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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

<i>a'</i> a'	$ ilde{a}$ \tilde{a}	\mathring{g} \mathring{g}
a" a''	\widetilde{ac} \widetilde{ac}	\widehat{AB} \overgroup{AB}
a' a^{\prime}	\underbrace{AB} \utilde{AB}	AB \undergroup{AB}
$cute\{a\}$	$ec{F}$ \vec{F}	$\overrightarrow{\overline{AB}}$ \Overrightarrow{AB}
$ar{y}$ \bar{y}	\overleftarrow{AB} \overleftarrow{AB}	\overrightarrow{AB} \overrightarrow{AB}
$reve{a}$ \breve{a}	$AB \setminus AB \setminus AB$	$AB \longrightarrow \text{Algnormal} \{AB\}$
\check{a} \check{a}	$\frac{\overleftarrow{ac}}{ac}$ \overleftharpoon{ac}	\overrightarrow{ac} \overrightharpoon{ac}
\dot{a} \dot{a}	\overrightarrow{AB} \overleftrightarrow{AB}	\widehat{AB} \overbrace{AB}
$\ddot{a} \setminus ddot\{a\}$	$ \stackrel{AB}{\longleftrightarrow} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	AB \underbrace{AB}
\grave{a} \grave{a}	\overline{AB} \overline{AB}	\overrightarrow{AB} \overlinesegment{AB}
$\hat{ heta}$ \hat{\theta}	\underline{AB} \underline{AB}	AB \underlinesegment{AB}
\widehat{ac} \widehat{ac}	\widecheck{ac} \widecheck{ac}	\underline{X} \underbar{X}

Accent functions inside \text{...}

á \'{a}	ã \~{a}	å \.{a}	ã \H{a}
à \`{a}	$\bar{a} \setminus =\{a\}$	ä \"{a}	ă ∖v{a}
â \^{a}	ă \u{a}	å \r{a}	

See also letters

Delimiters

()()	() \lparen \rparen		\lceil	↑ \uparrow
[][]	[] \lbrack \rbrack		\lfloor \rfloor	↓ \downarrow
{} \{ \}	{} \lbrace \rbrace	N	\lmoustache	
()()	<pre>\\ \langle \rangle</pre>	()	() \lgroup \rgroup	↑ \Uparrow
1	\vert	רז	\ulcorner	↓ \Downarrow
1	\Vert	r J r J	\llcorner	↑ \Updownarrow
\lvert \rvert	\lVert \rVert	\left.	\right.	\\backslash
<pre>\\lang \rang</pre>	< > \lt \gt		[] \llbracket \rrbracket	[] \lBrace \rBrace

Delimiter Sizing

HTML Letters and Unicode Layout Annotation Vertical Layout Overlap and Spacing Logic and Set Theory Macros Operators Big Operators Binary Operators Math Operators Negated Relations Arrows Special Notation Style, Color, Size, and Font Symbols and Punctuation

\right	\bigg	\biggl	\biggm	\biggr
	\Bigg	\Biggl	\Biggm	\Biggr

Environments

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

a = b + c $= e + f $ (1)	<pre>\begin{equation} \begin{split} a &=b+c\\ &=e+f \end{split} \end{equation}</pre>	a = b + c (2) d + e = f (3)	\begin{align} a&=b+c \\ d+e&=f \end{align}
a = b (4) $e = b + c (5)$	<pre>\begin{gather} a=b \\ e=b+c \end{gather}</pre>	$ \begin{array}{r} 10x + \ 3y = 2 \ (6) \\ 3x + 13y = 4 \ (7) \end{array} $	\begin{alignat} {2}
$\begin{array}{ccc} A & \stackrel{a}{\longrightarrow} & B \\ \downarrow & & \uparrow^c \\ C & & & D \end{array}$	\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
<pre>matrix* , pmatrix* , bmatrix* Bmatrix* , vmatrix* , Vmatrix*</pre>	take an optional argument to set column alignment, as in \begin{matrix*}[r]
equation*, gather* align*, alignat*	have no automatic numbering.
gathered , aligned , alignedat	do not need to be in display mode have no automatic numbering must be inside math delimiters in

Q Search

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

The {array} environment does not yet support $\c or \m multicolumn$.

\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.

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 \times	\htmlId{bar}{x}
x x	\htmlClass{foo}{x}
$m{x}$ x	<pre>\htmlStyle{color: red;}{x}</pre>
\boldsymbol{x} \boldsymbol{x} 	$\label{local_problem} $$ \ \ \ \ \ \ \ \ \ \ \ \ $

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

 $\label{thm:html} \mbox{HTML extension (\html-prefixed) commands are non-standard, so loosening strict option for $$htmlExtension$ is required.$

Letters and Unicode

Greek Letters

Direct Input: ABGAEZHOΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ $\alpha\beta\gamma\delta\epsilon\zeta\eta\theta\iota\kappa\lambda\mu\nu\xi\sigma\pi$ $\rho\sigma\tau\nu\phi\chi\psi\omega\epsilon\vartheta\varpi\varrho\varsigma\varphi\digamma$

A \Alpha	B \Beta	Γ \Gamma	Δ \Delta
${\rm E}$ \Epsilon	Z \Zeta	H \Eta	Θ \Theta
I \Iota	К \Карра	Λ \Lambda	M \Mu
N \Nu	Ξ\xi	O \Omicron	∏ \Pi
P \Rho	Σ \Sigma	T \Tau	Υ \Upsilon
Φ \Phi	X \Chi	Ψ \Psi	Ω \Omega
$arGamma$ \varGamma	$arDelta$ \varDelta	Θ \varTheta	\varLambda \varLambda
$arXeta$ \varXi	Π \varPi	$arSigma$ \varSigma	\varUpsilon \varUpsilon
Φ \varPhi	 ⊈ \varPsi	$arOmega$ \varOmega	
$lpha$ \alpha	eta \beta	γ \gamma	δ \delta
ϵ \epsilon	ζ \zeta	η \eta	$ heta$ \theta
ι \iota	κ \kappa	λ \lambda	μ \mu
$ u$ \nu	ξ \xi	O \omicron	π \pi
$ ho$ \rho	σ \sigma	$ au$ \tau	v \upsilon
ϕ \phi	χ \chi	ψ \psi	ω \omega
arepsilon		$artheta$ \vartheta	$artheta$ \thetasym
$arpi$ \varpi	$arrho$ \varrho	ς \varsigma	$arphi$ \varphi

Other Letters

≀ \imath	$ abla$ \nabla	\$ \Im	\mathbb{R} \Reals	$\times \text{ (NE)}$
\jmath \jmath	∂ \partial	[™] \image	℘\wp	<pre>Ø \text{\o}</pre>
X \aleph	∂ \Game	k ∖Bbbk	℘ \weierp	Ø \text{\0}
	∃ \Finv	N N	$\mathbb{Z}\setminus z$	ß \text{\ss}
	C \cnums	\mathbb{N} \natnums	å \text{\aa}	1 \text{\i}
☐ \beth	\mathbb{C} \Complex	R \R	\mathring{A} \text{\AA}	<pre>J \text{\j}</pre>
] \gimel	ℓ \ell	ℜ \Re	æ \text{\ae}	
7 \daleth	ħ \hbar	ℜ \real	Æ \text{\AE}	
ð ∖eth	ħ \hslash	\mathbb{R} \reals	œ \text{\oe}	

Direct Input: $\partial \nabla \Im \exists \Pi \exists \hbar \eth$ AÁÂÄÄAÆÇĖĖĖĖIÍĪĪĐŇÒÓŌÖÙÚÛÜÝÞßaáāāāaçèéēeiIīīōňòóôöùúûüýþÿ

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-2	Sans serif italic	A-Z a-z
Fractur	21-3 a-3	Monospace	A-Z a-z 0-9

Unicode

The letters listed above will render properly in any KaTeX rendering mode.

In addition, Armenian, Brahmic, Georgian, Chinese, Japanese, and Korean glyphs are 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 <code>.latin_fallback</code>, <code>.cyrillic_fallback</code>, <code>.brahmic_fallback</code>, <code>.georgian_fallback</code>, <code>.cjk_fallback</code>, and <code>.hangul_fallback</code> 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 ③.

Layout

Annotation

	$\overbrace{a+b+c}^{\text{note}} \ \ \text{\ \ } \ \ \ \ \ \ \ \ } \ \ \ \ \ \ \ \$
5 \bcancel{5}	$\underbrace{a+b+c}_{\mathrm{note}} \ \ underbrace \{a+b+c\}_{\mathrm{text}} \{note\}\}$
ABC \xcancel{ABC}	≠ \not =
<pre>abc \sout{abc}</pre>	$\boxed{\pi = \frac{c}{d}} \ \texttt{\boxed}\{\texttt{\pi=\frac\ c\ d}\}$
$a_{\overline{\mathbf{n}}}$ \$a_{\angl n}	$a_{\overline{\mathbf{n}}}$ a_\angln
$/-78^{\circ}$ \phase{-78^\circ}	

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

$$x + y^{2x}$$
 (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{!} {=}	$\frac{a}{b}$ a \atop b
e^x e^x	! \overset{!}{=}	a^bc a\raisebox{0.25em}{\$b\$}c
o u _u^o	= \underset{!} ! {=}	$a+\left(rac{a}{c} ight)$ 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}}< td=""></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

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		space the width and height of content
\enspace	½ em space	\hphantom{content}	space the width of content
	1 em space	\vphantom{content}	a strut the height of content
\qquad	2 em space	\!	- ¾18 em space
~	non-breaking space	\negthinspace	– ¾s em space
\ <space></space>	space	\negmedspace	- ⁴⁄₁₃ em space
\nobreakspace	non-breaking space	\negthickspace	– ⁵⁄18 em space
\space	space	\mathstrut	\vphantom{(}

Notes:

distance will accept any of the KaTeX units.

mkern and mskip will not work in text mode and both will write a console warning for any unit except

Logic and Set Theory

∀\forall	C \complement	:. \therefore	∅ \emptyset
∃ \exists		∵ \because	Ø \empty
∃ \exist	⊃ \supset	→ \mapsto	∅ \varnothing
∄ \nexists	\mid	$ ightarrow$ \to	⇒ \implies
\in \in	∧ \land	← \gets	← \impliedby
∈ \isin	V \lor	\leftrightarrow $\label{thm:leftrightarrow}$	<⇒ \iff
∉ \notin	∋ \ni	∌ \notni	¬ \neg or \lnot

 $\text{ Direct Input: } \forall \mathrel{\dot{\ldots}} \mathbb{C} \mathrel{\dot{\ldots}} \exists \mid \in \notin \ni \subset \supset \land \lor \mapsto \rightarrow \longleftrightarrow \neg \mathrel{\mathbb{C}} \mathbb{H} \mathrel{\mathbb{N}} \mathbb{P} \mathrel{\mathbb{Q}} \mathbb{R}$

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
	\futurelet\foo\bar x
	\global\def\macroname#1#2{definition}
	<pre>\newcommand\macroname[numargs]{definition}</pre>
	\renewcommand\macroname[numargs]{definition}
	$\verb \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 , $\global\def$, $\global\edf$, $\global\ed$, $\global\ed$, 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:

```
\verb|\color| $$ \mathchoice $$ $$ \mathchoice $$ \mathchoice $$ \mathchoice $$ \mathchoice $$ $$ \mathchoice $$ 
\relax \expandafter \noexpand
```

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

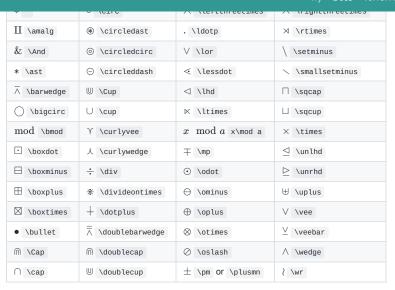
Operators

Big Operators

\sum	∏ \prod		<pre>V \bigvee</pre>
\int \int	∐ \coprod	→ \bigoplus	∧ \bigwedge
∬ \iint	∫ \intop	○ \bigodot	∩ \bigcap
∭ \iiint	∫ \smallint	+ \biguplus	
∮ \oint	∯ \oiint	∰ \oiiint	☐ \bigsqcup

Binary Operators

+ +	· \cdot	<pre>> \gtrdot</pre>	$x \pmod a imes \operatorname{pmod} a$
	· \cdotp	T \intercal	x (a) $ imes$ \pod a



 $\text{Direct Input:} + - \ / \ * \cdot \pm \times \div \mp \dotplus \wedge \vee \cap \cup \wr \uplus \sqcap \sqcup \oplus \ominus \otimes \oslash \odot \circledcirc \circledast \ominus \bigcirc$

Fractions and Binomials

$\frac{a}{b}$ \frac{a}{b}	$\frac{a}{b}$ \tfrac{a}{b}	$\left(\frac{a}{a+1}\right]$ \genfrac (] {2pt}{1}a{a+1}
$\frac{a}{b}$ {a \over b}	$\frac{a}{b}$ \dfrac{a}{b}	$\frac{a}{b+1}$ {a \above{2pt} b+1}
a/b a/b		$\frac{a}{1+\frac{1}{b}} \operatorname{ \backslash cfrac\{a\}\{1+\backslash cfrac\{1\}\{b\}\}\} }$

$\binom{n}{k} \ \ \ \ \{k\}$	$\binom{n}{k} \operatorname{\texttt{\sc Moinom}\{n\}\{k\}}$	${n \brace k} \text{ \{n\backslash brace k\}}$
$\binom{n}{k}$ {n \choose k}	$\binom{n}{k}$ \tbinom{n}{k}	$\begin{bmatrix} n \\ k \end{bmatrix}$ {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 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$			
arg max \argmax	inj lim \injlim	min \min	lim \varinjlim
arg min \argmin	lim \lim	plim \plim	<u>lim</u> \varliminf
det \det	liminf \liminf	Pr \Pr	lim \varlimsup
gcd \gcd	lim sup \limsup	projlim	<u>lim</u> ∖varprojlim
inf \inf	max \max	sup \sup	
f \operatorname*	f		
{f}	\operatornamewithlimits{f}		

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

\sqrt

 $\sqrt{x} \setminus \operatorname{sqrt}\{\mathbf{x}\}$

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

= =		≲ \lessapprox	
< <	≖ \eqcirc	<pre>≤ \lesseqgtr</pre>	
> >	-: \eqcolon or \minuscolon	<pre></pre>	<pre> \sqsubseteq </pre>
: :	-:: \Eqcolon or \minuscoloncolon	≶ \lessgtr	□ \sqsupset
≈ \approx	=: \eqqcolon or \equalscolon	\lesssim \lesssim	☐ \sqsupseteq
≈: \approxcolon	=:: \Eqqcolon Or \equalscoloncolon	« \II	
≈:: \approxcoloncolon	\sim \eqsim	≪ \ 111	
$pprox$ \approxeq	> \eqslantgtr	< ∖llless	<pre></pre>
≍ \asymp	⟨ \eqslantless	< \lt	<pre></pre>
∂ \backepsilon	≡ \equiv	\mid	≻ \succ
∽ \backsim	≒ \fallingdotseq	⊨ \models	≿ \succapprox
	← \frown	—○ \multimap	<pre>≽ \succcurlyeq</pre>
	≥ \ge	⊶ \origof	
\ \bowtie	≥ \geq	∋ \owns	≿ \succsim
≏ \bumpeq	≧ \geqq	\parallel	∋\Supset
⇒ \Bumpeq		⊥ \perp	⊃ \supset
≗ \circeq	≫ \gg	↑ \pitchfork	<pre></pre>
:≈ \colonapprox	>>> \ggg	≺ \prec	<pre> \supseteqq </pre>
∷≈ \Colonapprox Or \coloncolonapprox	>>> \gggtr	≅ \precapprox	≈ \thickapprox
:— \coloneq or \colonminus	> \gt	≼ \preccurlyeq	∼ \thicksim
:- \Coloneq Or \coloncolonminus	≳ \gtrapprox		⊴ \trianglelefteq
∷ \coloneqq or \colonequals	≥ \gtreqless	≾ \precsim	≜ \triangleq
<pre> ::= \Coloneqq Or \coloncolonequals</pre>	≥ \gtreqqless	∝ \propto	
\sim \colonsim	≷ \gtrless	≓ \risingdotseq	
∷~ \Colonsim Or \coloncolonsim	≳ \gtrsim	\shortmid	△ \vartriangle
≅ \cong	⊷ \imageof	∥ \shortparallel	⟨ \vartriangleleft
≺ \curlyeqprec	€ \in or \isin	\sim \sim	
⊱ \curlyeqsucc	Noin	\sim : \simcolon	: \vcentcolon Or \ratio
⊣ \dashv	≤ \le	~∷ \simcoloncolon	├ \vdash
:: \dblcolon Or \coloncolon	≤ \leq	\simeq \simeq	⊨ \vDash
≐ \doteq	≦ \leqq		I⊢ \Vdash
∴ \Doteq		√ \smallsmile	∥⊢ \Vvdash

≨ \gnapprox	≱ \ngeqslant	<pre> \nsubseteq </pre>	→ \precneqq
⇒ \gneq	≯ \ngtr	≨ \nsubseteqq	≾ \precnsim
	≰ \nleq	√ \nsucc	Ç \subsetneq
	≰ \nleqq		\subsetneq \subsetneqq
≩ \gvertneqq	≰ \nleqslant	≱ \nsupseteq	≿ \succnapprox
≨ \lnapprox	≮ \nless	≱ \nsupseteqq	
<pre></pre>	∤ \nmid		≿ \succnsim
≨ \lneqq	∉ \notin		⊋ \supsetneq
	∌ \notni		<pre></pre>
≨ \lvertneqq	∦ \nparallel		⊊ \varsubsetneq
≇ \ncong	⊀ \nprec	⊬ \nvdash	≨ \varsubsetneqq
≠ \ne	⊀ \npreceq	⊭ \nvDash	
≠ \neq	∤ \nshortmid	⊭ \nVDash	
≱ \ngeq	и \nshortparallel	⊮ \nVdash	
≹ \ngeqq	<pre></pre>	≨ \precnapprox	

Arrows

	← \leftharpoonup	⇒ \rArr
☼ \circlearrowright		\rightarrow \rarr
✓ \curvearrowleft	\leftrightarrow \leftrightarrow	\restriction
\curvearrowright \curvearrowright	⇔ \Leftrightarrow	$ ightarrow$ \rightarrow
↓ \Darr	$\stackrel{\longleftarrow}{\longrightarrow}$ \leftrightarrows	\Rightarrow \Rightarrow
↓ \dArr	← \leftrightharpoons	→ \rightarrowtail
↓ \darr	<pre> \\leftrightsquigarrow</pre>	→ \rightharpoondown
← \dashleftarrow	← \Lleftarrow	→ \rightharpoonup
→ \dashrightarrow	← \longleftarrow	$ ightarrow$ \rightleftarrows
↓ \downarrow	← \Longleftarrow	ightharpoons
↓ \Downarrow	\longleftrightarrow \longleftrightarrow	⇒ \rightrightarrows
↓ \downdownarrows	← \Longleftrightarrow	√→ \rightsquigarrow
\\downharpoonleft	\longmapsto \longmapsto	⇒ \Rrightarrow
\downharpoonright	\longrightarrow \longrightarrow	l→ \Rsh
← \gets	⇒ \Longrightarrow	∖ \searrow
⇔ \Harr	← \looparrowleft	√ \swarrow
⇔ \hArr	→ \looparrowright	$ ightarrow$ \to
\leftrightarrow \harr	⇔ \Lrarr	← \twoheadleftarrow
← \hookleftarrow	⇔ \lrArr	> \twoheadrightarrow
\hookrightarrow \hookrightarrow	↔ \lrarr	↑ \Uarr
← \iff	1 \Lsh	↑ \uArr
← \impliedby	→ \mapsto	↑ \uarr
⇒ \implies		↑ \uparrow
← \Larr	<pre>← \nleftarrow</pre>	↑ \Uparrow
← \lArr	<pre>⟨ ⟨ \nLeftarrow⟩ </pre>	↑ \updownarrow
← \larr	⟨→ \nleftrightarrow	↑ \Updownarrow
√→ \leadsto	⇔ \nLeftrightarrow	1 \upharpoonleft
← \leftarrow	→ \nrightarrow	\upharpoonright
← \Leftarrow	⇒ \nRightarrow	↑↑ \upuparrows

Q Search

Extensible Arrows

$\leftarrow \frac{abc}{\leftarrow} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	$\xrightarrow{over} value \\ under \\ \label{eq:condition} \\ \text{`xrightarrow[under]{over}}$
$\stackrel{abc}{\longleftarrow}$ \xLeftarrow{abc}	$\stackrel{abc}{\Longrightarrow}$ \xRightarrow{abc}
$\stackrel{abc}{\longleftrightarrow} \ \ \ \ \ \ \ \ \ \ \ \ \$	$\stackrel{abc}{\longleftrightarrow} \ \ \ \ \ \ \ \ $
$\stackrel{abc}{\longleftrightarrow}$ \xhookleftarrow{abc}	$\stackrel{abc}{\longleftrightarrow}$ \xhookrightarrow{abc}
$\stackrel{abc}{\longleftarrow} $	$\stackrel{abc}{-\!$
$\stackrel{abc}{\longleftarrow}$ \xleftharpoonup{abc}	\xrightarrow{abc} \xrightharpoonup{abc}
$\begin{array}{c} abc \\ \hline \end{array} \ \ \ \ \ \ \ \ \ \ \ \ \$	\xrightarrow{abc} \xrightharpoondown{abc}
\(\frac{abc}{\rightarrow}\\ \x\leftrightharpoons{abc}	\xrightarrow{abc} \xrightleftharpoons{abc}
\xrightarrow{abc} \xtofrom{abc}	\xrightarrow{abc} \xmapsto{abc}
\xlongequal{abc}	

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

Special Notation

Bra-ket Notation

$\langle \phi \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	$ \psi angle$ \ket{\psi}	$\langle \phi \psi angle$ \braket{\phi\vert\psi}
$\langle \phi \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	$ \psi angle$ \Ket{\psi}	

Style, Color, Size, and Font

Class Assignment

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

Color

F=ma \colon{blue} F=ma

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

$$\begin{split} F &= ma \text{ $$\text{textcolor{blue}}$} &= ma \text{ $$\text{textcolor{#228822}}$} &= ma \text{ $$\text{colorbox{aqua}}$} &= ma \text{ $$\text{colorbox{aqua}}$} &= ma \text{ $$\text{f} &= ma$} \\ \hline F &= ma \text{ $$\text{fcolorbox{red}}$} &= ma \text{ $$\text{f} &= ma$} \\ \end{split}$$

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.

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

$Ab0 \mbox{ \mbox{$\backslash$}}$	${f Ab0}$ \mathbf{Ab0}	$Ab0$ \mathit{Ab0}
Abo \mathnormal{Ab0}	${f Ab0}$ \textbf{Ab0}	$Ab0 \setminus \text{textit}\{\text{Ab0}\}$
$Ab0 \ \texttt{\textrm{Ab0}}$	${f Ab0}$ \bf Ab0	$Ab0$ \it Ab0
${ m Ab0}$ \rm ${ m Ab0}$	${f Ab0}$ \bold{Ab0}	Ab0 \textup{Ab0}
$Ab0 \ \texttt{\ } \ $	$m{Ab0}$ \boldsymbol{Ab}	AB \Bbb{AB}
Ab0	$m{Ab0}$ \bm{Ab0}	$\mathbb{AB} \setminus mathbb\{AB\}$
Ab0 Ab0	$Ab0 \text{textmd} \{ \text{Ab0} \}$	Abo \frak{Ab0}
Ab0 \textsf{Ab0}	AbO \mathtt{Ab0}	Abo \mathfrak{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 $\text{textsf\{h\}}$ will produce H. The other versions do not stack, e.g., $\verb|\mathsf{\mathbf{H}}| will produce H.$

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

Size

AB \Huge AB	AB \normalsize AB
AB \huge AB	AB \small AB
AB \large ab	AB \footnotesize AB
AB \Large AB	AB \scriptsize AB
AB \large AB	AB \tiny AB

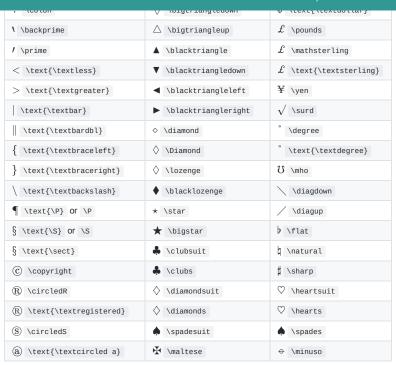
Style

$\sum_{i=1}^{n} \texttt{\displaystyle\sum}_{\{i=1\}^n}$
$\sum_{i=1}^n$ \textstyle\sum_{i=1}^n
x \scriptstyle x (The size of a first sub/superscript)
$_{\it x}$ \scriptscriptstyle x (The size of subsequent sub/superscripts)
$\lim_{x} \lim_{x} x$
$\lim_x \lim_{x \to x}$
x^2 \verb!x^2!

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

Symbols and Punctuation

% comment	\dots	KATEX \KaTeX
% \%		_
% \%	··· \cdots	IATEX \LaTeX
# \#	··· \ddots	ТЕХ \тех
& \&	\ldots	$ abla$ \nabla
_ _	: \vdots	∞ \infty
_ \text{\textunderscore}	··· \dotsb	∞ \infin
-	\dotsc	√ \checkmark
<pre>- \text{\textendash}</pre>	··· \dotsi	† \dag
	··· \dotsm	† \dagger
<pre> \text{\textemdash}</pre>	\dotso	† \text{\textdagger}
~ \text{\textasciitilde}	· \sdot	‡ \ddag
^ \text{\textasciicircum}	\mathellipsis	‡ \ddagger
•	<pre> \text{\textellipsis}</pre>	<pre>‡ \text{\textdaggerdbl}</pre>
<pre>text{\textquoteleft}</pre>	□ \Box	‡ \Dagger
'\lq	☐ \square	∠ \angle
'\text{\textquoteright}	■ \blacksquare	
' \rq	\triangle \triangle	√ \sphericalangle
" \text{\textquotedblleft}	√ \triangledown	T \top
27 11		⊥ \bot



Direct Input: § ¶ £\forall \nabla \cdot \lambda \delta \d

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	рс	12 KaTeX pt
mu	1/18 CSS em	dd	1238/1157 KaTeX pt
pt	1/72.27 inch × F × G	СС	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 \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 \rightarrow

