LATEX Mathematical Symbols The more unusual symbols are not defined in base LATEX (NFSS) and require \usepackage{amssymb}

1 Greek and Hebrew letters

α	\alpha	κ	\kappa	ψ	\psi	F	\digamma	Δ	\Delta	Θ	\Theta
β	\beta	λ	\lambda	ρ	\rho	ε	\varepsilon	Γ	\Gamma	Υ	\Upsilon
χ	\chi	μ	\mu	σ	\sigma	\varkappa	\varkappa	Λ	\Lambda	Ξ	\Xi
δ	\delta	ν	\nu	τ	\tau	φ	\varphi	Ω	\Omega		
ϵ	\epsilon	0	0	θ	\theta	$\overline{\omega}$	\varpi	Φ	\Phi	×	\aleph
η	\eta	ω	\omega	v	\upsilon	ρ	\varrho	П	\Pi	コ	\beth
γ	\gamma	ϕ	\phi	ξ	\xi	5	\varsigma	Ψ	\Psi	٦	\daleth
L	\iota	π	\pi	č	\zeta	v9	\vartheta	Σ	\Sigma	ב	\gimel

2 LATEX math constructs

$\frac{abc}{xyz}$	$\frac{abc}{xyz}$	\overline{abc}	$\operatorname{\mathtt{orem}}_{\operatorname{abc}}$	\overrightarrow{abc}	\overrightarrow{abc}
f'	f'	\underline{abc}	\underline{abc}	\overleftarrow{abc}	$\verb \overleftarrow \{abc\}$
\sqrt{abc}	\sqrt{abc}	\widehat{abc}	\widehat{abc}	\widehat{abc}	\overbrace{abc}
$\sqrt[n]{abc}$	\sqrt[n]{abc}	\widetilde{abc}	\widetilde{abc}	abc	\underbrace{abc}

3 Delimiters

		{	\{	L	\lfloor	/	/	1	\Uparrow	L	\llcorner
	\vert	}	\}		\rfloor	\	\backslash	1	\uparrow	_	\lrcorner
ĺ	\1	(\langle	Ī	\lceil	[[\Downarrow	Г	\ulcorner
Ш	\Vert	>	\rangle	1	\rceil	1	1	- 1	\downarrow	7	\urcorner

Use the pair $\lceil lefts_1 \rceil$ and $\lceil lefts_2 \rceil$ to match height of delimiters s_1 and s_2 to the height of their contents, e.g., \left| expr \right| \left\{ expr \right\} \left\Vert expr \right.

4 Variable-sized symbols (displayed formulae show larger version)

\sum	\sum	ſ	\int	+	\biguplus	\oplus	\bigoplus	V	\bigvee
П	\prod	∮	\oint	\cap	\bigcap	\otimes	\bigotimes	\wedge	\bigwedge
П	\coprod	\iint	\iint	U	\bigcup	\odot	\bigodot		\bigsqcup

5 Standard Function Names

I	Function names	should appear	in Roman, no	ot Italic, e.g.,	Corre			$\longrightarrow \tan(at - n\pi)$ $\longrightarrow \tan(at - n\pi)$	
	arccos	\arccos	arcsin	\arcsin	arctan	\arctan	arg	\arg	
	cos	\cos	\cosh	\cosh	cot	\cot	\coth	\coth	
	CSC	\csc	\deg	\deg	det	\det	\dim	\dim	
	exp	\exp	gcd	\gcd	hom	\hom	\inf	\inf	
	ker	\ker	lg	\lg	$_{ m lim}$	\lim	lim inf	\liminf	
	\limsup	\limsup	\ln	\ln	log	\log	max	\max	
	min	\min	$_{\mathrm{Pr}}$	\Pr	sec	\sec	\sin	\sin	
	sinh	\sinh	sun	\ sun	tan	\tan	tanh	\tanh	

6 Binary Operation/Relation Symbols

*	\ast	\pm	\pm	\cap	\cap	\triangleleft	\lhd
*	\star		\mp	U	\cup	\triangleright	\rhd
	\cdot	П	\amalg	\forall	\uplus	⊲	\triangleleft
0	\circ	0	\odot	П	\sqcap	⊳	\triangleright
•	\bullet	Θ	\ominus	Ш	\sqcup	⊴	\unlhd
Ö	\bigcirc	0	\oplus	^	\wedge		\unrhd
O	\diamond	0	\oslash	V	\vee \vee	_	
×	\times	8	\otimes			\triangle	\bigtriangledown
		-		†	\dagger		\bigtriangleup
÷	\div	~	\wr	‡	\ddagger	\ 	\setminus
•	\centerdot		\Box		\barwedge		\veebar
*	\circledast	H	\boxplus	人	\curlywedge	Υ	\curlyvee
0	\circledcirc	В	\boxminus	M	\Cap	U	\Cup
Θ	\circleddash	\boxtimes	\boxtimes	\perp	\bot	Т	\top
÷	\dotplus	•	\boxdot	<u>T</u> ⊼	\intercal	\times	\rightthreetimes
*	\divideontimes		\square	$\overline{\wedge}$	\doublebarwedge	λ	\leftthreetimes
=	\equiv	\leq	\leq	\geq	\geq	Ŧ	\perp
\simeq	\cong	\prec	\prec	\succ	\succ	Ü	\mid
\neq	\neq	\preceq	\preceq	\succeq	\succeq		\parallel
\sim	\sim	~	\11	>>	\gg	\bowtie	\bowtie
\simeq	\simeq	\subset	\subset	\supset	\supset	M	\Join
\approx	\approx	\subseteq	\subseteq		\supseteq	\bowtie	\ltimes
\simeq	\asymp		\sqsubset	\supset	\sqsupset	×	\rtimes
÷	\doteq	⊑	\sqsubseteq	\Box	\sqsupseteq	$\overline{}$	\smile
\propto	\propto	\exists	\dashv	F	\vdash	$\overline{}$	\frown
=	\models	€	\in	∋	\ni	∉	\notin
'	\	_	,		,	7-	,
\approx	\approxeq	\leq	\leqq	\geq	\geqq	≶	\lessgtr
~	\thicksim	<	\leqslant	≥	\geqslant	€	\lesseqgtr
~	\backsim	≨	\lessapprox	≳	\gtrapprox	≦	\lesseqqgtr
~	\backsimeq	≈ ≪	\111	≫	\ggg	MVIVAIIWIIAVIAW	\gtreqqless
≜	=					₹	
	\triangleq	<	\lessdot	≽	\gtrdot	2	\gtreqless
<u></u>	\circeq	≲	\lesssim	$\stackrel{>}{\sim}$	\gtrsim		\gtrless
~	\bumpeq	<	\eqslantless	≽	\eqslantgtr	Э	\backepsilon
≎	\Bumpeq	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	\precsim	U II U W ₹Y ₹Y W ₹V	\succsim	Ŏ	\between
÷	\doteqdot	≋	\precapprox	×≅	\succapprox	ф	\pitchfork
≈	\thickapprox	€	\Subset	∋	\Supset	1	\shortmid
Έ.	\fallingdotseq	⊆	\subseteqq	\supseteq	\supseteqq	\sim	\smallfrown
≓	\risingdotseq		\sqsubset	\supset	\sqsupset	$\overline{}$	\smallsmile
\propto	\varpropto	≼	\preccurlyeq	≽	\succcurlyeq	⊩	\Vdash
÷.	\therefore	₹	\curlyeqprec	⋟	\curlyeqsucc	F	\vDash
•:	\because	<	\blacktriangleleft	•	\blacktriangleright	III	\Vvdash
===	\eqcirc	⊴	\trianglelefteq	⊵	\trianglerighteq	П	\shortparallel
\neq	\neq	_	\vartriangleleft	_ ⊳	\vartriangleright	н.	\nshortparallel
7	\mcq	7	(var or rangicier o		(var or rangior igno	"	(mbnor upararrer
≇	\ncong	≰	\nleq	≱	\ngeq	⊈	\nsubseteq
ł	\nmid	\$\$\\	\nleqq	≱	\ngeqq	⊅	\nsupseteq
¥	\nparallel	₹	\nleqslant	¥	\ngeqslant	Ź	\nsubseteqq
- 1	\nshortmid	1	\nless	*	\ngtr	∌	\nsupseteqq
H	\nshortparallel	1	\nprec	, ¥	\nsucc		\subsetneq
11 ~	\nsim	7	\npreceq	¥	\nsucceq	Ž	\supsetneq
,~ ⊯	\nVDash	7		Ξ.		ž	\subsetneq
<i>y</i> – ⊭	\nvDash	≋	\precnapprox	≋	\succnapprox	₹	
<i>⊬</i>	\nvdash	ž	\precnsim	%	\succnsim	₹	\supsetneqq
		≉	\lnapprox	≉	\gnapprox	×	\varsubsetneq
≠	\ntriangleleft	₹	\lneq	₹	\gneq	\neq	\varsupsetneq
\$	\ntrianglelefteq	₹	\lneqq	€	\gneqq	₹	\varsubsetneqq
≯	\ntriangleright	#^\$^#\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\	\lnsim	#V3V #V1V #V3Y8Y# X X X # #X X	\gnsim	⊭	\varsupsetneqq
⊭	\ntrianglerighteq	\neq	\lvertneqq	≨	\gvertneqq		

7 Arrow symbols

$\downarrow \; \; \downarrow \; \uparrow \; \; \uparrow \; \; \downarrow \; \; \downarrow$	\leftarrow \Leftarrow \rightarrow \Rightarrow \leftrightarrow \Leftrightarrow	$\downarrow \; \Downarrow \; \uparrow \; \Leftrightarrow \; \downarrow \; \Leftrightarrow$	\longleftarrow \Longleftarrow \longrightarrow \Longleftrightarrow \Longleftrightarrow	$\uparrow \qquad \uparrow \qquad \downarrow \qquad $	\uparrow \Uparrow \downarrow \Downarrow \updownarrow \Updownarrow
→ ← ← =	\mapsto \hookleftarrow \leftharpoonup \leftharpoondown \rightleftharpoons		\longmapsto \hookrightarrow \rightharpoonup \rightharpoondown \leadsto		\nearrow \searrow \swarrow \nwarrow
→	\dashrightarrow \leftrightarrows \leftarrowtail \curvearrowleft \upuparrows \multimap \rightleftarrows \twoheadrightarrow \rightleftharpoons \Rsh \downharpoonright	$ \Leftrightarrow $	\dashleftarrow \Lleftarrow \looparrowleft \circlearrowleft \upharpoonleft \leftrightsquigarrow \rightrightarrows \rightarrowtail \curvearrowright \downdownarrows \rightsquigarrow	$\neg \bigcirc \oplus \bigcirc \square \bigcirc \neg \bigcirc \neg$	\leftleftarrows \twoheadleftarrow \leftrightharpoons \Lsh \downharpoonleft \rightrightarrows \rightleftarrows \looparrowright \circlearrowright \upharpoonright

\nrightarrow

\nleftrightarrow

\nLeftarrow

\nLeftrightarrow

8 Miscellaneous symbols

\nleftarrow

\nRightarrow

∞ ∇ ∂ ∂ ∂ • ♦ ≎	\infty \nabla \partial \eth \clubsuit \diamondsuit \heartsuit \spadesuit	∀ ∃ ∅ ∅ ∞ ≀ ℓ	\forall \exists \nexists \emptyset \varnothing \imath \jmath \ell	k ★ \/ ♦ ∃ ⊃ ħ	\Bbbk \bigstar \diagdown \diagup \Diamond \Finv \Game \hbar	% ∠	\wp \angle \measuredangle \sphericalangle \complement \triangledown \triangle \vartriangle
: : : : : :	\cdots \vdots \ldots \ddots \Im \Re		\iiiint \iiint \iint \sharp \flat \natural	ħ	\hslash \lozenge \mho \prime \square \surd	♦■♦♦♦(S)	\blacklozenge \blacksquare \blacktriangle \blacktrinagledown \backprime \circledS

9 Math mode accents

\acute{a}	\acute{a}	\bar{a}	$\text{ar{a}}$	Á	\Acute{\Acute{A}}	$ar{ar{A}}$	\Bar{\Bar{A}}
$reve{a}$	$\brack {a}$	\check{a}	$\operatorname{\check}\{a\}$	Å	\Breve{\Breve{A}}	Å	$\Check{\Check{A}}$
\ddot{a}	\dot{a}	\dot{a}	$\det\{a\}$	Ä	$\Ddot{\Ddot{A}}$	À	\Dot{\Dot{A}}
\grave{a}	\grave{a}	\hat{a}	\hat{a}	À	$\verb \Grave{\Grave{A}} $	\hat{A}	$\Hat{\A}}$
\tilde{a}	\tilde{a}	\vec{a}	$\sqrt{ec}{a}$	$ ilde{ ilde{A}}$	<pre>\Tilde{\Tilde{A}}</pre>	$ec{ec{A}}$	\Vec{\Vec{A}}

10 Array environment, examples

Simplest version: $\begin{array}{cols} row_1 \setminus row_2 \setminus \dots row_m \end{array}$ where cols includes one character [1rc] for each column (with optional characters | inserted for vertical lines) and row_i includes character & a total of (n-1) times to separate the n elements in the row. Examples:

$$\left(\begin{array}{cc} 2\tau & 7\phi - \frac{5}{12} \\ 3\psi & \frac{\pi}{8} \end{array}\right) \left(\begin{array}{c} x \\ y \end{array}\right) \text{ and } \left[\begin{array}{cc} 3 & 4 & 5 \\ 1 & 3 & 729 \end{array}\right]$$

$$f(z) = \begin{cases} \overline{z^2 + \cos z} & \text{for } |z| < 3\\ 0 & \text{for } 3 \le |z| \le 5\\ \sin \overline{z} & \text{for } |z| > 5 \end{cases}$$

11 Other Styles (math mode only)

Caligraphic letters: \$\mathcal{A}\$ etc.: \$ABCDEFGHIJKLMNOPQRSTUVWXYZ\$

Mathbb letters: \$\mathbb{A}\$\$ etc.: \$ABCDEFGHIJKLMNOPQRSTUVWXYZ\$

Mathfrak letters: \$\mathfrak{A}\$\$ etc.: \$ABCDEFGHIJKLMNOPQRSTUVWXYZ\$

Math Sans serif letters: \$\mathsf{A}\$\$ etc.: \$ABCDEFGHIJKLMNOPQRSTUVWXYZ\$

Math bold letters: \$\mathbf{A}\$\$\$ etc.: \$ABCDEFGHIJKLMNOPQRSTUVWXYZ\$

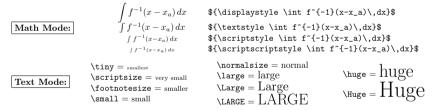
Math bold italic letters: \$\mathbf{A}\$\$\$ etc.: \$ABCDEFGHIJKLMNOPQRSTUVWXYZ\$

Math bold italic letters: \$\mathbf{A}\$\$\$ etc.: \$ABCDEFGHIJKLMNOPQRSTUVWXYZ\$

ABCDEFGHIJKLMNOPQRSTUVWXYZ\$

Become and the companies of the

12 Font sizes



13 Text Mode: Accents and Symbols

ó	\'{o}	ö	\"{o}	ô	\^{o}	ò	\'{o}	õ	\~{o}	ō	\={o}	ş	\d s
ò	\.{o}	ŏ	\u{o}	ő	\H{o}	oo	\t{oo}	Q	\c{o}	ó	\d{o}	ŝ	\r s
Ō	\b{o}	Å	\AA	å	\aa	ß	\ss	1	\i	J	\j	s	\H s
Ø	\0	$\hat{\mathbf{s}}$	\t s	š	\v s	Ø	\0	\P	\P	§	\S		
æ	\ae	Æ	\AE	†	\dag	‡	\ddag	©	\copyright	£	\pounds		