List of LaTeX mathematical symbols

All the predefined mathematical symbols from the TEX package are listed below. More symbols are available from extra packages.

Greek letters

Greek letters

Symbol	LaTeX	Symbol	LaTeX
A and α	\Alpha and \alpha	N and ν	\Nu and \nu
B and β	\Beta and \beta	Ξ and ξ	\Xi and \xi
Γ and γ	\Gamma and \gamma	O and o	\Omicron and \omicron
Δ and δ	\Delta and \delta	Π, π and ϖ	\Pi, \pi and \varpi
E, ϵ and ε	\Epsilon, \epsilon and \varepsilon	P, ρ and ϱ	\Rho, \rho and \varrho
Z and ζ	\Zeta and \zeta	Σ, σ and ς	\Sigma, \sigma and \varsigma
H and η	\Eta and \eta	T and τ	\Tau and \tau
Θ, θ and ϑ	\Theta, \theta and \vartheta	Υ and υ	\Upsilon and \upsilon
I and ι	\Iota and \iota	Φ, ϕ, and φ	\Phi, \phi and \varphi
K, κ and $\varkappa$	\Kappa, \kappa and \varkappa	X and χ	\Chi and \chi
Λ and λ	\Lambda and \lambda	Ψ and ψ	\Psi and \psi
M and μ	\Mu and \mu	Ω and ω	\Omega and \omega

Archaic Greek letters

Symbol	LaTeX
$\digamma$	\Digamma
$\digamma$	\digamma

Unary operators

Unary operators

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
+	+		−	-	negation	!	!	factorial	#	\#	primorial
			¬	\neg	not						

Relation operators

Relation operators

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
<	<	is less than	>	>	is greater than
$\not<$	\nless	is not less than	$\not>$	\ngtr	is not greater than
≤	\leq	is less than or equal to	≥	\geq	is greater than or equal to
$\leqslant$	\leqslant	is less than or equal to	$\geqslant$	\geqslant	is greater than or equal to
$\not\leq$	\nleq	is neither less than nor equal to	$\not\geq$	\ngeq	is neither greater than nor equal to

Symbol	LaTeX	Comment
=	=	is equal to

$\nleqslant$	\nleqslant	is neither less than nor equal to	$\ngeqslant$	\ngeqslant	is neither greater than nor equal to
$\prec$	\prec	precedes	$\succ$	\succ	succeeds
$\nprec$	\nprec	doesn't precede	$\nsucc$	\nsucc	doesn't succeed
$\preceq$	\preceq	precedes or equals	$\succeq$	\succeq	succeeds or equals
$\npreceq$	\npreceq	neither precedes nor equals	$\nsucceq$	\nsucceq	neither succeeds nor equals
$\ll$	\ll		$\gg$	\gg	
$\lll$	\lll		$\ggg$	\ggg	
$\subset$	\subset	is a proper subset of	$\supset$	\supset	is a proper superset of
$\not\subset$	\not\subset	is not a proper subset of	$\not\supset$	\not\supset	is not a proper superset of
$\subseteq$	\subseteq	is a subset of	$\supseteq$	\supseteq	is a superset of
$\nsubseteq$	\nsubseteq	is not a subset of	$\nsupseteq$	\nsupseteq	is not a superset of
$\sqsubset$	\sqsubset		$\sqsupset$	\sqsupset	
$\sqsubseteq$	\sqsubseteq		$\sqsupseteq$	\sqsupseteq	

$\doteq$	\doteq	
$\equiv$	\equiv	is equivalent to
$\approx$	\approx	is approximately
$\cong$	\cong	is congruent to
$\simeq$	\simeq	is similar or equal to
$\sim$	\sim	is similar to
$\propto$	\propto	is proportional to
$\neq$ or $\neq$	\neq or \ne	is not equal to

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
$\parallel$	\parallel	is parallel with	$\nparallel$	\nparallel	is not parallel with
$\asymp$	\asymp	is asymptotic to	$\bowtie$	\bowtie	
$\vdash$	\vdash		$\dashv$	\dashv	
$\in$	\in	is member of	$\ni$	\ni	owns, has member
$\smile$	\smile		$\frown$	\frown	
$\models$	\models	models	$\notin$	\notin	is not member of
$\perp$	\perp	is perpendicular with	$\mid$	\mid	divides

Binary operators

Binary operators

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
$\pm$	\pm	plus or minus	$\cap$	\cap	set intersection	$\diamond$	\diamond		$\oplus$	\oplus	
$\mp$	\mp	minus or plus	$\cup$	\cup	set union	$\triangle$	\bigtriangleup		$\ominus$	\ominus	
$\times$	\times	multiplied by	$\uplus$	\uplus	multiset addition	$\triangledown$	\bigtriangledown		$\otimes$	\otimes	
$\div$	\div	divided by	$\sqcap$	\sqcap		$\triangleleft$	\triangleleft		$\oslash$	\oslash	
$*$	\ast	asterisk	$\sqcup$	\sqcup		$\triangleright$	\triangleright		$\odot$	\odot	
$\star$	\star		$\vee$	\vee		$\bigcirc$	\bigcirc		$\circ$	\circ	
$\dagger$	\dagger		$\wedge$	\wedge		$\bullet$	\bullet		$\setminus$	\setminus	set difference
$\ddagger$	\ddagger		$\cdot$	\cdot		$\wr$	\wr		$\amalg$	\amalg	

Negated binary relations

Negated binary operators

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
$\neq$ or $\neq$	\neq or \ne	is not equal to	$\notin$	\notin	is not member of
$\not<$	\nless	is not less than	$\not>$	\ngtr	is not greater than
$\not\leq$	\nleq	is not less than or equal to	$\not\geq$	\ngeq	is not greater than or equal to
$\not\leqslant$	\nleqslant		$\not\geqslant$	\ngeqslant	
$\not\leqq$	\nleqq		$\not\geqq$	\ngeqq	
$\lneq$	\lneq		$\gneq$	\gneq	
$\lneqq$	\lneqq		$\gneqq$	\gneqq	
$\lvertneqq$	\lvertneqq		$\gvertneqq$	\gvertneqq	
$\lnsim$	\lnsim		$\gnsim$	\gnsim	
$\lnapprox$	\lnapprox		$\gnapprox$	\gnapprox	
$\not\prec$	\nprec	does not precede	$\not\succ$	\nsucc	does not succeed
$\not\preceq$	\npreceq	neither precedes nor equals	$\not\succeq$	\nsucceq	neither succedes nor equals
$\precneqq$	\precneqq		$\succneqq$	\succneqq	
$\precnsim$	\precnsim		$\succnsim$	\succnsim	
$\precnapprox$	\precnapprox		$\succnapprox$	\succnapprox	
$\not\sim$	\nsim	is not similar to	$\not\cong$	\ncong	is not congruent to
$\nshortmid$	\nshortmid		$\nshortparallel$	\nshortparallel	
$\nmid$	\nmid		$\nparallel$	\nparallel	is not parallel with
$\nvdash$	\nvdash		$\nvDash$	\nvDash	

⊮	\nVdash		⊯	\nVDash	
⋪	\ntriangleleft		⋫	\ntriangleright	
⋬	\ntrianglelefteq		⋭	\ntrianglerighteq	
⊈	\nsubseteq		⊉	\nsupseteq	
⫅̸	\nsubseteqq		⫆̸	\nsupseteqq	
⊊	\subsetneq		⊋	\supsetneq	
⫋	\varsubsetneq		⫌	\varsupsetneq	
⫋̸	\subsetneqq		⫌̸	\supsetneqq	
⫋̸	\varsubsetneqq		⫌̸	\varsupsetneqq	

Set and/or logic notation

Set notation

Symbol	LaTeX	Comment
$\emptyset$ or $\varnothing$, and $\varnothing$	\O or \emptyset, and \varnothing	the empty set
$\mathbb{N}$	\N	set of natural numbers
$\mathbb{Z}$	\Z	set of integers
$\mathbb{Q}$	\Q	set of rational numbers
$\mathbb{A}$	\mathbb{A}	set of algebraic numbers
$\mathbb{R}$	\R	set of real numbers
$\mathbb{C}$	\C	set of complex numbers
$\mathbb{H}$	\mathbb{H}	set of quaternions
$\mathbb{O}$	\mathbb{O}	set of octonions
$\mathbb{S}$	\mathbb{S}	set of sedenions
$\in$	\in	is member of
$\notin$	\notin	is not member of
$\ni$	\ni	owns (has member)
$\subset$	\subset	is proper subset of
$\subseteq$	\subseteq	is subset of
$\supset$	\supset	is proper superset of
$\supseteq$	\supseteq	is superset of
$\cup$	\cup	set union
$\cap$	\cap	set intersection
$\setminus$	\setminus	set difference

Logic notation

Symbol	LaTeX	Comment
$\exists$	\exists	there exists at least one
$\exists!$	\exists!	there exists one and only one
$\nexists$	\nexists	there is no
$\forall$	\forall	for all
$\neg$	\neg	not (logical not)
$\vee$	\lor	or (logical or)
$\wedge$	\land	and (logical and)
$\Longrightarrow$ or $\implies$	\Longrightarrow or \implies	implies
$\Rightarrow$	\Rightarrow	*(preferred for right implication)*
$\Longleftarrow$	\Longleftarrow	is implied by (only if)
$\Leftarrow$	\Leftarrow	*(preferred for left implication)*
$\iff$	\iff	is equivalent to (if and only if, iff)
$\Leftrightarrow$	\Leftrightarrow	*(preferred for equivalence)*
$\top$	\top	
$\bot$	\bot	

Geometry

Geometry notation

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
$\overline{\mathrm{AB}}$	\overline{\rm AB}	segment	$\overrightarrow{\mathrm{AB}}$	\overrightarrow{\rm AB}	ray (half-line)
$\angle$	\angle	angle	$\measuredangle$	\measuredangle	measured angle
$\triangle$	\triangle	triangle	$\square$	\square	square
$\cong$	\cong	congruent (same shape and size)	$\ncong$	\ncong	not congruent
$\sim$	\sim	similar (same shape)	$\nsim$	\nsim	not similar
$\parallel$	|	is parallel with	$\nparallel$	\nparallel	is not parallel with
$\perp$	\perp	is perpendicular to	$\not\perp$	\not\perp	is not perpendicular to

Delimiters

Delimiters

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
$\vert$	|	divides	$\Vert$	\\|	divides unitarily, is parallel with	/	/	slash	\	\backslash	
(	(\,	left parenthesis	)	) \,	right parenthesis	[	[\,	left [square] bracket	]	] \,	right [square] bracket
{	\{	left brace	}	\}	right brace	$\langle$	\langle	left angle bracket	$\rangle$	\rangle	right angle bracket

⌈	\lceil	ceiling (left)	⌉	\rceil	ceiling (right)	⌊	\lfloor	floor (left)	⌋	\rfloor	floor (right)
⌜	\ulcorner		⌝	\urcorner		⌞	\llcorner		⌟	\lrcorner	

Arrows

Arrows

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
→ or $\to$	\rightarrow or \to		⇒	\Rightarrow		⟶	\longrightarrow		⟹	\Longrightarrow	
↦	\mapsto					⟼	\longmapsto				
← or $\gets$	\leftarrow or \gets		⇐	\Leftarrow		⟵	\longleftarrow		⟸	\Longleftarrow	

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
↑	\uparrow	Knuth's up-arrow notation	⇑	\Uparrow	
↓	\downarrow		⇓	\Downarrow	
↕	\updownarrow		⇕	\Updownarrow	

Other symbols

Other symbols

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
∂	\partial	partial derivative	$\imath$	\imath		$\Re$	\Re	real part	∇	\nabla	del (vector calculus)
$\eth$	\eth		$\jmath$	\jmath		$\Im$	\Im	imaginary part	□	\Box	
$\hbar$	\hbar	reduced Planck's constant	ℓ	\ell		$\wp$	\wp	[Weierstrass] powerset	∞	\infty	infinity

Hebrew lettters

Symbol	LaTeX	Comment
א	\aleph	aleph numbers
ב	\beth	
ג	\gimel	

Trigonometric functions

Circular functions

***The prefix* arc *used for inverse circular trigonometric functions is the abbreviation for* arcus.**

Symbol	LaTeX	Symbol	LaTeX	Symbol	LaTeX	Symbol	LaTeX
sin	\sin	arcsin	\arcsin	csc	\csc	arccsc	\arccsc
cos	\cos	arccos	\arccos	sec	\sec	arcsec	\arcsec
tan	\tan	arctan	\arctan	cot	\cot	arccot	\arccot

Hyperbolic functions

***The abbreviations* arcsinh, arccosh, *etc., are commonly used for inverse hyperbolic trigonometric functions (area hyperbolic functions), even though they are misnomers, since the prefix* arc *is the abbreviation for* arcus, *while the prefix* ar *stands for* area.

Symbol	LaTeX	Symbol	LaTeX	Symbol	LaTeX	Symbol	LaTeX
sinh	\sinh	arsinh	\operatorname{arsinh}	csch	\operatorname{csch}	arcsch	\operatorname{arcsch}
cosh	\cosh	arcosh	\operatorname{arcosh}	sech	\operatorname{sech}	arsech	\operatorname{arsech}
tanh	\tanh	artanh	\operatorname{artanh}	coth	\coth	arcoth	\operatorname{arcoth}

***Sections remaining to be done**: Table 3 onwards from symbols.pdf* (To do)[1]

Notes

1. ↑ To do.

External links

- Scott Pakin, The Comprehensive LaTeX Symbol List, 2017. (Lists thousands of symbols and the corresponding LaTeX commands that produce them.)
- Comprehensive TeX Archive Network
- http://ctan.cms.math.ca/tex-archive/info/symbols/comprehensive/SYMLIST

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