

List of LaTeX mathematical symbols

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

Contents

- 1 Greek letters
- 2 Unary operators
- 3 Relation operators
- 4 Binary operators
- 5 Negated binary relations
- 6 Set and/or logic notation
- 7 Geometry
- 8 Delimiters
- 9 Arrows
- 10 Other symbols
- 11 Trigonometric functions
- 12 Notes
- 13 External links

Greek letters

Greek letters

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

Archaic Greek letters

Symbol	L ^A T _E X
<i>F</i>	<code>\Digamma</code>
<i>F</i>	<code>\digamma</code>

Unary operators

Unary operators

Symbol	L ^A T _E X	Comment	Symbol	L ^A T _E X	Comment	Symbol	L ^A T _E X	Comment	Symbol	L ^A T _E X	Comment
+	<code>+</code>		−	<code>−</code>	negation	!	<code>!</code>	factorial	#	<code>\#</code>	primorial
			¬	<code>\neg</code>	not						

Relation operators

Relation operators

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Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
<	<	is less than	>	>	is greater than
⩵	\nless	is not less than	⩶	\ngtr	is not greater than
≤	\leq	is less than or equal to	≥	\geq	is greater than or equal to
⩵	\leqslant	is less than or equal to	⩶	\geqslant	is greater than or equal to
⩵	\nleq	is neither less than nor equal to	⩶	\ngeq	is neither greater than nor equal to
⩵	\nleqslant	is neither less than nor equal to	⩶	\ngeqslant	is neither greater than nor equal to
⋈	\prec	precedes	⋉	\succ	succeeds
⋈	\nprec	doesn't precede	⋉	\nsucc	doesn't succeed
⋈	\preceq	precedes or equals	⋉	\succeq	succeeds or equals
⋈	\npreceq	neither precedes nor equals	⋉	\nsucceq	neither succeeds nor equals
⊂	\ll		⊃	\gg	
⊂	\lll		⊃	\ggg	
⊂	\subset	is a proper subset of	⊃	\supset	is a proper superset of
⊄	\not\subset	is not a proper subset of	⊄	\not\supset	is not a proper superset of
⊆	\subseteq	is a subset of	⊇	\supseteq	is a superset of
⊈	\nsubseteq	is not a subset of	⊈	\nsupseteq	is not a superset of
⊂	\sqsubset		⊃	\sqsupset	
⊆	\sqsubseteq		⊇	\sqsupseteq	

Symbol	LaTeX	Comment
=	=	is equal to
⋈	\doteq	
≡	\equiv	is equivalent to
≈	\approx	is approximately
⋈	\cong	is congruent to
⋈	\simeq	is similar or equal to
~	\sim	is similar to
∝	\propto	is proportional to
≠ or ≠	\neq or \ne	is not equal to

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
∥	\parallel	is parallel with	⋈	\nparallel	is not parallel with
∞	\asymp	is asymptotic to	⋈	\bowtie	
⋈	\vdash		⋈	\dashv	
∈	\in	is member of	∋	\ni	owns, has member
⋈	\smile		⋈	\frown	
⋈	\models	models	⋈	\notin	is not member of
⊥	\perp	is perpendicular with	∣	\mid	divides

Binary operators

Binary operators

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
±	\pm	plus or minus	∩	\cap	set intersection	◊	\diamond		⊕	\oplus	
∓	\mp	minus or plus	∪	\cup	set union	Δ	\bigtriangleup	up	⊖	\ominus	
×	\times	multiplied by	⋈	\uplus	multiset addition	▽	\bigtriangledown	down	⊗	\otimes	
÷	\div	divided by	∩	\sqcap		◄	\triangleleft	left	∅	\oslash	
*	\ast	asterisk	∪	\sqcup		►	\triangleright	right	∘	\odot	
★	\star		∨	\vee		◯	\bigcirc		◦	\circ	
†	\dagger		∧	\wedge		•	\bullet		\	\setminus	set difference
‡	\ddagger		⋅	\cdot		ℓ	\wr		⋈	\amalg	

Negated binary relations

Negated binary operators

Symbol	L ^A T _E X	Comment	Symbol	L ^A T _E X	Comment
\neq or \neq	<code>\neq</code> or <code>\ne</code>	is not equal to	\notin	<code>\notin</code>	is not member of
\nless	<code>\nless</code>	is not less than	\ngtr	<code>\ngtr</code>	is not greater than
\nleq	<code>\nleq</code>	is not less than or equal to	\ngeq	<code>\ngeq</code>	is not greater than or equal to
\nleqslant	<code>\nleqslant</code>		\ngeqslant	<code>\ngeqslant</code>	
\nleqq	<code>\nleqq</code>		\ngeqq	<code>\ngeqq</code>	
\lneq	<code>\lneq</code>		\lgneq	<code>\lgneq</code>	
\lneqq	<code>\lneqq</code>		\lgneqq	<code>\lgneqq</code>	
\lvertneqq	<code>\lvertneqq</code>		\gvertneqq	<code>\gvertneqq</code>	
\lnsim	<code>\lnsim</code>		\gnsim	<code>\gnsim</code>	
\lnapprox	<code>\lnapprox</code>		\gnapprox	<code>\gnapprox</code>	
\nprec	<code>\nprec</code>	does not precede	\nsucc	<code>\nsucc</code>	does not succeed
\npreceq	<code>\npreceq</code>	neither precedes nor equals	\nsucceq	<code>\nsucceq</code>	neither succeeds nor equals
\precneqq	<code>\precneqq</code>		\succneqq	<code>\succneqq</code>	
\precnsim	<code>\precnsim</code>		\succnsim	<code>\succnsim</code>	
\precnapprox	<code>\precnapprox</code>		\succnapprox	<code>\succnapprox</code>	
\nsim	<code>\nsim</code>	is not similar to	\ncong	<code>\ncong</code>	is not congruent to
\nshortmid	<code>\nshortmid</code>		\nshortparallel	<code>\nshortparallel</code>	
\nmid	<code>\nmid</code>		\nparallel	<code>\nparallel</code>	is not parallel with
\nvDash	<code>\nvDash</code>		\nVDash	<code>\nVDash</code>	
\nVdash	<code>\nVdash</code>		\nVDash	<code>\nVDash</code>	
\ntriangleleft	<code>\ntriangleleft</code>		\ntriangleright	<code>\ntriangleright</code>	
\ntrianglelefteq	<code>\ntrianglelefteq</code>		\ntrianglerighteq	<code>\ntrianglerighteq</code>	
\nsubseteq	<code>\nsubseteq</code>		\nsupseteq	<code>\nsupseteq</code>	
\nsubseteqq	<code>\nsubseteqq</code>		\nsupseteqq	<code>\nsupseteqq</code>	
\subsetneq	<code>\subsetneq</code>		\supsetneq	<code>\supsetneq</code>	
\varsubsetneq	<code>\varsubsetneq</code>		\varsupsetneq	<code>\varsupsetneq</code>	
\subsetneqq	<code>\subsetneqq</code>		\supsetneqq	<code>\supsetneqq</code>	
\varsubsetneqq	<code>\varsubsetneqq</code>		\varsupsetneqq	<code>\varsupsetneqq</code>	

Set and/or logic notation

Set notation			Logic notation		
Symbol	L ^A T _E X	Comment	Symbol	L ^A T _E X	Comment
\emptyset or \emptyset , and \varnothing	<code>\emptyset</code> or <code>\varnothing</code> , and <code>\varnothing</code>	the empty set	\exists	<code>\exists</code>	there exists at least one
\mathbb{N}	<code>\mathbb{N}</code>	set of natural numbers	$\exists!$	<code>\exists!</code>	there exists one and only one
\mathbb{Z}	<code>\mathbb{Z}</code>	set of integers	\nexists	<code>\nexists</code>	there is no
\mathbb{Q}	<code>\mathbb{Q}</code>	set of rational numbers	\forall	<code>\forall</code>	for all
\mathbb{A}	<code>\mathbb{A}</code>	set of algebraic numbers	\neg	<code>\neg</code>	not (logical not)
\mathbb{R}	<code>\mathbb{R}</code>	set of real numbers	\vee	<code>\vee</code>	or (logical or)
\mathbb{C}	<code>\mathbb{C}</code>	set of complex numbers	\wedge	<code>\wedge</code>	and (logical and)
\mathbb{H}	<code>\mathbb{H}</code>	set of quaternions	\implies or \implies	<code>\Longrightarrow</code> or <code>\implies</code>	implies
\mathbb{O}	<code>\mathbb{O}</code>	set of octonions	\Rightarrow	<code>\Rightarrow</code>	<i>(preferred for right implication)</i>
\mathbb{S}	<code>\mathbb{S}</code>	set of sedenions	\Leftarrow	<code>\Longleftarrow</code>	is implied by (only if)
\in	<code>\in</code>	is member of	\Leftarrow	<code>\Leftarrow</code>	<i>(preferred for left implication)</i>
\notin	<code>\notin</code>	is not member of	\iff	<code>\iff</code>	is equivalent to (if and only if, iff)
\ni	<code>\ni</code>	owns (has member)	\Leftrightarrow	<code>\Leftrightarrow</code>	<i>(preferred for equivalence)</i>
\subset	<code>\subset</code>	is proper subset of	\top	<code>\top</code>	
\subseteq	<code>\subseteq</code>	is subset of	\bot	<code>\bot</code>	
\supset	<code>\supset</code>	is proper superset of			
\supseteq	<code>\supseteq</code>	is superset of			
\cup	<code>\cup</code>	set union			

\cap	<code>\cap</code>	set intersection
\setminus	<code>\setminus</code>	set difference

Geometry

Geometry notation

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

Delimiters

Delimiters

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
$ $	<code> </code>	divides	\parallel	<code>\parallel</code>	divides unitarily, is parallel with	$/$	<code>/</code>	slash	\backslash	<code>\backslash</code>	
$($	<code>(\,</code>	left parenthesis	$)$	<code>) \,</code>	right parenthesis	$[$	<code>[\,</code>	left [square] bracket	$]$	<code>] \,</code>	right [square] bracket
$\{$	<code>\{</code>	left brace	$\}$	<code>\}</code>	right brace	\langle	<code>\langle</code>	left angle bracket	\rangle	<code>\rangle</code>	right angle bracket
\lceil	<code>\lceil</code>	ceiling (left)	\rceil	<code>\rceil</code>	ceiling (right)	\lfloor	<code>\lfloor</code>	floor (left)	\rfloor	<code>\rfloor</code>	floor (right)
\ulcorner	<code>\ulcorner</code>		\urcorner	<code>\urcorner</code>		\llcorner	<code>\llcorner</code>		\lrcorner	<code>\lrcorner</code>	

Arrows

Arrows

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
\rightarrow or \rightarrowtail	<code>\rightarrow</code> or <code>\rightarrowtail</code>		\Rightarrow	<code>\Rightarrow</code>		\longrightarrow	<code>\longrightarrow</code>		\Longrightarrow	<code>\Longrightarrow</code>	
\mapsto	<code>\mapsto</code>					\longmapsto	<code>\longmapsto</code>				
\leftarrow or \leftarrowtail	<code>\leftarrow</code> or <code>\leftarrowtail</code>		\Leftarrow	<code>\Leftarrow</code>		\longleftarrow	<code>\longleftarrow</code>		\Longleftarrow	<code>\Longleftarrow</code>	

Symbol	LaTeX	Comment	Symbol	LaTeX	Comment
\uparrow	<code>\uparrow</code>	Knuth's up-arrow notation	\Uparrow	<code>\Uparrow</code>	
\downarrow	<code>\downarrow</code>		\Downarrow	<code>\Downarrow</code>	
\updownarrow	<code>\updownarrow</code>		\Updownarrow	<code>\Updownarrow</code>	

Other symbols

Other symbols

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

Hebrew letters

Symbol	LaTeX	Comment
א	<code>\aleph</code>	aleph numbers
ב	<code>\beth</code>	
ג	<code>\gimel</code>	

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	<code>\sin</code>	arcsin	<code>\arcsin</code>	csc	<code>\csc</code>	arccsc	<code>\arccsc</code>
cos	<code>\cos</code>	arccos	<code>\arccos</code>	sec	<code>\sec</code>	arcsec	<code>\arcsec</code>
tan	<code>\tan</code>	arctan	<code>\arctan</code>	cot	<code>\cot</code>	arccot	<code>\arccot</code>

Hyperbolic functions

The abbreviations *arsinh*, *arcosh*, 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	<code>\sinh</code>	arsinh	<code>\operatorname{arsinh}</code>	csch	<code>\operatorname{csch}</code>	arcsch	<code>\operatorname{arcsch}</code>
cosh	<code>\cosh</code>	arcosh	<code>\operatorname{arcosh}</code>	sech	<code>\operatorname{sech}</code>	arsech	<code>\operatorname{arsech}</code>
tanh	<code>\tanh</code>	artanh	<code>\operatorname{artanh}</code>	coth	<code>\coth</code>	arcoth	<code>\operatorname{arcoth}</code>

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 (<http://tug.ctan.org/info/symbols/comprehensive/symbols-a4.pdf>), 2017. (Lists thousands of symbols and the corresponding LaTeX commands that produce them.)
- Comprehensive TeX Archive Network (<http://www.ctan.org/>)
- <http://ctan.cms.math.ca/tex-archive/info/symbols/comprehensive/SYMLIST>

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