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 unsupported functions.

Accents

a' `a'`	$\tilde{a}$ `\tilde{a}`	$\mathring{g}$ `\mathring{g}`
a'' `a''`	$\widetilde{ac}$ `\widetilde{ac}`	$\overgroup{AB}$ `\overgroup{AB}`
a' `a^{\prime}`	$\utilde{AB}$ `\utilde{AB}`	$\undergroup{AB}$ `\undergroup{AB}`
$\acute{a}$ `\acute{a}`	$\vec{F}$ `\vec{F}`	$\Overrightarrow{AB}$ `\Overrightarrow{AB}`
$\bar{y}$ `\bar{y}`	$\overleftarrow{AB}$ `\overleftarrow{AB}`	$\overrightarrow{AB}$ `\overrightarrow{AB}`
$\breve{a}$ `\breve{a}`	$\underleftarrow{AB}$ `\underleftarrow{AB}`	$\underrightarrow{AB}$ `\underrightarrow{AB}`
$\check{a}$ `\check{a}`	$\overleftharpoon{ac}$ `\overleftharpoon{ac}`	$\overrightharpoon{ac}$ `\overrightharpoon{ac}`
$\dot{a}$ `\dot{a}`	$\overleftrightarrow{AB}$ `\overleftrightarrow{AB}`	$\overbrace{AB}$ `\overbrace{AB}`
$\ddot{a}$ `\ddot{a}`	$\underleftrightarrow{AB}$ `\underleftrightarrow{AB}`	$\underbrace{AB}$ `\underbrace{AB}`
$\grave{a}$ `\grave{a}`	$\overline{AB}$ `\overline{AB}`	$\overlinesegment{AB}$ `\overlinesegment{AB}`
$\hat{\theta}$ `\hat{\theta}`	$\underline{AB}$ `\underline{AB}`	$\underlinesegment{AB}$ `\underlinesegment{AB}`
$\widehat{ac}$ `\widehat{ac}`	$\widecheck{ac}$ `\widecheck{ac}`	$\underline{X}$ `\underbar{X}`

a \`{a}	a \={a}	a \'{a}	a \v{a}
â \^{a}	ă \u{a}	å \r{a}	

See also letters and unicode.

Delimiters

( ) ( )	( ) \lparen \rparen	⌈ ⌉ ⌈ ⌉	⌈ ⌉ \lceil \rceil	↑ \uparrow
[ ] [ ]	[ ] \lbrack \rbrack	⌊ ⌋ ⌊ ⌋	⌊ ⌋ \lfloor \rfloor	↓ \downarrow
{ } \{ \}	{ } \lbrace \rbrace	⎰ ⎱ ⎰ ⎱	⎰ \lmoustache ⎱ \rmoustache	↕ \updownarrow
⟨ ⟩ ⟨ ⟩	⟨ ⟩ \langle \rangle	( ) ( )	( ) \lgroup \rgroup	⇑ \Uparrow
| |	| \vert	⌜ ⌝ ⌜ ⌝	⌜ ⌝ \ulcorner \urcorner	⇓ \Downarrow
‖ \\|	‖ \Vert	⌞ ⌟ ⌞ ⌟	⌞ ⌟ \llcorner \lrcorner	⇕ \Updownarrow
| | \lvert \rvert	‖ ‖ \lVert \rVert	\left.	\right.	\ \backslash
⟨ ⟩ \lang \rang	< > \lt \gt	⟦ ⟧ ⟦ ⟧	⟦ ⟧ \llbracket \rrbracket	{ } \lBrace \rBrace

Delimiter Sizing

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

\middle	\Big	\Bigl	\Bigm	\Bigr
\right	\bigg	\biggl	\biggm	\biggr
	\Bigg	\Biggl	\Biggm	\Biggr

Environments

$a \quad b$ $c \quad d$	\begin{matrix} a & b \\ c & d \end{matrix}	$a \quad b$ $c \quad d$	\begin{array}{cc} a & b \\ c & d \end{array}
$\begin{pmatrix} a & b \\ c & d \end{pmatrix}$	\begin{pmatrix} a & b \\ c & d \end{pmatrix}	$\begin{bmatrix} a & b \\ c & d \end{bmatrix}$	\begin{bmatrix} a & b \\ c & d \end{bmatrix}
$\begin{vmatrix} a & b \\ c & d \end{vmatrix}$	\begin{vmatrix} a & b \\ c & d \end{vmatrix}	$\begin{Vmatrix} a & b \\ c & d \end{Vmatrix}$	\begin{Vmatrix} a & b \\ c & d \end{Vmatrix}
$\begin{Bmatrix} a & b \\ c & d \end{Bmatrix}$	\begin{Bmatrix} a & b \\ c & d \end{Bmatrix}	$\begin{array}{c:c:c} a & b & c \\ \hline d & e & f \\ \hdashline g & h & i \end{array}$	\def\arraystretch{1.5} \begin{array}{c:c:c} a & b & c \\ \hline d & e & f \\ \hdashline g & h & i \end{array}
$x = \begin{cases} a & \text{if } b \\ c & \text{if } d \end{cases}$	x = \begin{cases} a &\text{if } b \\ c &\text{if } d \end{cases}	$\begin{cases} a & \text{if } b \\ c & \text{if } d \end{cases} \Rightarrow \dots$	\begin{rcases} a &\text{if } b \\ c &\text{if } d \end{rcases}⇒…

	`\end{smallmatrix}`		`\end{subarray}}`

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

$$a = b + c \\ = e + f \quad (1)$$	`\begin{equation}`
	`\begin{split}`
	`a &=b+c\\`
	`  &=e+f`
	`\end{split}`
	`\end{equation}`
		$$a = b + c \quad (2) \\ d + e = f \quad (3)$$	`\begin{ali`
			`a&=b+c \\`
			`d+e&=f`
			`\end{align`

$$a = b \quad (4) \\ e = b + c \quad (5)$$	`\begin{gather}`
	`a=b \\`
	`e=b+c`
	`\end{gather}`
		$$10x+ 3y = 2 \quad (6) \\ 3x+13y = 4 \quad (7)$$	`\begin{ali`
			`10&x+&3&y`
			`3&x+&13&y`
			`\end{align`

$$\begin{CD} A @>a>> B \\ @VbVV @AAcA \\ C @= D \end{CD}$$	`\begin{CD}`
	`A @>a>> B \\`
	`@VbVV @AAcA \\`
	`C @= D`
	`\end{CD}`		

Other KaTeX Environments

Environments	How they differ from those shown above
`darray` , `dcases` , `drcases`	… apply `displaystyle`
`matrix*` , `pmatrix*` , `bmatrix*` `Bmatrix*` , `vmatrix*` , `Vmatrix*`	… take an optional argument to set column alignment, as in `\begin{matrix*}[r]`
`equation*` , `gather*` `align*` , `alignat*`	… have no automatic numbering. Alternatively, you can use `\nonumber` or `\notag` to omit the numbering for a specific row of the equation.

`aligned` , `alignedat`	… must be inside math delimiters in order to be rendered by the auto-render extension.

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 be applied to individual rows of top-level environments (`align` , `align*` , `alignat` , `alignat*` , `gather` , `gather*`).

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.

KaTeX	`\href{https://katex.org/}{\KaTeX}`
https://katex.org/	`\url{https://katex.org/}`
	`\includegraphics[height=0.8em, totalheight=0.9em, width=0.9em, alt=KA logo]{https://katex.org/img/khan-academy.png}`
x ……x……	`\htmlId{bar}{x}`
x ……x……	`\htmlClass{foo}{x}`
x ……x……	`\htmlStyle{color: red;}{x}`

`\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: ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ αβγδεζηθικλμνξοπ ρστυφχψωεϑϖϱςφϝ

$\Alpha$ `\Alpha`	$\Beta$ `\Beta`	Γ `\Gamma`	Δ `\Delta`
$\Epsilon$ `\Epsilon`	$\Zeta$ `\Zeta`	$\Eta$ `\Eta`	Θ `\Theta`
$\Iota$ `\Iota`	$\Kappa$ `\Kappa`	Λ `\Lambda`	$\Mu$ `\Mu`
$\Nu$ `\Nu`	Ξ `\Xi`	$\Omicron$ `\Omicron`	Π `\Pi`
$\Rho$ `\Rho`	Σ `\Sigma`	$\Tau$ `\Tau`	Υ `\Upsilon`
Φ `\Phi`	$\Chi$ `\Chi`	Ψ `\Psi`	Ω `\Omega`
$\varGamma$ `\varGamma`	$\varDelta$ `\varDelta`	$\varTheta$ `\varTheta`	$\varLambda$ `\varLambda`
$\varXi$ `\varXi`	$\varPi$ `\varPi`	$\varSigma$ `\varSigma`	$\varUpsilon$ `\varUpsilon`
$\varPhi$ `\varPhi`	$\varPsi$ `\varPsi`	$\varOmega$ `\varOmega`	
α `\alpha`	β `\beta`	γ `\gamma`	δ `\delta`
ϵ `\epsilon`	ζ `\zeta`	η `\eta`	θ `\theta`
ι `\iota`	κ `\kappa`	λ `\lambda`	μ `\mu`
ν `\nu`	ξ `\xi`	o `\omicron`	π `\pi`
ρ `\rho`	σ `\sigma`	τ `\tau`	υ `\upsilon`
ϕ `\phi`	χ `\chi`	ψ `\psi`	ω `\omega`

Other Letters

ı `\imath`	∇ `\nabla`	ℑ `\Im`	ℝ `\Reals`	Œ `\text{\OE}`
ȷ `\jmath`	∂ `\partial`	ℑ `\image`	℘ `\wp`	ø `\text{\o}`
ℵ `\aleph`	⅁ `\Game`	𝕜 `\Bbbk`	℘ `\weierp`	Ø `\text{\O}`
ℵ `\alef`	Ⅎ `\Finv`	ℕ `\N`	ℤ `\Z`	ß `\text{\ss}`
ℵ `\alefsym`	ℂ `\cnums`	ℕ `\natnums`	å `\text{\aa}`	ı `\text{\i}`
ℶ `\beth`	ℂ `\Complex`	ℝ `\R`	Å `\text{\AA}`	ȷ `\text{\j}`
ℷ `\gimel`	ℓ `\ell`	ℜ `\Re`	æ `\text{\ae}`	
ℸ `\daleth`	ℏ `\hbar`	ℜ `\real`	Æ `\text{\AE}`	
ð `\eth`	ℏ `\hslash`	ℝ `\reals`	œ `\text{\oe}`	

Direct Input: ∂∇ℑℲℵℶℷℸ⅁ℏð − ∗
ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏÐÑÒÓÔÕÖÙÚÛÜÝÞßàáâãäåçèéêëìíîïðñòóôöùúûüýþÿ
$_{+-=()0123456789aehijklmnoprstuvx\beta\gamma\rho\varphi\chi}^{+-=()0123456789abcdeghijklmnoprstuwxyzv\beta\gamma\delta\varphi\chi}$

Math-mode Unicode (sub|super)script characters will render as if you had written regular characters in a subscript or superscript. For instance, `A²⁺³` will render the same as `A^{2+3}` .

Unicode Mathematical Alphanumeric Symbols

Item	Range	Item	Range
Bold	A-Z a-z 0-9	Double-struck	A-Z k
Italic	A-Z a-z	Sans serif	A-Z a-z 0-9
Bold Italic	A-Z a-z	Sans serif bold	A-Z a-z 0-9
Script	A-Z	Sans serif italic	A-Z a-z
Fractur	A-Z a-z	Monospace	A-Z a-z 0-9

always accepted in text mode. However, these glyphs will be rendered from system fonts (not KaTeX-supplied fonts) so their typography may clash. You can provide rules for CSS classes `.latin_fallback`, `.cyrillic_fallback`, `.brahmic_fallback`, `.georgian_fallback`, `.cjk_fallback`, and `.hangul_fallback` to provide fallback fonts for these languages. Use of these glyphs may cause small vertical alignment issues: KaTeX has detailed metrics for listed symbols and most Latin, Greek, and Cyrillic letters, but other accepted glyphs are treated as if they are each as tall as the letter M in the current KaTeX font.

If the KaTeX rendering mode is set to `strict: false` or `strict: "warn"` (default), then KaTeX will accept all Unicode letters in both text and math mode. All unrecognized characters will be treated as if they appeared in text mode, and are subject to the same issues of using system fonts and possibly using incorrect vertical alignment.

For Persian composite characters, a user-supplied plug-in is under development.

Any character can be written with the `\char` function and the Unicode code in hex. For example `\char"263a` will render as ☺.

Layout

Annotation

$\cancel{5}$ `\cancel{5}`	$\overbrace{a+b+c}^{\text{note}}$ `\overbrace{a+b+c}^{\text{note}}`
$\bcancel{5}$ `\bcancel{5}`	$\underbrace{a+b+c}_{\text{note}}$ `\underbrace{a+b+c}_{\text{note}}`
$\xcancel{ABC}$ `\xcancel{ABC}`	$\not=$ `\not =`
$\sout{abc}$ `\sout{abc}`	$\boxed{\pi=\frac c d}$ `\boxed{\pi=\frac c d}`
$a_{\angl n}$ `$a_{\angl n}`	$a_{\angln}$ `a_\angln`
$\phase{-78^\circ}$ `\phase{-78^\circ}`	

```
\tag{hi} x+y^{2x}
```

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

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 `x_n`	$\stackrel{!}{=}$ `\stackrel{!}{=}`	$\begin{matrix}a\\b\end{matrix}$ `a \atop b`
e^x `e^x`	$\overset{!}{=}$ `\overset{!}{=}`	a^bc `a\raisebox{0.25em}{$b$}c`
$\begin{matrix}o\\u\end{matrix}$ `_u^o`	$\underset{!}{=}$ `\underset{!}{=}`	$a+\left(\begin{matrix}\frac{a}{b}\\c\end{matrix}\right)$ `a+\left(\vcenter{\hbox{$\frac{\frac a b}c$}}\right)`
		$\sum_{\substack{0<i<m\\0<j<n}}$ `\sum_{\substack{0<i<m\\0<j<n}}`

`\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

$\neq$ `{=}\mathllap{/\,}`	$\left(x^{\smash{2}}\right)$ `\left(x^{\smash{2}}\right)`
$\neq$ `\mathrlap{\,/}{=}`	$\sqrt{y}$ `\sqrt{\smash[b]{y}}`

arguments.

Spacing

Function	Produces	Function	Produces
`\,`	3⁄18 em space	`\kern{distance}`	space, width = *distance*
`\thinspace`	3⁄18 em space	`\mkern{distance}`	space, width = *distance*
`\>`	4⁄18 em space	`\mskip{distance}`	space, width = *distance*
`\:`	4⁄18 em space	`\hskip{distance}`	space, width = *distance*
`\medspace`	4⁄18 em space	`\hspace{distance}`	space, width = *distance*
`\;`	5⁄18 em space	`\hspace*{distance}`	space, width = *distance*
`\thickspace`	5⁄18 em space	`\phantom{content}`	space the width and height of content
`\enspace`	½ em space	`\hphantom{content}`	space the width of content
`\quad`	1 em space	`\vphantom{content}`	a strut the height of content
`\qquad`	2 em space	`\!`	– 3⁄18 em space
`~`	non-breaking space	`\negthinspace`	– 3⁄18 em space
`\<space>`	space	`\negmedspace`	– 4⁄18 em space
`\nobreakspace`	non-breaking space	`\negthickspace`	– 5⁄18 em space
`\space`	space	`\mathstrut`	`\vphantom{(}`

Notes:

`distance` will accept any of the KaTeX units.

`\kern`, `\mkern`, `\mskip`, and `\hspace` accept unbraced distances, as in: `\kern1em`.

`\mkern` and `\mskip` will not work in text mode and both will write a console warning for

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∀ \forall	∁ \complement	∴ \therefore	∅ \emptyset		
∃ \exists	⊂ \subset	∵ \because	∅ \empty		
∃ \exist	⊃ \supset	↦ \mapsto	∅ \varnothing		
∄ \nexists	∣ \mid	→ \to	⟹ \implies		
∈ \in	∧ \land	← \gets	⟸ \impliedby		
∈ \isin	∨ \lor	↔ \leftrightarrow	⟺ \iff		
∉ \notin	∋ \ni	∌ \notni	¬ \neg or \lnot		
	$\Set{ x |	x<\frac 1 2 }$ `\Set{ x |	x<\frac 1 2 }`	$\set{x|	x<5}$ `\set{x|

Direct Input: ∀ ∴ ∁ ∵ ∃ ∣∈∉∋⊂⊃ ∧∨ ↦→←↔ ¬ ℂ ℍ ℕ ℙ ℚ ℝ

Macros

$x^2 + x^2$	`\def\foo{x^2} \foo + \foo`
$y^2 + y^2$	`\gdef\bar#1{#1^2} \bar{y} + \bar{y}`
	`\edef\macroname#1#2…{definition to be expanded}`
	`\xdef\macroname#1#2…{definition to be expanded}`
	`\let\foo=\bar`

	`\renewcommand\macroname[numargs]{definition}`
	`\providecommand\macroname[numargs]{definition}`

Macros can also be defined in the KaTeX rendering options.

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

Macros defined by `\gdef`, `\xdef`, `\global\def`, `\global\edef`, `\global\let`, and `\global\futurelet` will persist between math expressions. (Exception: macro persistence may be disabled. There are legitimate security reasons for that.)

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

Available functions include:

`\char` `\mathchoice` `\TextOrMath` `\@ifstar` `\@ifnextchar` `\@firstoftwo` `\@secondoftwo` `\relax` `\expandafter` `\noexpand`

@ 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`	$\bigodot$ `\bigodot`	$\bigcap$ `\bigcap`
$\iiint$ `\iiint`	$\int$ `\smallint`	$\biguplus$ `\biguplus`	$\bigcup$ `\bigcup`
$\oint$ `\oint`	$\oiint$ `\oiint`	$\oiiint$ `\oiiint`	$\bigsqcup$ `\bigsqcup`

Direct Input: $\int \iint \iiint \oint \prod \coprod \sum \bigwedge \bigvee \bigcap \bigcup \bigodot \bigoplus \bigotimes \biguplus \bigsqcup \oint \oint$

Binary Operators

$+$ `+`	$\cdot$ `\cdot`	$\gtrdot$ `\gtrdot`	$x \pmod a$ `x \pmod`

$*$ *	$\circ$ \circ	$\leftthreetimes$ \leftthreetimes	$\rightthreetimes$ \rightthreetimes
$\amalg$ \amalg	$\circledast$ \circledast	. \ldotp	$\rtimes$ \rtimes
$\&$ \And	$\circledcirc$ \circledcirc	$\vee$ \lor	$\setminus$ \setminus
$*$ \ast	$\circleddash$ \circleddash	$\lessdot$ \lessdot	$\smallsetminus$ \smallsetminus
$\barwedge$ \barwedge	$\Cup$ \Cup	$\lhd$ \lhd	$\sqcap$ \sqcap
$\bigcirc$ \bigcirc	$\cup$ \cup	$\ltimes$ \ltimes	$\sqcup$ \sqcup
$\bmod$ \bmod	$\curlyvee$ \curlyvee	$x \bmod a$ x\mod a	$\times$ \times
$\boxdot$ \boxdot	$\curlywedge$ \curlywedge	$\mp$ \mp	$\unlhd$ \unlhd
$\boxminus$ \boxminus	$\div$ \div	$\odot$ \odot	$\unrhd$ \unrhd
$\boxplus$ \boxplus	$\divideontimes$ \divideontimes	$\ominus$ \ominus	$\uplus$ \uplus
$\boxtimes$ \boxtimes	$\dotplus$ \dotplus	$\oplus$ \oplus	$\vee$ \vee
$\bullet$ \bullet	$\doublebarwedge$ \doublebarwedge	$\otimes$ \otimes	$\veebar$ \veebar
$\Cap$ \Cap	$\doublecap$ \doublecap	$\oslash$ \oslash	$\wedge$ \wedge
$\cap$ \cap	$\doublecup$ \doublecup	$\pm$ \pm or \plusmn	$\wr$ \wr

Direct Input: + − / ∗ · ○ ● ± × ÷ ∓ ∔ ∧ ∨ ∩ ∪ ≀ ⊎ ⊓ ⊔ ⊕ ⊖ ⊗ ⊘ ⊙ ◎ ⊛ ⊖ ◯ \

Fractions and Binomials

$\frac{a}{b}$ \frac{a}{b}	$\tfrac{a}{b}$ \tfrac{a}{b}	$\left(\frac{a}{a+1}\right]$ \genfrac ( ] {2pt}{1}a{a+1}

		$1+\frac{1}{b}$

$\binom{n}{k}$ `\binom{n}{k}`	$\dbinom{n}{k}$ `\dbinom{n}{k}`	$\left\{ {n \atop k} \right\}$ `{n\brace k}`
$\binom{n}{k}$ `{n \choose k}`	$\tbinom{n}{k}$ `\tbinom{n}{k}`	$\left[{n \atop k} \right]$ `{n\brack k}`

Math Operators

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

}	}		

Functions in the bottom six rows of this table can take `\limits`.

\sqrt

$\sqrt{x}$ `\sqrt{x}`

$\sqrt[3]{x}$ `\sqrt[3]{x}`

Relations

$\stackrel{!}{=}$ `\stackrel{!}{=}`

$=$ `=`	$\doteqdot$ `\doteqdot`	$\lessapprox$ `\lessapprox`	$\smile$ `\smile`
$<$ `<`	$\eqcirc$ `\eqcirc`	$\lesseqgtr$ `\lesseqgtr`	$\sqsubset$ `\sqsubset`
$>$ `>`	$\eqcolon$ `\eqcolon` or $\minuscolon$ `\minuscolon`	$\lesseqqgtr$ `\lesseqqgtr`	$\sqsubseteq$ `\sqsubseteq`
$:$ `:`	$\Eqcolon$ `\Eqcolon` or $\minuscoloncolon$ `\minuscoloncolon`	$\lessgtr$ `\lessgtr`	$\sqsupset$ `\sqsupset`
$\approx$ `\approx`	$\eqqcolon$ `\eqqcolon` or $\equalscolon$ `\equalscolon`	$\lesssim$ `\lesssim`	$\sqsupseteq$ `\sqsupseteq`
$\approx:$ `\approxcolon`	$\Eqqcolon$ `\Eqqcolon` or $\equalscoloncolon$ `\equalscoloncolon`	$\ll$ `\ll`	$\Subset$ `\Subset`
$\approx::$ `\approxcoloncolon`	$\eqsim$ `\eqsim`	$\lll$ `\lll`	$\subset$ `\subset` or $\sub$ `\sub`
$\approxeq$ `\approxeq`	$\eqslantgtr$ `\eqslantgtr`	$\llless$ `\llless`	$\subseteq$ `\subseteq` or $\sube$ `\sube`
$\asymp$ `\asymp`	$\eqslantless$ `\eqslantless`	$\lt$ `\lt`	$\subseteqq$ `\subseteqq`
$\ni$ `\backepsilon`	$\equiv$ `\equiv`	$\mid$ `\mid`	$\succ$ `\succ`

⋈ \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	⊴ \trianglelefteq
:≔ \coloneqq or \colonequals	⋛ \gtreqless	≾ \precsim	≜ \triangleq
::≔ \Coloneqq or \coloncolonequals	⪌ \gtreqqless	∝ \propto	⊵ \trianglerighteq
:∼ \colonsim	≷ \gtrless	≓ \risingdotseq	∝ \varpropto
::∼ \Colonsim or \coloncolonsim	≳ \gtrsim	∣ \shortmid	△ \vartriangle
≅ \cong	⊷ \imageof	∥ \shortparallel	◁ \vartriangleleft
≼ \curlyeqprec	∈ \in or \isin	∼ \sim	▷ \vartriangleright

$\dashv$ `\dashv`	$\le$ `\le`	`\simcoloncolon`	$\vdash$ `\vdash`
$::$ `\dblcolon` or `\coloncolon`	$\leq$ `\leq`	$\simeq$ `\simeq`	$\vDash$ `\vDash`
$\doteq$ `\doteq`	$\leqq$ `\leqq`	$\smallfrown$ `\smallfrown`	$\Vdash$ `\Vdash`
$\Doteq$ `\Doteq`	$\leqslant$ `\leqslant`	$\smallsmile$ `\smallsmile`	$\Vvdash$ `\Vvdash`

Direct Input: = < > : ∈ ∋ ∝ ∼ ∽ ≂ ≃ ≅ ≈ ≊ ≍ ≎ ≏ ≐ ≑ ≒ ≓ ≖ ≗ ≜ ≡ ≤ ≥ ≦ ≧ ≫ ≬ ≳ ≷ ≺ ≻ ⋞ ⋟ ≾ ≿ ⊂ ⊃ ⊆ ⊇ ⊏ ⊐ ⊑ ⊒ ⊢ ⊣ ⊩ ⊪ ⊸ ⋈ ⋍ ⋐ ⋑ ⋔ ⋙ ⋛ ⋞ ⋟ ⌢ ⌣ ⩾ ⪆ ⪌ ⪕ ⪖ ⪯ ⪰ ⪷ ⪸ ⫅ ⫆ ≲ ⩽ ⪅ ≶ ⋚ ⪋ ⟂ ⊨ ⊶ ⊷ ≔ ≕ ⩴

Negated Relations

$\not =$ `\not =`

$\gnapprox$ `\gnapprox`	$\ngeqslant$ `\ngeqslant`	$\nsubseteq$ `\nsubseteq`	$\precneqq$ `\precneqq`
$\gneq$ `\gneq`	$\ngtr$ `\ngtr`	$\nsubseteqq$ `\nsubseteqq`	$\precnsim$ `\precnsim`
$\gneqq$ `\gneqq`	$\nleq$ `\nleq`	$\nsucc$ `\nsucc`	$\subsetneq$ `\subsetneq`
$\gnsim$ `\gnsim`	$\nleqq$ `\nleqq`	$\nsucceq$ `\nsucceq`	$\subsetneqq$ `\subsetneqq`
$\gvertneqq$ `\gvertneqq`	$\nleqslant$ `\nleqslant`	$\nsupseteq$ `\nsupseteq`	$\succnapprox$ `\succnapprox`
$\lnapprox$ `\lnapprox`	$\nless$ `\nless`	$\nsupseteqq$ `\nsupseteqq`	$\succneqq$ `\succneqq`
$\lneq$ `\lneq`	$\nmid$ `\nmid`	$\ntriangleleft$ `\ntriangleleft`	$\succnsim$ `\succnsim`
$\lneqq$ `\lneqq`	$\notin$ `\notin`	$\ntrianglelefteq$ `\ntrianglelefteq`	$\supsetneq$ `\supsetneq`
$\lnsim$ `\lnsim`	$\notni$ `\notni`	$\ntriangleright$ `\ntriangleright`	$\supsetneqq$ `\supsetneqq`
$\lvertneqq$ `\lvertneqq`	$\nparallel$ `\nparallel`	$\ntrianglerighteq$ `\ntrianglerighteq`	$\varsubsetneq$ `\varsubsetneq`

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≠ \neq	∤ \nshortmid	⊯ \nVDash	⫌ \varsupsetneqq
≱ \ngeq	∦ \nshortparallel	⊮ \nVdash	
≱ \ngeqq	≁ \nsim	⪹ \precnapprox	

Direct Input: ∉∌∤∦≁≆≠
≨≩≮≯≰≱⊀⊁⊈⊉⊊⊋⊬⊭⊮⊯⋠⋡⋦⋧⋨⋩⋬⋭⪇⪈⪉⪊⪵⪶⪹⪺⫋⫌

Arrows

↺ \circlearrowleft	↼ \leftharpoonup	⇒ \rArr
↻ \circlearrowright	⇇ \leftleftarrows	→ \rarr
↶ \curvearrowleft	↔ \leftrightarrow	↾ \restriction
↷ \curvearrowright	⇔ \Leftrightarrow	→ \rightarrow
⇓ \Darr	⇆ \leftrightarrows	⇒ \Rightarrow
⇓ \dArr	⇋ \leftrightharpoons	↣ \rightarrowtail
↓ \darr	↭ \leftrightsquigarrow	⇁ \rightharpoondown
⇠ \dashleftarrow	⇚ \Lleftarrow	⇀ \rightharpoonup
⇢ \dashrightarrow	⟵ \longleftarrow	⇄ \rightleftarrows
↓ \downarrow	⟸ \Longleftarrow	⇌ \rightleftharpoons
⇓ \Downarrow	⟷ \longleftrightarrow	⇉ \rightrightarrows
⇊ \downdownarrows	⟺ \Longleftrightarrow	⇝ \rightsquigarrow
⇃ \downharpoonleft	⟼ \longmapsto	⇛ \Rrightarrow
⇂ \downharpoonright	⟶ \longrightarrow	↱ \Rsh
← \gets	⟹ \Longrightarrow	↘ \searrow

↩ \hookleftarrow	⇔ \lrArr	↠ \twoheadrightarrow
↪ \hookrightarrow	↔ \lrarr	⇑ \Uarr
⟺ \iff	↰ \Lsh	⇑ \uArr
⟸ \impliedby	↦ \mapsto	↑ \uarr
⟹ \implies	↗ \nearrow	↑ \uparrow
⇐ \Larr	↚ \nleftarrow	⇑ \Uparrow
⇐ \lArr	⇍ \nLeftarrow	↕ \updownarrow
← \larr	↮ \nleftrightarrow	⇕ \Updownarrow
⇝ \leadsto	⇎ \nLeftrightarrow	↿ \upharpoonleft
← \leftarrow	↛ \nrightarrow	↾ \upharpoonright
⇐ \Leftarrow	⇏ \nRightarrow	⇈ \upuparrows
↢ \leftarrowtail	↖ \nwarrow	
↼ \leftharpoondown	⇒ \Rarr	

Direct Input: ←↑→↓↔↕↖↗↘↙↚↛↞↠↢↣↦↩↪↫↬↭↰↱↶↷↺↻←⟵
↾↿⇀⇁⇃⇂⇄⇆⇇⇈⇉⇊⇋⇌⇍⇎⇏⇐⇑⇒⇓⇔⇕⇚⇛⇝⇠⇢
⟵⟶⟷⟸⟹⟺⟼↼

Extensible Arrows

$\xleftarrow{abc}$ \xleftarrow{abc}	$\xrightarrow[under]{over}$ \xrightarrow[under]{over}
$\xLeftarrow{abc}$ \xLeftarrow{abc}	$\xRightarrow{abc}$ \xRightarrow{abc}
$\xleftrightarrow{abc}$ \xleftrightarrow{abc}	$\xLeftrightarrow{abc}$ \xLeftrightarrow{abc}
$\xhookleftarrow{abc}$ \xhookleftarrow{abc}	$\xhookrightarrow{abc}$ \xhookrightarrow{abc}
$\xtwoheadleftarrow{abc}$ \xtwoheadleftarrow{abc}	$\xtwoheadrightarrow{abc}$ \xtwoheadrightarrow{abc}

$\xleftrightharpoons{abc}$ `\xleftrightharpoons{abc}`	$\xrightleftharpoons{abc}$ `\xrightleftharpoons{abc}`
$\xtofrom{abc}$ `\xtofrom{abc}`	$\xmapsto{abc}$ `\xmapsto{abc}`
$\xlongequal{abc}$ `\xlongequal{abc}`	

Extensible arrows all can take an optional argument in the same manner as `\xrightarrow[under]{over}`.

Special Notation

Bra-ket Notation

$\bra{\phi}$ `\bra{\phi}`	$\ket{\psi}$ `\ket{\psi}`	$\braket{\phi\vert\psi}$ `\braket{\phi\vert\psi}`			
$\Bra{\phi}$ `\Bra{\phi}`	$\Ket{\psi}$ `\Ket{\psi}`	$\Braket{ ϕ |	\frac{∂^2}{∂ t^2} |	ψ }$ `\Braket{ ϕ |	\frac{∂^2}{∂ t^2} \`

Style, Color, Size, and Font

Class Assignment

`\mathbin` `\mathclose` `\mathinner` `\mathop`
`\mathopen` `\mathord` `\mathpunct` `\mathrel`

Color

$F = ma$ `\color{blue} F=ma`

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

$F = ma$ `\textcolor{blue}{F=ma}`
$F = ma$ `\textcolor{#228B22}{F=ma}`
$F = ma$ `\colorbox{aqua}{$F=ma$}`

For color definition, KaTeX color functions will accept the standard HTML predefined color names. They will also accept an RGB argument in CSS hexadecimal style. The "#" is optional before a six-digit specification.

Font

Ab0 `\mathrm{Ab0}`	**Ab0** `\mathbf{Ab0}`	*Ab0* `\mathit{Ab0}`
*Ab*o `\mathnormal{Ab0}`	**Ab0** `\textbf{Ab0}`	*Ab0* `\textit{Ab0}`
Ab0 `\textrm{Ab0}`	**Ab0** `\bf Ab0`	*Ab0* `\it Ab0`
Ab0 `\rm Ab0`	**Ab0** `\bold{Ab0}`	Ab0 `\textup{Ab0}`
Ab0 `\textnormal{Ab0}`	***Ab0*** `\boldsymbol{Ab}`	𝔸𝔹 `\Bbb{AB}`
Ab0 `\text{Ab0}`	***Ab0*** `\bm{Ab0}`	𝔸𝔹 `\mathbb{AB}`
Ab0 `\mathsf{Ab0}`	Ab0 `\textmd{Ab0}`	𝔄b𝔬 `\frak{Ab0}`
Ab0 `\textsf{Ab0}`	Ab0 `\mathtt{Ab0}`	𝔄b𝔬 `\mathfrak{Ab0}`
Ab0 `\sf Ab0`	Ab0 `\texttt{Ab0}`	$\mathcal{AB}0$ `\mathcal{AB0}`
	Ab0 `\tt Ab0`	$\mathcal{AB}0$ `\cal AB0`
		$\mathscr{AB}$ `\mathscr{AB}`

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 $\mathbf{H}$.

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

Size

AB `\Huge AB`	AB `\normalsize AB`
AB `\huge AB`	AB `\small AB`

AB `\large AB`	AB `\tiny AB`

Style

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

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

Symbols and Punctuation

`% comment`	$\ldots$ `\dots`	$\KaTeX$ `\KaTeX`
$\%$ `\%`	$\cdots$ `\cdots`	$\LaTeX$ `\LaTeX`
$\#$ `\#`	$\ddots$ `\ddots`	$\TeX$ `\TeX`
$\&$ `\&`	$\ldots$ `\ldots`	∇ `\nabla`
$\_$ `\_`	$\vdots$ `\vdots`	∞ `\infty`
$\_$ `\text{\textunderscore}`	$\cdots$ `\dotsb`	$\infin$ `\infin`
– `\text{--}`	$\ldots$ `\dotsc`	✓ `\checkmark`
– `\text{\textendash}`	$\cdots$ `\dotsi`	† `\dag`
— `\text{---}`	$\cdots$ `\dotsm`	† `\dagger`

‘ `	… \text{\textellipsis}	‡ \text{\textdaggerdbl}
‘ text{\textquoteleft}	□ \Box	‡ \Dagger
‘ \lq	□ \square	∠ \angle
’ \text{\textquoteright}	■ \blacksquare	∡ \measuredangle
′ \rq	△ \triangle	◁ \sphericalangle
“ \text{\textquotedblleft}	▽ \triangledown	⊤ \top
” "	◁ \triangleleft	⊥ \bot
” \text{\textquotedblright}	▷ \triangleright	$ \$
: \colon	▽ \bigtriangledown	$ \text{\textdollar}
‵ \backprime	△ \bigtriangleup	£ \pounds
′ \prime	▲ \blacktriangle	£ \mathsterling
< \text{\textless}	▼ \blacktriangledown	£ \text{\textsterling}
> \text{\textgreater}	◀ \blacktriangleleft	¥ \yen
| \text{\textbar}	▶ \blacktriangleright	√ \surd
‖ \text{\textbardbl}	◇ \diamond	° \degree
{ \text{\textbraceleft}	◇ \Diamond	° \text{\textdegree}
} \text{\textbraceright}	◊ \lozenge	℧ \mho
\ \text{\textbackslash}	⧫ \blacklozenge	╲ \diagdown

ⓒ `\copyright`	♣ `\clubs`	♯ `\sharp`
® `\circledR`	♢ `\diamondsuit`	♡ `\heartsuit`
® `\text{\textregistered}`	♢ `\diamonds`	♡ `\hearts`
Ⓢ `\circledS`	♠ `\spadesuit`	♠ `\spades`
ⓐ `\text{\textcircled a}`	✠ `\maltese`	⊖ `\minuso`

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 inch × F × G
ex	CSS ex	pc	12 KaTeX pt
mu	1/18 CSS em	dd	1238/1157 KaTeX pt
pt	1/72.27 inch × F × G	cc	14856/1157 KaTeX pt
mm	1 mm × F × G	nd	685/642 KaTeX pt
cm	1 cm × F × G	nc	1370/107 KaTeX pt
in	1 inch × F × G	sp	1/65536 KaTeX pt

where:

F = (font size of surrounding HTML text)/(10 pt)

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

The effect of style and size:

mu			
others			

← FONT

SUPPORT TABLE →

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