

# **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**

$a^\prime$ a'	$ ilde{a}$ \tilde{a}	$\mathring{g}$ \mathring{g}
a'' a''	$\widetilde{ac}$ \widetilde{ac}	$\widehat{AB}$ \overgroup{AB}
$a^\prime$ a^{\prime}	$AB$ \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}	$ \underbrace{AB} $ \underleftarrow{AB}	$\stackrel{AB}{\Longrightarrow}$ \underrightarrow{AB}
$\check{a}$ \check{a}	$\frac{\angle}{ac}$ \overleftharpoon{ac}	$\overrightarrow{ac}$ \overrightharpoon{ac}
$\dot{a}$ \dot{a}	$\overleftrightarrow{AB}$ \overleftrightarrow{AB}	$\widehat{AB}$ \overbrace{AB}
$\ddot{a}$ \ddot{a}	$ \stackrel{AB}{\longleftrightarrow} $ \underleftrightarrow{AB}	$AB$ \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}	

#### Accent functions inside \text{...}

á \'{a}	ã \~{a}	å \.{a}	ű ∖H{a}
à \`{a}	$\bar{a} \setminus = \{a\}$	ä \"{a}	ǎ ∖v{a}

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### **Delimiters**

()()	() \lparen	[][]	\rceil	↑ \uparrow
[][]	[] \lbrack \rbrack	[][]	│	↓ \downarrow
{} \{ \}	<pre>{} \lbrace \rbrace</pre>	$\mathcal{N}$	∫ \lmoustache \rmoustache	
()()	$\langle\  angle$ \langle \rangle	()()	() \lgroup \rgroup	↑ \Uparrow
	\vert	רח וו	\ulcorner\urcorner	↓ \Downarrow
\  \	\Vert	ГЛ Г J	∟」 \llcorner \lrcorner	↑ \Updownarrow
\lvert \rvert	\lVert \rVert	\left.	\right.	\ \backslash
$\langle \ \rangle$ \lang	<> \lt \gt		[] \llbracket	{[]} \lBrace \rBrace

#### **Delimiter Sizing**

$$(AB)_{\text{left(\LARGE{AB}\right)}}$$
 
$$(((((( \ \text{\big(\big(\bigg(\bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\B)\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\B)\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\B)\Bigg(\B)\Bigg(\Bigg(\Bigg(\Bigg(\B)\Bigg(\B)\Bigg(\Bigg(\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\Bigg(\B)\B$$

\left	\big	\bigl	\bigm	\bigr
\middle	\Big	\Bigl	\Bigm	\Bigr
\right	\bigg	\biggl	\biggm	\biggr
	\Bigg	\Biggl	\Biggm	\Biggr

### **Environments**

Try	Docs	Users	GitHub
$\begin{pmatrix} a & b \\ c & d \end{pmatrix}$	<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>
$egin{array}{c c} a & b \ c & d \ \end{array}$	<pre>\begin{vmatrix}   a &amp; b \\   c &amp; d \end{vmatrix}</pre>	$egin{array}{c c} a & b \ c & d \ \end{array}$	<pre>\begin{Vmatrix}   a &amp; b \\   c &amp; d \end{Vmatrix}</pre>
$     \begin{cases}       a & b \\       c & d     \end{cases} $	<pre>\begin{Bmatrix}   a &amp; b \\   c &amp; d \end{Bmatrix}</pre>	$egin{array}{ c c c c c c c c c c c c c c c c c c c$	<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>
a = b + c $d + e = f$	<pre>\begin{aligned} a&amp;=b+c \\ d+e&amp;=f \end{aligned}</pre>	10x + 3y = 2 3x + 13y = 4	\begin{alignedat}{2}  10&x+ &3&y = 2 \\  3&x+&13&y = 4  \end{alignedat}
a = b $e = b + c$	<pre>\begin{gathered}   a=b \\   e=b+c \end{gathered}</pre>	$x = egin{cases} a &  ext{if } b \ c &  ext{if } d \end{cases}$	<pre>x = \begin{cases} a &amp;\text{if } b \\ c &amp;\text{if } d \end{cases}</pre>

KaTeX also supports darray and dcases .

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

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

### **HTML**

KATEX	\href{https://katex.org/}{\KaTeX}

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#### **Greek Letters**

# Direct Input: $AB\Gamma\Delta EZH\Theta IK\Lambda MN\Xi O\Pi P\Sigma T\Upsilon\Phi X\Psi\Omega$ $\alpha\beta\gamma\delta\epsilon\zeta\eta\theta\iota\kappa\lambda\mu\nu\xi o\pi\rho\sigma\tau\upsilon\phi\chi\psi\omega\epsilon\vartheta\varpi\varrho\varsigma\varphi$

A \Alpha	B \Beta	$\Gamma$ \Gamma	$\Delta$ \Delta
${ m E}$ \Epsilon	Z \Zeta	H \Eta	$\Theta$ \Theta
I \Iota	К \Карра	$\Lambda$ \Lambda	$M$ \Mu
N \Nu	Ξ\Xi	O \Omicron	∏ \Pi
P \Rho	$\Sigma$ \Sigma	$T$ \Tau	$\Upsilon$ \Upsilon
$\Phi$ \Phi	X \Chi	Ψ \Psi	$\Omega$ \Omega
$arGamma$ \varGamma	$arDelta$ \varDelta	$\Theta$ \varTheta	$arLambda$ \varLambda
Ξ \varXi	$arPi$ \varPi	$arSigma$ \varSigma	$\varUpsilon$ \varUpsilon
$\Phi$ \varPhi	<b>Ψ</b> \varPsi	$arOmega$ \varOmega	
$lpha$ \alpha	$eta$ \beta	$\gamma$ \gamma	$\delta$ \delta
$\epsilon$ \epsilon	ζ \zeta	$\eta$ \eta	$ heta$ \theta
$\iota$ \iota	$\kappa$ \kappa	$\lambda$ \lambda	$\mu$ \mu
$ u$ \nu	<i>ξ</i> \xi	O \omicron	$\pi$ \pi
$ ho$ \rho	$\sigma$ \sigma	$ au$ \tau	$v$ \upsilon
$\phi$ \phi	$\chi$ \chi	$\psi$ \psi	$\omega$ \omega
$arepsilon$ \varepsilon	<b>ℋ</b> ∖varkappa	$artheta$ \vartheta	$artheta$ \thetasym
ϖ \varpi	<pre></pre>	ς \varsigma	$arphi$ \varphi
F \digamma			

#### **Other Letters**

≀ \imath	∇ \nabla		$\mathbb{R}$ \Reals	Œ \text{\OE}
$\jmath$ \jmath	$\partial$ \partial	ℑ \image	<i>℘</i> \wp	Ø \text{\o}

Try	D	ocs	Users	GitHub
□ \beth	$\mathbb{C}$ \Complex	<b>ℝ</b> \R	$\mathring{A}$ \text{\AA}	<pre>J \text{\j}</pre>
] \gimel	$\ell$ \ell	ℜ \Re	æ \text{\ae}	
☐ \daleth	$\hbar$ \hbar	ℜ \real	Æ \text{\AE}	
ð ∖eth	$\hbar$ \hslash	$\mathbb{R}$ \reals	œ \text{\oe}	

Direct Input: ∂∇S∃Xユゴコラħð

ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏĐÑÒÓÔÕÖÙÚÛÜÝÞßàáâãäåçèéêëìíîiðñòóôöùúûüýþÿ

#### **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	21-3 a-3	Monospace	A-Z a-z 0-9

#### Unicode

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

If the KaTeX rendering mode is set to strict: false or strict: "warn" (default), then KaTeX will accept all Unicode letters. The letters not listed above will be rendered from system fonts, not KaTeX-supplied fonts, so their typography may clash. They may also cause small vertical alignment issues. KaTeX has detailed metrics for glyphs in Latin, Greek, and Cyrillic, but other glyphs are treated as if they are each as tall as the letter M.

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

### Layout

#### **Annotation**

$$\delta$$
 \cancel{5} \  $a+b+c$  \overbrace{a+b+c}^{\text{note}}

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

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

\tag\*{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	!	$egin{array}{c} a \ b \end{array}$ a \atop b
$e^x$ e^x	! \overset{!}{=}	$a^{\mathrm{b}}c$ a\raisebox{0.25em}{b}c
$\overset{o}{u}$ _u^o	<pre>= \underset{!}{=} !</pre>	

The second argument of \raisebox can contain math if it is nested within \$...\$ delimiters, as in \raisebox{0.25em}{\$\frac a b\$}

### **Overlap and Spacing**

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

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arguments.

#### Spacing

Function	Produces	Function	Produces
	<sup>3</sup> / <sub>18</sub> em space	\kern{distance}	space, width = distance
\thinspace	<sup>3</sup> / <sub>18</sub> em space	\mkern{distance}	space, width = distance
\>	⁴⁄₁ <sub>8</sub> em space	\mskip{distance}	space, width = distance
\:	⁴⁄₁ <sub>8</sub> em space	\hskip{distance}	space, width = distance
\medspace	⁴⁄₁ <sub>8</sub> em space	\hspace{distance}	space, width = distance
\;	⁵⁄₁ <sub>8</sub> em space	\hspace*{distance}	space, width = distance
\thickspace	⁵⁄₁ <sub>8</sub> 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	\!	− <sup>3</sup> ⁄ <sub>18</sub> em space
~	non-breaking space	\negthinspace	− <sup>3</sup> ⁄ <sub>18</sub> em space
\ <space></space>	space	\negmedspace	− <sup>4</sup> ⁄ <sub>18</sub> em space
\nobreakspace	non-breaking space	\negthickspace	− <sup>5</sup> ⁄ <sub>18</sub> em space
\space	space		

#### Notes:

distance will accept any of the KaTeX units.

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

 $\mbox{\sc mkern}$  and  $\mbox{\sc mskip}$  will not work in text mode and both will write a console warning for any unit except  $\mbox{\sc mu}$  .

### **Logic and Set Theory**

Try	Docs	Use	ers	GitHub
_ ,	_ ,p	, \	·- /·-··	
∄ \nexists	\mid	$ ightarrow$ \to	⇒ \implies	
$\in$ \in	∧ \land	← \gets	← \impliedby	
$\in$ \isin	∨ \lor	$\leftrightarrow$ \leftrightarrow	<> \iff	
∉ \notin	∋ \ni	∌ \notni	¬ \neg Or \lnot	

### **Macros**

$x^2 + x^2$	$\def\foo\{x^2\} \foo + \foo$
$y^2 + y^2$	\gdef\bar#1{#1^2} \bar{y} + \bar{y}
	\global\def\macroname#1#2{definition}
	<pre>\newcommand\macroname[numargs]{definition}</pre>
	\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.

\gdef and \global\def macros will persist between math expressions.

Available functions include:

\char \mathchoice \TextOrMath \@ifstar \@ifnextchar \@firstoftwo \@secondoftwo \relax

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

### **Operators**

### **Big Operators**

\Sum	∏ \prod	<pre>V \bigvee</pre>



### **Binary Operators**

+ +	· \cdot	>> \gtrdot	$x\pmod a$ x \pmod a
	· \cdotp	T \intercal	$x$ $(a)$ $ imes$ \pod a
/ /	■ \centerdot	∧ \land	
* *	○ \circ		
∐ \amalg	★ \circledast	. \ldotp	⋊ \rtimes
& \And		V ∖lor	\ \setminus
* \ast	○ \circleddash	√ \lessdot	
	⊎ \Cup	√ \lhd	□ \sqcap
○ \bigcirc	U \cup		□ \sqcup
mod \bmod	Ƴ \curlyvee	$x \mod a$ x\mod a	× \times
· \boxdot	人 \curlywedge	<b>∓</b> \mp	
☐ \boxminus	÷ \div	⊙ \odot	\unrhd
⊞ \boxplus	★ \divideontimes	→ \ominus	⊎ \uplus
	∔ \dotplus	⊕ \oplus	∨ \vee
• \bullet	= ∧ \doublebarwedge	⊗ \otimes	
⋒ \Cap	∩ \doublecap	⊘ \oslash	∧ \wedge
∩ \cap	⊎ \doublecup	± \pm or \plusmn	} \wr

#### **Fractions and Binomials**

### **Math Operators**

arcsin \arcsin	cotg \cotg	ln \ln	det \det
arccos \arccos	coth \coth	log \log	gcd \gcd
arctan \arctan	CSC \csc	Sec \sec	inf \inf
arctg \arctg	ctg \ctg	sin \sin	lim \lim
arcctg \arcctg	cth \cth	sinh \sinh	lim inf \liminf
arg \arg	deg \deg	sh \sh	lim sup \limsup
ch \ch	dim \dim	tan \tan	max \max
COS \cos	exp \exp	tanh \tanh	min \min
COSEC \cosec	hom \hom	tg \tg	Pr \Pr
cosh \cosh	ker \ker	th \th	sup \sup
cot \cot	lg \lg	$f \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	arg max \argmax
arg min \argmin			

Functions on the right column of this table can take  $\$  \limits .

### \sqrt

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

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

### Relations

Try	Docs	Users	GitHub
/ /	· \L4COTOH	> /TESSÉTI	∠ /Jubset
: :	=: \eqqcolon	$\lesssim$ \lesssim	
$pprox$ \approx	=∷ \Eqqcolon	≪ \11	⊆ \subseteq Or \sube
$pprox$ \approxeq	$\overline{\sim}$ \eqsim		
	> \eqslantgtr	<	≻ \succ
<b>Э</b> \backepsilon	⟨ \eqslantless	< \lt	≿ \succapprox
√ \backsim	≡ \equiv	\mid	<pre></pre>
	≒ \fallingdotseq	⊨ \models	
) \between		—○ \multimap	≿ \succsim
├ \bowtie	≥ \ge	→ \owns	∋ \Supset
	≥ \geq	\parallel	⊃ \supset
⇒ \Bumpeq	≧ \geqq	⊥ \perp	
° \circeq	<pre></pre>	↑ \pitchfork	<pre></pre>
∷≈ \colonapprox	≫ \gg	≺ \prec	≈ \thickapprox
∷≈ \Colonapprox	>>> \ggg	≅ \precapprox	$\sim$ \thicksim
:— \coloneq	>>> \gggtr		
∷— \Coloneq	> \gt		$\stackrel{ riangle}{=}$ \triangleq
<b>≔</b> \coloneqq	≳ \gtrapprox	≾ \precsim	
∷= \Coloneqq	≥ \gtreqless	∝ \propto	∝ \varpropto
$\sim$ \colonsim	≥ \gtreqqless	≓ \risingdotseq	$\triangle$ \vartriangle
∷∼ \Colonsim	≷ \gtrless	\shortmid	√ \vartriangleleft
$\cong$ \cong	≳ \gtrsim	∥ \shortparallel	
≺ \curlyeqprec	∈ \in Or \isin	$\sim$ \sim	: \vcentcolon
<pre></pre>		$\simeq$ \simeq	├ \vdash
⊢ \dashv	≤ \le		⊨ \vDash

Try	Docs	Users	GitHub
		☐ \sqsubseteq	

### **Negated Relations**

$$\neq$$
 \not =

		⊈ \nsubseteq	
⇒ \gneq	≯ \ngtr	⊈ \nsubseteqq	
	≰ \nleq	√ \nsucc	
	≰ \nleqq		$\subsetneq$ \subsetneqq
<pre></pre>	≰ \nleqslant	⊉ \nsupseteq	≿ \succnapprox
≨ \lnapprox	≮ \nless	<b>⊉</b> \nsupseteqq	<pre></pre>
<pre></pre>	∤ \nmid		≿ \succnsim
≨ \lneqq	∉ \notin		→ \supsetneq
$\lesssim$ \lnsim	∌ \notni	<pre></pre>	$\supseteq$ \supsetneqq
≨ \lvertneqq	∦ \nparallel	<pre></pre>	
≇ \ncong	⊀ \nprec	⊬ \nvdash	<pre></pre>
<b>≠</b> \ne	⊀ \npreceq	⊭ \nvDash	
≠ \neq	∤ \nshortmid	⊭ \nVDash	⊋ \varsupsetneqq
≱ \ngeq	서 \nshortparallel	⊮ \nVdash	
≱ \ngeqq		₹ \precnapprox	

#### **Arrows**

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	⇔ \Leftrightarrow	$ ightarrow$ \rightarrow
↓ \Darr		$\Rightarrow$ \Rightarrow
↓ \dArr		→ \rightarrowtail
↓ \darr	<pre></pre> <pre> <pre> </pre> <pre> <pre> <pre> </pre> <pre> <pre> <pre> <pre> </pre> <pre> </pre> <pre> <pre> </pre> <pre> <pre> <pre> </pre> <pre> </pre> <pre> <pre> <pre> </pre> <pre> <pre> <pre> <pre> </pre> <pre> </pre> <pre> <pre> <pre> </pre> <pre> <pre> <pre> <pre> <pre> </pre> <pre> <pre> <pre> <pre> </pre> <pre> <pre> <pre> <pre> </pre> <pre> <pre> <pre> </pre> <pre> <pr< td=""><td>→ \rightharpoondown</td></pr<></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>	→ \rightharpoondown
← \dashleftarrow	⟨ \Lleftarrow	→ \rightharpoonup
→ \dashrightarrow	< ∖longleftarrow	$ ightarrow$ \rightleftarrows
↓ \downarrow	← \Longleftarrow	
↓ \Downarrow	$\longleftrightarrow$ \longleftrightarrow	
↓ \downdownarrows	← \Longleftrightarrow	√→ \rightsquigarrow
\\downharpoonleft	├── \longmapsto	⇒ \Rrightarrow
\downharpoonright	→ \longrightarrow	r \Rsh
← \gets	⇒ \Longrightarrow	∖ \searrow
⇔ \Harr	<pre>← \looparrowleft</pre>	√ \swarrow
⇔ \hArr	→ \looparrowright	$ ightarrow$ \to
$\leftrightarrow$ \harr	⇔ \Lrarr	← \twoheadleftarrow
← \hookleftarrow	⇔ \lrArr	→ \twoheadrightarrow
$\hookrightarrow$ \hookrightarrow	$\leftrightarrow$ \lrarr	↑ \Uarr
← \iff	↑ \Lsh	↑ \uArr
← \impliedby	→ \mapsto	† \uarr
⇒ \implies		↑ \uparrow
← \Larr	<pre>← \nleftarrow</pre>	↑ \Uparrow
← \lArr	<pre> ⟨  ⟨  ⟨  ⟨  ⟨  ⟨  ⟨  ⟨  ⟨  ⟨  ⟨  ⟨  ⟨</pre>	↑ \updownarrow
← \larr	<pre>⟨→ \nleftrightarrow</pre>	↑ \Updownarrow
√→ \leadsto	<pre></pre>	1 \upharpoonleft
← \leftarrow	→ \nrightarrow	\upharpoonright

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#### **Extensible Arrows**

$\stackrel{abc}{\longleftarrow}$ \xleftarrow{abc}	$\xrightarrow{over}        $
$\stackrel{abc}{\longleftarrow}$ \xLeftarrow{abc}	$\stackrel{abc}{\Longrightarrow} \   \   \   \   \   \   \   \ $
$\stackrel{abc}{\longleftrightarrow} \   \   \   \   \   \   \   \ $	$\stackrel{abc}{\Longleftrightarrow} \  \   \   \   \   \   \   \  $
$\stackrel{abc}{\longleftrightarrow}$ \xhookleftarrow{abc}	$\stackrel{abc}{\longleftrightarrow}$ \xhookrightarrow{abc}
$ \stackrel{abc}{\longleftarrow}                                   $	$\xrightarrow{abc}$ \xtwoheadrightarrow{abc}
$\stackrel{abc}{\longleftarrow}$ \xleftharpoonup{abc}	$abc$ \xrightharpoonup{abc}
$abc$ \xleftharpoondown{abc}	$abc$ \xrightharpoondown{abc}
$\stackrel{\angle abc}{\longleftarrow}$ \xleftrightharpoons{abc}	$abc$ \xrightleftharpoons{abc}
$\stackrel{abc}{\longleftrightarrow}$ \xtofrom{abc}	$\stackrel{abc}{\longmapsto} \  \   \   \   \   \   \   \  $
$abc$ \xlongequal{abc}	

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

### Style, Color, Size, and Font

#### **Class Assignment**

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

#### Color

$$F=ma$$
 \colon{blue} F=ma

Note that KaTeX \color acts like a switch. This aligns with LaTeX and differs from MathJax. Other KaTeX color functions expect the content to be a function argument:

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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}	${f Ab0}$ \mathbf{Ab0}	$Ab\theta$ \mathit{Ab0}
$Ab{ m o}$ \mathnormal{Ab0}	${f Ab0}$ \textbf{Ab0}	$Ab\theta$ \textit{Ab0}
Ab0 Ab0	${f Ab0}$ \bf Ab0	$Ab0$ \it Ab0
${ m Ab0}$ \rm Ab0	${f Ab0}$ \bold{Ab0}	Ab0 Ab0
Ab0 Ab0	$m{Ab0}$ \boldsymbol{Ab}	AB \Bbb{AB}
Ab0 Ab0	$m{Ab0}$ \bm{Ab0}	$\mathbb{AB}$ \mathbb{AB}
$Ab0 \ \mbox{mathsf{Ab0}}$	Ab0 Ab0	Abo \frak{Ab0}
Ab0 \textsf{Ab0}	AbO \mathtt{Ab0}	Abo \mathfrak{Ab0}
Ab0 \sf Ab0	AbO \texttt{Ab0}	$\mathcal{AB}_0$ \mathcal{AB0}
	AbO \tt Ab0	$\mathscr{A}\mathscr{B}$ \mathscr{AB}

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

In cases where KaTeX fonts do not have a bold glyph,  $\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protect\protec$ 

#### Size

$AB$ \Huge AB	$AB$ \normalsize AB
$AB$ \huge AB	$AB$ \small AB
$AB$ \LARGE AB	$AB$ \footnotesize AB
	$AB$ \scriptsize AB

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#### Style

$\sum_{i=1}^{n} \ \texttt{\displaystyle\sum}_{i=1}^n$		
$\sum_{i=1}^{n} \text{$$\text{textstyle}\sum_{i=1}^{n} $}$		
$x \setminus \text{scriptstyle } x$ (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	\dots	$ m K^{\!A}T_{\!E}X$ \KaTeX
% \%	··· \cdots	$ ext{IAT}_{ ext{E}} ext{X}$ \LаТеX
# \#	·· \ddots	$T_{\!E}X$ \TeX
& \&	\ldots	$ abla$ \nabla
_ \_	· : \vdots	$\infty$ \infty
_ \text{\textunderscore}	··· \dotsb	$\infty$ \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
6 .	\textellipsis	† \text{\textdaggerdbl}

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" \text{\textquotedblright}		\$ \\$
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/ \prime	▲ \blacktriangle	$\pounds$ \mathsterling
< \text{\textless}	▼ \blacktriangledown	$\pounds$ \text{\textsterling}
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Direct Input:  $\pounds \Psi \nabla \infty \cdot \angle \angle \triangleleft \spadesuit \heartsuit \diamondsuit \clubsuit \flat \natural \sharp \checkmark \dots \cdot \cdot \cdot !$  !!

### **Units**

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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

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#### 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

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