathellipsis</code>	<code>\ddagger \ddagger</code>
<code>‘ ’</code>	<code>... \text{\textellipsis}</code>	<code>\text{\textdaggerdbl} \text{\textdaggerdbl}</code>
<code>‘ \text{\textquoteleft}</code>	<code>\Box \Box</code>	<code>\dagger \dagger</code>
<code>‘ \lq</code>	<code>\square \square</code>	<code>\angle \angle</code>
<code>’ \text{\textquoteright}</code>	<code>\blacksquare \blacksquare</code>	<code>\measuredangle \measuredangle</code>
<code>’ \rq</code>	<code>\triangle \triangle</code>	<code>\sphericalangle \sphericalangle</code>
<code>“ \text{\textquotedblleft}</code>	<code>\triangledown \triangledown</code>	<code>\top \top</code>
<code>” ”</code>	<code>\triangleleft \triangleleft</code>	<code>\bot \bot</code>

<code>\bigodot</code>		<code>\text{\textbigodot}</code>
<code>\backprime</code>		<code>\pounds</code>
<code>\prime</code>		<code>\mathsterling</code>
<code>&lt; \text{\textless}</code>		<code>\text{\textsterling}</code>
<code>&gt; \text{\textgreater}</code>		<code>\yen</code>
<code>  \text{\textbar}</code>		<code>\surd</code>
<code>   \text{\textbardbl}</code>		<code>^{\circ}</code>
<code>{ \text{\textbraceleft}</code>		<code>^{\circ} \text{\textdegree}</code>
<code>} \text{\textbraceright}</code>		<code>\mho</code>
<code>\ \text{\textbackslash}</code>		<code>\diagdown</code>
<code>\P \text{\P} or \P</code>		<code>\diagup</code>
<code>\S \text{\S} or \S</code>		<code>\flat</code>
<code>\S \text{\sect}</code>		
<code>\C \copyright</code>		
<code>\R \circledR</code>		
<code>\R \text{\textregistered}</code>		
<code>\S \circledS</code>		
<code>\a \text{\textcircled a}</code>		

Direct Input: § ¶ £ ¥ ∇ ∞ · ∠ ◊ ♠ ♥ ♦ ♣ ♢ ♡ ✓ ... ⋮ ⋯ ⋰ ⋱ ! !! ⊕

## Units

In KaTeX, units are proportioned as they are in TeX.

KaTeX units are different than CSS units.










KaTeX Unit	Value	KaTeX Unit	Value
em	CSS em	bp	$1/72 \text{ inch} \times F \times G$
ex	CSS ex	pc	12 KaTeX pt
mu	1/18 CSS em	dd	1238/1157 KaTeX pt
pt	$1/72.27 \text{ inch} \times F \times G$	cc	14856/1157 KaTeX pt
mm	$1 \text{ mm} \times F \times G$	nd	685/642 KaTeX pt
cm	$1 \text{ cm} \times F \times G$	nc	1370/107 KaTeX pt
in	$1 \text{ inch} \times F \times G$	sp	1/65536 KaTeX pt

where:

$$F = (\text{font size of surrounding HTML text}) / (10 \text{ pt})$$

$G = 1.21$  by default, because KaTeX font-size is normally  $1.21 \times$  the surrounding font size. This value can be overridden by the CSS of an HTML page.

The effect of style and size:

Unit	textstyle	scriptscript	huge
em or ex			
mu			
others			

← FONT

SUPPORT TABLE →

Usage

Configuration

Misc

GitHub Discussions

Stack Overflow

☆ Star 14,065



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