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## List of LaTeX mathematical symbols

There are no approved revisions of this page, so it may not have been reviewed.

All the predefined mathematical symbols from the `\TeX` package are listed below. More symbols are available from extra packages.

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### Greek letters

#### Greek letters

Symbol	L <sup>A</sup> T <sub>E</sub> X	Symbol	L <sup>A</sup> T <sub>E</sub> X
A and $\alpha$	\Alpha and \alpha	N and $\nu$	\Nu and \nu
B and $\beta$	\Beta and \beta	$\Xi$ and $\xi$	\Xi and \xi
$\Gamma$ and $\gamma$	\Gammama and \gammama	O and $\o$	\Omicron and \omicron
$\Delta$ and $\delta$	\Delta and \delta	$\Pi$ , $\pi$ and $\varpi$	\Pi, \pi and \varpi
E, $\epsilon$ and $\varepsilon$	\Epsilon, \epsilon and \varepsilon	P, $\rho$ and $\varrho$	\Rho, \rho and \varrho
Z and $\zeta$	\Zeta and \zeta	$\Sigma$ , $\sigma$ and $\varsigma$	\Sigma, \sigma and \varsigma
H and $\eta$	\Eta and \eta	T and $\tau$	\Tau and \tau
$\Theta$ , $\theta$ and $\vartheta$	\Theta, \theta and \vartheta	$\Upsilon$ and $\upsilon$	\Upsilon and \upsilon
I and $\iota$	\Iota and \iota	$\Phi$ , $\phi$ , and $\varphi$	\Phi, \phi and \varphi
K, $\kappa$ and $\varkappa$	\Kappa, \kappa and \varkappa	X and $\chi$	\Chi and \chi
$\Lambda$ and $\lambda$	\Lambda and \lambda	$\Psi$ and $\psi$	\Psi and \psi
M and $\mu$	\Mu and \mu	$\Omega$ and $\omega$	\Omega and \omega

### Archaic Greek letters

Symbol	L <sup>A</sup> T <sub>E</sub> X
F	\Digamma
f	\digamma

### Unary operators

#### Unary operators

Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment
+	+		-	-	negation	!	!	factorial	#	\#	primorial
			\neg	\not							

### Relation operators

#### Relation operators

Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment
<	<	is less than	>	>	is greater than
$\nless$	\nless	is not less than	$\ngtr$	\ngtr	is not greater than
$\leq$	\leq	is less than or equal to	$\geq$	\geq	is greater than or equal to
$\lessgtr$	\lessgtr	is less than or equal to	$\geqslant$	\geqslant	is greater than or equal to
$\nleq$	\nleq	is neither less than nor equal to	$\ngeq$	\ngeq	is neither greater than nor equal to
$\neq$	\neq	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	

Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment
=	=	is equal to
$\doteq$	\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

$\subset$	<code>\subset</code>	is a proper subset of	$\supset$	<code>\supset</code>	---	$\propto$	<code>\propto</code>	is proportional to
$\not\subset$	<code>\not\subset</code>	is not a proper subset of	$\not\supset$	<code>\not\supset</code>	is not a proper superset of	$\neq$ or $\neq$	<code>\neq</code> or <code>\neq</code>	is not equal to
$\subseteq$	<code>\subseteq</code>	is a subset of	$\supseteq$	<code>\supseteq</code>	is a superset of			
$\not\subseteq$	<code>\not\subseteq</code>	is not a subset of	$\not\supseteq$	<code>\not\supseteq</code>	is not a superset of			
$\sqsubset$	<code>\sqsubset</code>		$\sqsupset$	<code>\sqsupset</code>				
$\sqsubseteq$	<code>\sqsubseteq</code>		$\sqsupseteq$	<code>\sqsupseteq</code>				

Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment
$\parallel$	<code>\parallel</code>	is parallel with	$\not\parallel$	<code>\not\parallel</code>	is not parallel with
$\asymp$	<code>\asymp</code>	is asymptotic to	$\bowtie$	<code>\bowtie</code>	
$\vdash$	<code>\vdash</code>		$\dashv$	<code>\dashv</code>	
$\in$	<code>\in</code>	is member of	$\ni$	<code>\ni</code>	owns, has member
$\smile$	<code>\smile</code>		$\frown$	<code>\frown</code>	
$\models$	<code>\models</code>	models	$\notin$	<code>\notin</code>	is not member of
$\perp$	<code>\perp</code>	is perpendicular with	$ $	<code>\mid</code>	divides

## Binary operators

### Binary operators

Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment
$\pm$	<code>\pm</code>	plus or minus	$\cap$	<code>\cap</code>	set intersection	$\diamond$	<code>\diamond</code>	diamond	$\oplus$	<code>\oplus</code>	
$\mp$	<code>\mp</code>	minus or plus	$\cup$	<code>\cup</code>	set union	$\triangle$	<code>\triangleup</code>		$\ominus$	<code>\ominus</code>	
$\times$	<code>\times</code>	multiplied by	$\uplus$	<code>\uplus</code>	multiset addition	$\triangledown$	<code>\triangledown</code>		$\otimes$	<code>\otimes</code>	
$\div$	<code>\div</code>	divided by	$\sqcap$	<code>\sqcap</code>		$\triangleleft$	<code>\triangleleft</code>		$\oslash$	<code>\oslash</code>	
$*$	<code>\ast</code>	asterisk	$\sqcup$	<code>\sqcup</code>		$\triangleright$	<code>\triangleright</code>		$\odot$	<code>\odot</code>	
$\star$	<code>\star</code>		$\vee$	<code>\vee</code>		$\circlearrowright$	<code>\circlearrowright</code>		$\circ$	<code>\circ</code>	
$\dagger$	<code>\dagger</code>	dagger	$\wedge$	<code>\wedge</code>		$\bullet$	<code>\bullet</code>		$\backslash$	<code>\backslash</code>	set difference
$\ddagger$	<code>\ddagger</code>		$\cdot$	<code>\cdot</code>		$\wr$	<code>\wr</code>		$\amalg$	<code>\amalg</code>	

## Negated binary relations

### Negated binary operators

Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment
$\neq$ or $\neq$	<code>\neq</code> or <code>\neq</code>	is not equal to	$\notin$	<code>\notin</code>	is not member of
$\lessdot$	<code>\lessdot</code>	is not less than	$\ngtr$	<code>\ngtr</code>	is not greater than
$\not\leq$	<code>\not\leq</code>	is not less than or equal to	$\ngeq$	<code>\ngeq</code>	is not greater than or equal to
$\not\leqslant$	<code>\not\leqslant</code>		$\not\leqslant$	<code>\not\leqslant</code>	
$\not\leqq$	<code>\not\leqq</code>		$\not\geq$	<code>\not\geq</code>	
$\not\lneq$	<code>\not\lneq</code>		$\gtrsim$	<code>\gtrsim</code>	
$\not\lneqq$	<code>\not\lneqq</code>		$\gtrapprox$	<code>\gtrapprox</code>	
$\not\lvertneqq$	<code>\lvertneqq</code>		$\gvertneqq$	<code>\gvertneqq</code>	
$\not\lnsim$	<code>\lnsim</code>		$\gnsim$	<code>\gnsim</code>	
$\not\lnapprox$	<code>\lnapprox</code>		$\gnapprox$	<code>\gnapprox</code>	
$\not\prec$	<code>\prec</code>	does not precede	$\nsucc$	<code>\succ</code>	does not succeed
$\not\preceq$	<code>\preceq</code>	neither precedes nor equals	$\nsuccceq$	<code>\succceq</code>	neither succeeds nor equals
$\not\precneqq$	<code>\precneqq</code>		$\succcneqq$	<code>\succcneqq</code>	
$\not\precnsim$	<code>\precnsim</code>		$\succnsim$	<code>\succnsim</code>	
$\not\precnapprox$	<code>\precnapprox</code>		$\succnapprox$	<code>\succnapprox</code>	
$\not\sim$	<code>\sim</code>	is not similar to	$\not\cong$	<code>\not\cong</code>	is not congruent to
$\not\shortmid$	<code>\shortmid</code>		$\not\shortparallel$	<code>\shortparallel</code>	
$\not\mid$	<code>\mid</code>		$\not\parallel$	<code>\parallel</code>	is not parallel with
$\not\vDash$	<code>\vDash</code>		$\nvDash$	<code>\nvDash</code>	
$\not\nVdash$	<code>\Vdash</code>		$\nvDash$	<code>\nvDash</code>	
$\not\triangleleft$	<code>\triangleleft</code>		$\not\triangleright$	<code>\triangleright</code>	
$\not\trianglelefteq$	<code>\trianglelefteq</code>		$\not\trianglerighteq$	<code>\trianglerighteq</code>	
$\not\subset$	<code>\subset</code>		$\not\supseteq$	<code>\supseteq</code>	
$\not\subsetneq$	<code>\subsetneq</code>		$\not\supseteqq$	<code>\supseteqq</code>	
$\not\subseteqq$	<code>\subseteqq</code>		$\not\supsetneq$	<code>\supsetneq</code>	
$\not\varsubsetneq$	<code>\varsubsetneq</code>		$\not\varsupsetneq$	<code>\varsupsetneq</code>	
$\not\subsetneqq$	<code>\subsetneqq</code>		$\not\varsupsetneqq$	<code>\varsupsetneqq</code>	
$\not\varsubsetneqq$	<code>\varsubsetneqq</code>		$\not\varsupsetneqq$	<code>\varsupsetneqq</code>	

## Set and/or logic notation

Set notation		
Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment
$\emptyset$ or $\varnothing$ , and $\varnothing$	$\emptyset$ or $\text{\emptyset}$ , and $\text{\varnothing}$	the empty set
$\mathbb{N}$	$\mathbb{N}$	set of natural numbers
$\mathbb{Z}$	$\mathbb{Z}$	set of integers
$\mathbb{Q}$	$\mathbb{Q}$	set of rational numbers
$\mathbb{A}$	$\mathbb{A}$	set of algebraic numbers
$\mathbb{R}$	$\mathbb{R}$	set of real numbers
$\mathbb{C}$	$\mathbb{C}$	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	L <sup>A</sup> T <sub>E</sub> X	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)
$\vee$	$\vee$	or (logical or)
$\wedge$	$\wedge$	and (logical and)
$\Rightarrow$ or $\Longrightarrow$	$\Rightarrow$ or $\Longrightarrow$	implies
$\Rightarrow$	$\Rightarrow$	(preferred for right implication)
$\Leftarrow$	$\Leftarrow$	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	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment
$\overline{AB}$	$\overline{AB}$	segment	$\overrightarrow{AB}$	$\overrightarrow{AB}$	ray (half-line)
$\angle$	$\angle$	angle	$\measuredangle$	$\measuredangle$	measured angle
$\triangle$	$\triangle$	triangle	$\square$	$\square$	square
$\cong$	$\cong$	congruent (same shape and size)	$\not\cong$	$\not\cong$	not congruent
$\sim$	$\sim$	similar (same shape)	$\approx$	$\approx$	not similar
$\parallel$	$\parallel$	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	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment
$ $	$ $	divides	$\parallel$	$\parallel$	divides unitarily, is parallel with	$/$	$/$	slash	$\backslash$	$\backslash$	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
$\lceil$	$\lceil$	ceiling (left)	$\rceil$	$\rceil$	ceiling (right)	$\lfloor$	$\lfloor$	floor (left)	$\rfloor$	$\rfloor$	floor (right)
$\lrcorner$	$\lrcorner$		$\urcorner$	$\urcorner$		$\llcorner$	$\llcorner$		$\lrcorner$	$\lrcorner$	

## Arrows

Arrows											
Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment
$\rightarrow$ or $\rightarrow$	$\rightarrow$ or $\rightarrow$	$\rightarrow$ or $\rightarrow$	$\Rightarrow$	$\Rightarrow$	$\Rightarrow$	$\longrightarrow$	$\longrightarrow$	$\longrightarrow$	$\Longrightarrow$	$\Longrightarrow$	$\Longrightarrow$
$\mapsto$	$\mapsto$	$\mapsto$				$\longmapsto$	$\longmapsto$				
$\leftarrow$ or $\leftarrow$	$\leftarrow$ or $\leftarrow$	$\leftarrow$ or $\leftarrow$	$\Leftarrow$	$\Leftarrow$	$\Leftarrow$	$\longleftarrow$	$\longleftarrow$	$\longleftarrow$	$\Longleftarrow$	$\Longleftarrow$	$\Longleftarrow$
Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment
$\uparrow$	$\uparrow$	Knuth's up-arrow notation	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$			
$\downarrow$	$\downarrow$	$\downarrow$	$\downarrow$	$\downarrow$	$\downarrow$	$\downarrow$	$\downarrow$	$\downarrow$			
$\updownarrow$	$\updownarrow$	$\updownarrow$	$\updownarrow$	$\updownarrow$	$\updownarrow$	$\updownarrow$	$\updownarrow$	$\updownarrow$			

## Other symbols

Other symbols											
Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment	Symbol	L <sup>A</sup> T <sub>E</sub> X	Comment
$\partial$	$\partial$	partial derivative	$i$	$i$	$i$	$\Re$	$\Re$	real part	$\nabla$	$\nabla$	del (vector calculus)
$\eth$	$\eth$		$j$	$j$	$j$	$\Im$	$\Im$	imaginary part	$\Box$	$\Box$	
$\hbar$	$\hbar$	reduced Planck's constant	$\ell$	$\ell$	$\ell$	$\wp$	$\wp$	[Weierstrass] powerset	$\infty$	$\infty$	infinity

## Hebrew letters

Symbol	L <sup>A</sup> T <sub>E</sub> X	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	L <sup>A</sup> T <sub>E</sub> X						
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  $\text{arsinh}$ ,  $\text{arccosh}$ , 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	L <sup>A</sup> T <sub>E</sub> X						
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

- ↑ To do.

## External links

- Scott Pakin, The Comprehensive L<sup>A</sup>T<sub>E</sub>X Symbol List [\[2\]](#), 2017. (Lists thousands of symbols and the corresponding L<sup>A</sup>T<sub>E</sub>X commands that produce them.)
- Comprehensive T<sub>E</sub>X Archive Network [\[3\]](#)
- <http://ctan.cms.math.ca/tex-archive/info/symbols/comprehensive/SYMLIST> [\[4\]](#)

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