List of LaTeX symbols

LaTeX symbols have either names (denoted by backslash) or special characters. They are organized into seven *classes* based on their role in a mathematical expression. This is not a comprehensive list. Refer to the external references at the end of this article for more information.

Contents [show]

Class 0 (Ord) symbols: Simple / ordinary ("noun") Edit

Latin letters and Arabic numerals Edit

Letters are rendered in italic font; numbers are upright / roman. `\imath` and `\jmath` make "dotless" i and j, which are useful in conjunction with hats and accents.

LaTeX markup...	...results in:
`A B C D E F G H I J K L M N O P Q R S T U V W X Y Z`	$A B C D E F G H I J K L M N O P Q R S T U V W X Y Z$
`a b c d e f g h i j k l m n o p q r s t u v w x y z`	$a b c d e f g h i j k l m n o p q r s t u v w x y z$
`0 1 2 3 4 5 6 7 8 9`	$0 1 2 3 4 5 6 7 8 9$
`\imath \quad \jmath \quad \hat{\jmath}`	$\imath \quad \jmath \quad \hat{\jmath}$

Greek letters Edit

Lower case Greek letters are rendered in italic font; upper case Greek letters are rendered in upright/Roman.

Upper case Greek letters		Lower case Greek letters			Misc Greek letters
Γ `\Gamma`	Υ `\Upsilon`	α `\alpha`	ι `\iota`	σ `\sigma`	$\digamma$ `\digamma`
Δ `\Delta`	Ξ `\Xi`	β `\beta`	κ `\kappa`	τ `\tau`	ε `\varepsilon`
Λ `\Lambda`	Ω `\Omega`	γ `\gamma`	λ `\lambda`	υ `\upsilon`	$\varkappa$ `\varkappa`
Φ `\Phi`		δ `\delta`	μ `\mu`	ϕ `\phi`	φ `\varphi`
Π `\Pi`		ϵ `\epsilon`	ν `\nu`	χ `\chi`	ϖ `\varpi`
Ψ `\Psi`		ζ `\zeta`	ξ `\xi`	ψ `\psi`	ϱ `\varrho`
Σ `\Sigma`		η `\eta`	π `\pi`	ω `\omega`	ς `\varsigma`
Θ `\Theta`		θ `\theta`	ρ `\rho`		ϑ `\vartheta`

Other alphabetic characters Edit

$\aleph$ `\aleph`	$\complement$ `\complement`	$\hslash$ `\hslash`	$\circledS$ `\circledS`	$\Game$ `\Game`
$\beth$ `\beth`	ℓ `\ell`	$\mho$ `\mho`	$\Bbbk$ `\Bbbk`	$\Im$ `\Im`
$\daleth$ `\daleth`	$\eth$ `\eth`	∂ `\partial`	$\Finv$ `\Finv`	$\Re$ `\Re`
$\gimel$ `\gimel`	$\hbar$ `\hbar`	$\wp$ `\wp`		

Other simple symbols Edit

The following characters don't have any spacing associated with them. That is, they are simple symbols, in class 0.

$\#$ `\#`	$\clubsuit$ `\clubsuit`	∞ `\infty`	$\sharp$ `\sharp`
$\angle$ `\angle`	$\diagdown$ `\diagdown`	$\lozenge$ `\lozenge`	$\spadesuit$ `\spadesuit`
$\backprime$ `\backprime`	$\diagup$ `\diagup`	$\measuredangle$ `\measuredangle`	$\sphericalangle$ `\sphericalangle`
$\bigstar$ `\bigstar`	$\diamondsuit$ `\diamondsuit`	∇ `\nabla`	$\square p$ `\square p`
$\blacklozenge$ `\blacklozenge`	$\emptyset$ `\emptyset`	$\natural$ `\natural`	$\surd$ `\surd`
$\blacksquare$ `\blacksquare`	$\exists$ `\exists`	$\neg$ `\neg` or `\lnot`	$\top$ `\top`
$\blacktriangle$ `\blacktriangle`	$\flat$ `\flat`	$\nexists$ `\nexists`	$\triangle$ `\triangle`
$\blacktriangledown$ `\blacktriangledown`	$\forall$ `\forall`	$\prime$ `\prime`	$\triangledown$ `\triangledown`
$\bot$ `\bot`	$\heartsuit$ `\heartsuit`	$\S$ `\S`	$\varnothing$ `\varnothing`

There is also a command **\&** which is not supported by Wikia's LaTeX parser.

Hats, bars, and accents Edit

Symbols that go above, below, or in the corners of other symbols.

Note 1: dotless *i* and *j* (symbols `\imath` and `\jmath`) can be used to leave room for whatever hat you want them to wear.

Note 2: `\sideset` takes two required parameters, left side and right side, and must be followed by a sum class math operator that normally takes subscripts and superscripts below and above the symbol.

$\acute{x}$ `\acute{x}`	$\overleftarrow{xxx}$ `\overleftarrow{xxx}`
$\grave{x}$ `\grave{x}`	$\overrightarrow{xxx}$ `\overrightarrow{xxx}`
$\ddot{x}$ `\ddot{x}`	$\overleftrightarrow{xxx}$ `\overleftrightarrow{xxx}`
$\tilde{x}$ `\tilde{x}`	

$\bar{x}$ \bar{x}

$\breve{x}$ \breve{x}

$\check{x}$ \check{x}

$\hat{x}$ \hat{x}

$\vec{x}$ \vec{x}

$\dot{x}$ \dot{x}

$\ddot{x}$ \ddot{x}

$\overset{*}{X}$ \overset{*}{X}

$\underset{*}{X}$ \underset{*}{X}

$\sum\!\!\!\!\!\!\;'$ \sideset{}{'}\sum

$\sideset{_1^2}{_3^4}\sum$ \sideset{_1^2}{_3^4}\sum

$\widehat{xxx}$ \widehat{xxx}

$\overline{xxx}$ \overline{xxx}

$\underline{xxx}$ \underline{xxx}

$\overbrace{xxx}$ \overbrace{xxx}

$\underbrace{xxx}$ \underbrace{xxx}

$\xleftarrow[under]{over}$ \xleftarrow[under]{over}

$\xrightarrow[under]{over}$ \xrightarrow[under]{over}

The following commands are not supported by the Wikia's LaTeX parser:

\dddot \widetilde \underleftarrow \underrightarrow \underleftrightarrow

Fonts Edit

Bold face: \boldsymbol and \mathbf make bold face symbols, and \pmb makes very bold face symbols. However, \mathbf cannot be applied to Greek symbols, for instance. The AMS "short guide" (see references) contains a cryptic comment, "generally speaking, it is ill-advised to apply \boldsymbol to more than one symbol at a time." Best not to discover why!

LaTeX markup...	...results in:
`A_\infty + \pi A_0`	$A_\infty + \pi A_0$
`\mathbf{A}_\mathbf{\infty} \mathbf{+} \mathbf{\pi} \mathbf{A}_\mathbf{0}`	$\mathbf{A}_\mathbf{\infty} \mathbf{+} \mathbf{\pi} \mathbf{A}_\mathbf{0}$
`\mathbf{A}_{\boldsymbol{\infty} } \boldsymbol{+} \boldsymbol{\pi} \mathbf{A}_{\boldsymbol{0} }`	$\mathbf{A}_{\boldsymbol{\infty} } \boldsymbol{+} \boldsymbol{\pi} \mathbf{A}_{\boldsymbol{0} }$
`2\alpha x^2yz+5`	$2\alpha x^2yz+5$
`\mathbf{2\alpha x^2yz+5}`	$\mathbf{2\alpha x^2yz+5}$

The **\pmb** command is not supported by the Wikia's LaTeX parser.

Other fonts are...

LaTeX markup...	...results in:	...is used for:
`\mathbb{A B C . . . X Y Z}`	$\mathbb{A B C D E F G H I J K L M N O P Q R S T U V W X Y Z}$	Blackboard bold (no lowercase) is used to represent standard sets of numbers, e.g. $\mathbb{C}$ complex numbers, $\mathbb{H}$ quaternions, $\mathbb{N}$ natural numbers, $\mathbb{O}$ octonians, $\mathbb{Q}$ rationals, $\mathbb{R}$ reals, $\mathbb{S}$ sedenions, $\mathbb{Z}$ integers.
`\mathcal{A B C . . . M}`	$\mathcal{A B C D E F G H I J K L M}$	Calligraphic letters (no lowercase)
`\mathcal{N . . . X Y Z}`	$\mathcal{N O P Q R S T U V W X Y Z}$	Calligraphic letters (no lowercase)
`\mathfrak{A B C ... M}`	$\mathfrak{A B C D E F G H I J K L M}$	Fraktur letters
`\mathfrak{N ... X Y Z}`	$\mathfrak{N O P Q R S T U V W X Y Z}$	Fraktur letters
`\mathfrak{a b c ... m}`	$\mathfrak{a b c d e f g h i j k l m}$	Fraktur letters
`\mathfrak{n ... x y z}`	$\mathfrak{n o p q r s t u v w x y z}$	Fraktur letters
`\mathrm{A B C ... M}`	$\mathrm{A B C D E F G H I J K L M}$	Roman letters
`\mathrm{N ... X Y Z}`	$\mathrm{N O P Q R S T U V W X Y Z}$	Roman letters
`\mathrm{a b c`	$\mathrm{a b c d e f g h i j k l m}$	Roman letters

`... m}`		
`\mathrm{n ... x y z}`	n o p q r s t u v w x y z	Roman letters

Spaces Edit

Main article: Spaces

Edit

Simple symbols (class 0) are rendered without any space between them. Operators (class 1) are rendered with spaces. Spacing symbols change the amount of spacing, either by adding more space or taking spaces away. Space is measured in *math units*, or mu. 18mu equals 1em.

LaTeX markup...	...results in:	...is used for:
`a b c d`	$abcd$	Simple symbols (class 0) have no spaces around them
`\sin b \cos d`	$\sin b \cos d$	Operators (class 1) have thin spaces around them
`a \, b \mspace{3mu} c \thinspace d`	$a\,b\,c\,d$	thin 3mu space
`a \: b \mspace{4mu} c \medspace d`	$a\:b\:c\medspace d$	medium 4mu space
`a \; b \mspace{5mu} c \thickspace d`	$a\;b\;c\thickspace d$	thick 5mu space
`a \ b \mspace{6mu} c \ d`	$a\ b\ c\ d$	thicker 6mu space provided by backslash followed by blank
`a \quad b \mspace{18mu} c \quad d`	$a \quad b \quad c \quad d$	18mu or 1em space
`a \qquad b \mspace{36mu} c \qquad d`	$a \qquad b \qquad c \qquad d$	36mu or 2em space
`a \! b \mspace{-3mu} c \negthinspace d`	$a\!b\!c\!d$	negative thin -3mu space. See \int for a suggested use.
`a \negmedspace b \mspace{-4mu} c \negmedspace d`	$a\negmedspace b\negmedspace c\negmedspace d$	negative medium -4mu space
`a \negthickspace b \mspace{-5mu} c \negthickspace d`	$a\negthickspace b\negthickspace c\negthickspace d$	negative thick -5mu space

Spaces of exactly the size of some rendered text can be obtained using the `\phantom`, command, and its cousins, `\hphantom` and `\vphantom`, as follows:

LaTeX markup...	...results in:	...is used for:
`& a \ b \\ & \cdot \phantom{\int XXX} \cdot \\ & c \ d`	$a\ b$ $\cdot \qquad\qquad \cdot$ $c\ d$	space as wide and high as integral and three X's
`& a \ b \\ & \cdot \hphantom{\int XXX} \cdot \\ & c \ d`	$a\ b$ $\cdot \qquad\qquad \cdot$ $c\ d$	space as wide as integral and three X's; height 0
`& a \ b \\ & \cdot \vphantom{\int XXX} \cdot \\ & c \ d`	$a\ b$ $\cdot \quad \cdot$ $c\ d$	space of width 0, as high as integral and three X's

Class 1 (Op) symbols: prefix operator (extensible) Edit

Accumulation operators: sum, integral, union, etc. Edit

Main article: Sum-class symbol

These prefix operators accumulate the things they're prefixed to. "Extensible" means they have variable size to accommodate their operands, and their limits can appear below and above the operator.

$\int$ `\int`	$\bigodot$ `\bigodot`	$\biguplus$ `\biguplus`	$\prod$ `\prod`
$\oint$ `\oint`	$\bigoplus$ `\bigoplus`	$\bigvee$ `\bigvee`	$\sum$ `\sum`
$\bigcap$ `\bigcap`	$\bigotimes$ `\bigotimes`	$\bigwedge$ `\bigwedge`	
$\bigcup$ `\bigcup`	$\bigsqcup$ `\bigsqcup`	$\coprod$ `\coprod`	

The **\smallint** command is not supported by the Wikia's LaTeX parser.

Named operators: sin, cos, etc. Edit

If your favorite operator, say, "foo", isn't listed, then you won't be able to use `\foo(x)` in your LaTeX equation. But don't fret. You can get the same result with `\operatorname{foo}(x)`. If your made-up operator needs displayed limits, as in `\lim` or `\max`, then use `\operatorname*{foo}`, as in the example in the following table.

$\arccos$ `\arccos`	$\det$ `\det`	$\liminf$ `\liminf`	$\sinh$ `\sinh`
$\arcsin$ `\arcsin`	$\dim$ `\dim`	$\limsup$ `\limsup`	$\sup$ `\sup`
$\arctan$ `\arctan`	$\exp$ `\exp`	$\ln$ `\ln`	$\tan$ `\tan`
$\arg$ `\arg`	$\gcd$ `\gcd`	$\log$ `\log`	$\tanh$ `\tanh`
$\cos$ `\cos`	$\hom$ `\hom`	$\max$ `\max`	$\varinjlim$ `\varinjlim`
$\cosh$ `\cosh`	$\inf$ `\inf`	$\min$ `\min`	$\varprojlim$ `\varprojlim`

cot \cot	inj lim \injlim	Pr \Pr	$\varliminf$ \varliminf
coth \coth	ker \ker	proj lim \projlim	$\varlimsup$ \varlimsup
csc \csc	lg \lg	sec \sec	foo_0^1 \operatorname{foo}_0^1
deg \deg	lim \lim	sin \sin	

The command **\operatorname*** is not supported by the wikia's LaTeX parser.

Class 2 (Bin) symbols: binary operator ("conjunction") Edit

The binary operator symbols are...

$*$ *	$\Cap$ \Cap or \doublecap	$\divideontimes$ \divideontimes	$\rightthreetimes$ \rightthreetimes
$+$ +	$\cdot$ \cdot	$\dotplus$ \dotplus	$\rtimes$ \rtimes
$-$ -	$\centerdot$ \centerdot	$\doublebarwedge$ \doublebarwedge	$\setminus$ \setminus
$\amalg$ \amalg	$\circ$ \circ	$\gtrdot$ \gtrdot	$\smallsetminus$ \smallsetminus
$\ast$ \ast	$\circledast$ \circledast	$\intercal$ \intercal	$\sqcap$ \sqcap
$\barwedge$ \barwedge	$\circledcirc$ \circledcirc	$\leftthreetimes$ \leftthreetimes	$\sqcup$ \sqcup
$\bigcirc$ \bigcirc	$\circleddash$ \circleddash	$\lessdot$ \lessdot	$\star$ \star
$\bigtriangledown$ \bigtriangledown	$\cup$ \cup	$\ltimes$ \ltimes	$\times$ \times
$\bigtriangleup$ \bigtriangleup	$\Cup$ \Cup or \doublecup	$\mp$ \mp	$\triangleleft$ \triangleleft
$\boxdot$ \boxdot	$\curlyvee$ \curlyvee	$\odot$ \odot	$\triangleright$ \triangleright
$\boxminus$ \boxminus	$\curlywedge$ \curlywedge	$\ominus$ \ominus	$\uplus$ \uplus
$\boxplus$ \boxplus	$\dagger$ \dagger	$\oplus$ \oplus	$\vee$ \vee or \lor
$\boxtimes$ \boxtimes	$\ddagger$ \ddagger	$\oslash$ \oslash	$\veebar$ \veebar
$\bullet$ \bullet	$\diamond$ \diamond	$\otimes$ \otimes	$\wedge$ \wedge or \land
$\cap$ \cap	$\div$ \div	$\pm$ \pm	$\wr$ \wr

Class 3 (Rel) symbols: relation / comparison ("verb") Edit

<, =, >, and variants Edit

$<$ <	$\geqq$ \geqq	$\lll$ \lll or \llless	$\preccurlyeq$ \preccurlyeq
$=$ =	$\geqslant$ \geqslant	$\lnapprox$ \lnapprox	$\preceq$ \preceq
$>$ >	$\gg$ \gg	$\lneq$ \lneq	$\precnapprox$ \precnapprox
$\approx$ \approx	$\ggg$ \ggg or \gggtr	$\lneqq$ \lneqq	$\precneqq$ \precneqq
$\approxeq$ \approxeq	$\gnapprox$ \gnapprox	$\lnsim$ \lnsim	$\precnsim$ \precnsim
$\asymp$ \asymp	$\gneq$ \gneq	$\lvertneqq$ \lvertneqq	$\precsim$ \precsim
$\backsim$ \backsim	$\gneqq$ \gneqq	$\ncong$ \ncong	$\risingdotseq$ \risingdotseq
$\backsimeq$ \backsimeq	$\gnsim$ \gnsim	$\neq$ \neq or \ne	$\sim$ \sim
$\bumpeq$ \bumpeq	$\gtrapprox$ \gtrapprox	$\ngeq$ \ngeq	$\simeq$ \simeq
$\Bumpeq$ \Bumpeq	$\gtreqless$ \gtreqless	$\ngeqq$ \ngeqq	$\succ$ \succ
$\circeq$ \circeq	$\gtreqqless$ \gtreqqless	$\ngeqslant$ \ngeqslant	$\succapprox$ \succapprox
$\cong$ \cong	$\gtrless$ \gtrless	$\ngtr$ \ngtr	$\succcurlyeq$ \succcurlyeq
$\curlyeqprec$ \curlyeqprec	$\gtrsim$ \gtrsim	$\nleq$ \nleq	$\succeq$ \succeq
$\curlyeqsucc$ \curlyeqsucc	$\gvertneqq$ \gvertneqq	$\nleqq$ \nleqq	$\succnapprox$ \succnapprox
$\doteq$ \doteq	$\leq$ \leq or \le	$\nleqslant$ \nleqslant	$\succneqq$ \succneqq
$\doteqdot$ \doteqdot or \Doteq	$\leqq$ \leqq	$\nless$ \nless	$\succnsim$ \succnsim
$\eqcirc$ \eqcirc	$\leqslant$ \leqslant	$\nprec$ \nprec	$\succsim$ \succsim
$\eqsim$ \eqsim	$\lessapprox$ \lessapprox	$\npreceq$ \npreceq	$\thickapprox$ \thickapprox
$\eqslantgtr$ \eqslantgtr	$\lesseqgtr$ \lesseqgtr	$\nsim$ \nsim	$\thicksim$ \thicksim
$\eqslantless$ \eqslantless	$\lesseqqgtr$ \lesseqqgtr	$\nsucc$ \nsucc	$\triangleq$ \triangleq
$\equiv$ \equiv	$\lessgtr$ \lessgtr	$\nsucceq$ \nsucceq	
$\fallingdotseq$ \fallingdotseq	$\lesssim$ \lesssim	$\prec$ \prec	
$\geq$ \geq or \ge	$\ll$ \ll	$\precapprox$ \precapprox	

Arrows Edit

$\circlearrowleft$ \circlearrowleft	$\longleftarrow$ \longleftarrow	$\rightarrow$ \rightarrow or \to
$\circlearrowright$ \circlearrowright	$\Longleftarrow$ \Longleftarrow	$\Rightarrow$ \Rightarrow
$\curvearrowleft$ \curvearrowleft	$\longleftrightarrow$ \longleftrightarrow	$\rightarrowtail$ \rightarrowtail

↷ \curvearrowright	⟺ \Longleftrightarrow	⇁ \rightharpoondown
⇊ \downdownarrows	⟼ \longmapsto	⇀ \rightharpoonup
⇂ \downharpoonleft	⟶ \longrightarrow	⇄ \rightleftarrows
⇃ \downharpoonright	⟹ \Longrightarrow or \implies	⇌ \rightleftharpoons
↩ \hookleftarrow	↫ \looparrowleft	⇉ \rightrightarrows
↪ \hookrightarrow	↬ \looparrowright	⇝ \rightsquigarrow
← \leftarrow or \gets	↰ \Lsh	⇛ \Rrightarrow
⇐ \Leftarrow	↦ \mapsto	↱ \Rsh
↢ \leftarrowtail	⊸ \multimap	↘ \searrow
↽ \leftharpoondown	⇍ \nLeftarrow	↙ \swarrow
↼ \leftharpoonup	⇎ \nLeftrightarrow	↞ \twoheadleftarrow
⇇ \leftleftarrows	⇏ \nRightarrow	↠ \twoheadrightarrow
↔ \leftrightarrow	↗ \nearrow	↿ \upharpoonleft
⇔ \Leftrightarrow	↚ \nleftarrow	↾ \upharpoonright or \restriction
⇆ \leftrightarrows	↮ \nleftrightarrow	⇈ \upuparrows
⇋ \leftrightharpoons	↛ \nrightarrow	
↭ \leftrightsquigarrow	↖ \nwarrow	
⇚ \Lleftarrow		

Other relation symbols Edit

϶ \backepsilon	⊈ \nsubseteqq	⌣ \smallsmile	∴ \therefore
∵ \because	⊉ \nsupseteq	⌣ \smile	◁ \trianglelefteq
≬ \between	⊉ \nsupseteqq	⊏ \sqsubset	▷ \trianglerighteq
◀ \blacktriangleleft	⋪ \ntriangleleft	⊑ \sqsubseteq	∝ \varpropto
▶ \blacktriangleright	⋬ \ntrianglelefteq	⊐ \sqsupset	⊊ \varsubsetneq
⋈ \bowtie	⋫ \ntriangleright	⊒ \sqsupseteq	⫋ \varsubsetneqq
⊣ \dashv	⋭ \ntrianglerighteq	⊂ \subset	⊋ \varsupsetneq
⌢ \frown	⊬ \nvdash	⋐ \Subset	⫌ \varsupsetneqq
∈ \in	⊮ \nVdash	⊆ \subseteq	△ \vartriangle
∣ \mid	⊭ \nvDash	⫅ \subseteqq	◁ \vartriangleleft
⊨ \models	⊯ \nVDash	⊊ \subsetneq	▷ \vartriangleright
∋ \ni or \owns	∦ \parallel	⫋ \subsetneqq	⊢ \vdash
∤ \nmid	⊥ \perp	⊃ \supset	⊩ \Vdash
∉ \notin	⋔ \pitchfork	⋑ \Supset	⊨ \vDash
∦ \nparallel	∝ \propto	⊇ \supseteq	⊪ \Vvdash
∤ \nshortmid	∣ \shortmid	⫆ \supseteqq	
∦ \nshortparallel	∥ \shortparallel	⊋ \supsetneq	
⊈ \nsubseteq	⌢ \smallfrown	⫌ \supsetneqq	

Class 4 (open; left) and class 5 (close; right) symbols (extensible) Edit

Paired left and right symbols Edit

( ) ( )	⟨ ⟩ \langle \rangle
[ ] [ ]	⌈ ⌉ \lceil \rceil
{ } \lbrace \rbrace	⌊ ⌋ \lfloor \rfloor
‖ ‖ \lVert \rVert	

The following commands are not supported by the Wikia's LaTeX parser:

\lvert \rvert \lgroup \rgroup \lmoustache \rmoustache

Nonpairing symbols (extensible) Edit

∣ \vert or |	
‖ \Vert or \\|	
/ /	
\ \backslash	

The following commands are not supported by the Wikia's LaTeX parser:

\arrowvert \Arrowvert \bracevert

Vertical arrows (extensible) Edit

↑ \uparrow ↓ \downarrow ↕ \updownarrow
⇑ \Uparrow ⇓ \Downarrow ⇕ \Updownarrow

Class 6 (Pun) symbols: postfix / punctuation Edit

The punctuation symbols are

. . ; ; ? ?
/ / : \colon ⋯ \dotsb
| | : : ⋱ \ddots
, , ! ! ⋮ \vdots

The following commands are not supported by the Wikia's LaTeX parser:

\dotsc \dotsi \dotsm \dotso

External references Edit

- Short Math Guide for LaTeX, by Michael Downes, AMS
- User's Guide for the amsmath Package
- The Comprehensive LaTeX Symbols List (Pakin)
- LaTeX reference card
- CTAN, the Comprehensive TeX Archive Network
- LaTeX help file for the VIM editor
- Sourceforge Mini LaTeX Tutorial
- LaTeX help at wikipedia

Categories: Symbol | Example for right arrow with small circle | Add category