

LaTeX:Symbols

LaTeX

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This article will provide a short list of commonly used LaTeX symbols.

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Common Symbols

Operators

Relations

Finding Other Symbols

Here are some external resources for finding less commonly used symbols:

- Detexify is an app which allows you to draw the symbol you'd like and shows you the \LaTeX code for it!
- MathJax (what allows us to use \LaTeX on the web) maintains a list of supported commands.
- The Comprehensive LaTeX Symbol List.

Operators

Symbol	Command	Symbol	Command	Symbol	Command
\pm	<code>\pm</code>	\mp	<code>\mp</code>	\times	<code>\times</code>
\div	<code>\div</code>	\cdot	<code>\cdot</code>	$*$	<code>\ast</code>

★	\star	†	\dagger	‡	\ddagger
∏	\amalg	∩	\cap	∪	\cup
⊕	\uplus	⊍	\sqcap	⊎	\sqcup
∨	\vee	∧	\wedge	⊕	\oplus
⊖	\ominus	⊗	\otimes	∘	\circ
●	\bullet	◇	\diamond	◁	\lhd
▷	\rhd	◁	\unlhd	▷	\unrhd
⊘	\oslash	⊙	\odot	◯	\bigcirc
◁	\triangleleft	◊	\Diamond	△	\bigtriangleup
▽	\bigtriangledown	□	\Box	▷	\triangleright
\	\setminus	ℓ	\wr	√ <i>x</i>	\sqrt{x}
<i>x</i> [°]	<i>x</i> \{\circ}			^{<i>n</i>} √ <i>x</i>	\sqrt[n]{x}
▽	\triangledown				

Relations

Symbol	Command	Symbol	Command	Symbol	Command
≤	\le	≥	\ge	≠	\neq
≈	\sim	≪	\ll	≫	\gg
≐	\doteq	≍	\simeq	⊂	\subset
⊃	\supset	≈	\approx	⋈	\asymp
⊆	\subseteq	⊇	\supseteq	≡	\cong
⊂	\smile	⊆	\sqsubset	⊇	\sqsupset
≡	\equiv	⊆	\frown	⊆	\sqsubseteq
⊆	\sqsupseteq	∝	\propto	⊗	\bowtie
⊆	\in	⊃	\ni	⋈	\prec
⋈	\succ	⊥	\vdash	⊥	\dashv
⋈	\preceq	⋈	\succeq	⊥	\models
⊥	\perp	∥	\parallel	∥	\parallel
	\mid	≍	\bumpeq		

Negations of many of these relations can be formed by just putting \not before the symbol, or by slipping an n between the \ and the word. Here are a few examples, plus a few other negations; it works for many of the others as well.

Symbol	Command	Symbol	Command	Symbol	Command
⊥	\nmid	≠	\nleq	≠	\ngeq
≈	\nsim	≠	\ncong	⊥	\nparallel
≠	\not<	≠	\not>	≠	\not=
≠	\not\le	≠	\not\ge	≠	\not\sim
≠	\not\approx	≠	\not\cong	≠	\not\equiv
⊥	\not\parallel	≠	\nless	≠	\ngtr
≠	\neq	≠	\gneq	≈	\nsim
≠	\neqq	≠	\gneqq		

To use other relations not listed here, such as =, >, and <, in LaTeX, you may just use the symbols on your keyboard.

Greek Letters

Lowercase Letters

Symbol Command Symbol Command Symbol Command Symbol Command

α	<code>\alpha</code>	β	<code>\beta</code>	γ	<code>\gamma</code>	δ	<code>\delta</code>
ϵ	<code>\epsilon</code>	ε	<code>\varepsilon</code>	ζ	<code>\zeta</code>	η	<code>\eta</code>
θ	<code>\theta</code>	ϑ	<code>\vartheta</code>	ι	<code>\iota</code>	κ	<code>\kappa</code>
λ	<code>\lambda</code>	μ	<code>\mu</code>	ν	<code>\nu</code>	ξ	<code>\xi</code>
π	<code>\pi</code>	ϖ	<code>\varpi</code>	ρ	<code>\rho</code>	ϱ	<code>\varrho</code>
σ	<code>\sigma</code>	ς	<code>\varsigma</code>	τ	<code>\tau</code>	υ	<code>\upsilon</code>
ϕ	<code>\phi</code>	φ	<code>\varphi</code>	χ	<code>\chi</code>	ψ	<code>\psi</code>
ω	<code>\omega</code>						

Capital Letters

Symbol Command Symbol Command Symbol Command Symbol Command

Γ	<code>\Gamma</code>	Δ	<code>\Delta</code>	Θ	<code>\Theta</code>	Λ	<code>\Lambda</code>
Ξ	<code>\Xi</code>	Π	<code>\Pi</code>	Σ	<code>\Sigma</code>	Υ	<code>\Upsilon</code>
Φ	<code>\Phi</code>	Ψ	<code>\Psi</code>	Ω	<code>\Omega</code>		

Headline text

Arrows

Symbol	Command	Symbol	Command
\leftarrow	<code>\gets</code>	\rightarrow	<code>\to</code>
\leftarrow	<code>\leftarrow</code>	\Leftarrow	<code>\Leftarrow</code>
\rightarrow	<code>\rightarrow</code>	\Rightarrow	<code>\Rightarrow</code>
\leftrightarrow	<code>\leftrightarrow</code>	\Leftrightarrow	<code>\Leftrightarrow</code>
\mapsto	<code>\mapsto</code>	\hookrightarrow	<code>\hookrightarrow</code>
\leftharpoonup	<code>\leftharpoonup</code>	\leftharpoondown	<code>\leftharpoondown</code>
\rightleftharpoons	<code>\rightleftharpoons</code>	\longleftarrow	<code>\longleftarrow</code>
\Longleftarrow	<code>\Longleftarrow</code>	\longrightarrow	<code>\longrightarrow</code>
\Longrightarrow	<code>\Longrightarrow</code>	\longleftrightarrow	<code>\longleftrightarrow</code>
\Longleftrightarrow	<code>\Longleftrightarrow</code>	\mapsto	<code>\mapsto</code>
\hookrightarrow	<code>\hookrightarrow</code>	\rightharpoonup	<code>\rightharpoonup</code>
\rightharpoondown	<code>\rightharpoondown</code>	\leadsto	<code>\leadsto</code>
\uparrow	<code>\uparrow</code>	\Uparrow	<code>\Uparrow</code>
\downarrow	<code>\downarrow</code>	\Downarrow	<code>\Downarrow</code>
\updownarrow	<code>\updownarrow</code>	\Updownarrow	<code>\Updownarrow</code>
\nearrow	<code>\nearrow</code>	\searrow	<code>\searrow</code>
\swarrow	<code>\swarrow</code>	\nwarrow	<code>\nwarrow</code>

(For those of you who hate typing long strings of letters, `\iff` and `\implies` can be used in place of `\Longleftrightarrow` and `\Longrightarrow` respectively.)

Dots

Accents

Symbol Command Symbol Command Symbol Command Symbol Command

Symbol Command Symbol Command Symbol Command

\hat{x}	<code>\hat{x}</code>	\check{x}	<code>\check{x}</code>	\dot{x}	<code>\dot{x}</code>
\breve{x}	<code>\breve{x}</code>	\acute{x}	<code>\acute{x}</code>	\ddot{x}	<code>\ddot{x}</code>
\grave{x}	<code>\grave{x}</code>	\tilde{x}	<code>\tilde{x}</code>	\mathring{x}	<code>\mathring{x}</code>
\bar{x}	<code>\bar{x}</code>	\vec{x}	<code>\vec{x}</code>		

When applying accents to i and j, you can use `\imath` and `\jmath` to keep the dots from interfering with the accents:

Symbol Command Symbol Command

\vec{j}	<code>\vec{\jmath}</code>	\tilde{i}	<code>\tilde{\imath}</code>
-----------	---------------------------	-------------	-----------------------------

`\tilde` and `\hat` have wide versions that allow you to accent an expression:

Symbol Command Symbol Command

$\widehat{3+x}$	<code>\widehat{3+x}</code>	\widetilde{abc}	<code>\widetilde{abc}</code>
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Others

Symbol Command Symbol Command Symbol Command

∞	<code>\infty</code>	\triangle	<code>\triangle</code>	\angle	<code>\angle</code>
\aleph	<code>\aleph</code>	\hbar	<code>\hbar</code>	\imath	<code>\imath</code>
\jmath	<code>\jmath</code>	ℓ	<code>\ell</code>	\wp	<code>\wp</code>
\Re	<code>\Re</code>	\Im	<code>\Im</code>	\mathcal{U}	<code>\mathcal{U}</code>
\prime	<code>\prime</code>	\emptyset	<code>\emptyset</code>	∇	<code>\nabla</code>
\surd	<code>\surd</code>	∂	<code>\partial</code>	\top	<code>\top</code>
\bot	<code>\bot</code>	\vdash	<code>\vdash</code>	\dashv	<code>\dashv</code>
\forall	<code>\forall</code>	\exists	<code>\exists</code>	\neg	<code>\neg</code>
\flat	<code>\flat</code>	\natural	<code>\natural</code>	\sharp	<code>\sharp</code>
\backslash	<code>\backslash</code>	\Box	<code>\Box</code>	\diamond	<code>\Diamond</code>
\clubsuit	<code>\clubsuit</code>	\diamondsuit	<code>\diamondsuit</code>	\heartsuit	<code>\heartsuit</code>
\spadesuit	<code>\spadesuit</code>	\Join	<code>\Join</code>	\blacksquare	<code>\blacksquare</code>
\S	<code>\S</code>	\P	<code>\P</code>	\copyright	<code>\copyright</code>
\pounds	<code>\pounds</code>	\overarc{ABC}	<code>\overarc{ABC}(it works)</code>	\underarc{XYZ}	<code>\underarc{XYZ}(it works)</code>
\star	<code>\bigstar</code>				
\square	<code>\square</code>				

Command Symbols

Some symbols are used in commands so they need to be treated in a special way.

Symbol Command Symbol Command Symbol Command Symbol Command

$\$$	<code>\textdollar</code>	$\&$	<code>\&</code>	$\%$	<code>\%</code>	$\#$	<code>\#</code>
$-$	<code>_</code>	$\{$	<code>\{</code>	$\}$	<code>\}</code>	\backslash	<code>\backslash</code>

(Warning: Using $\$$ for $\$$ will result in $\$$. This is a bug as far as we know. Depending on the version of **LaTeX** this is not always a problem.)

European Language Symbols

Symbol Command Symbol Command Symbol Command Symbol Command

\oe	<code>\oe</code>	\ae	<code>\ae</code>	\o	<code>\o</code>
--------------	------------------	--------------	------------------	-------------	-----------------

Œ	{\OE}	Æ	{\AE}	À	{\AA}	Ø	{\O}
l	{\l}	ß	{\ss}	ı	{\i}		
L	{\L}	SS	{\SS}				

Bracketing Symbols

In mathematics, sometimes we need to enclose expressions in brackets or braces or parentheses. Some of these work just as you'd imagine in LaTeX; type (and) for parentheses, [and] for brackets, and | and | for absolute value. However, other symbols have special commands:

Symbol Command Symbol Command Symbol Command

{	{\left}	}	{\right}		{\ }
\	{\backslash}	⌊	{\lfloor}	⌋	{\rfloor}
⌈	{\lceil}	⌉	{\rceil}	⟨	{\langle}
⟩	{\rangle}				

You might notice that if you use any of these to typeset an expression that is vertically large, like

$$(\frac{a}{x})^2$$

the parentheses don't come out the right size:

$$\left(\frac{a}{x}\right)^2$$

If we put \left and \right before the relevant parentheses, we get a prettier expression:

$$\left(\frac{a}{x}\right)^2$$

gives

$$\left(\frac{a}{x}\right)^2$$

\left and \right can also be used to resize the following symbols:

Symbol Command Symbol Command Symbol Command

↑	{\uparrow}	↓	{\downarrow}	↕	{\updownarrow}
↗	{\Uparrow}	↘	{\Downarrow}	↕	{\Updownarrow}

Multi-Size Symbols

Some symbols render differently in inline math mode and in display mode. Display mode occurs when you use \[...\] or \$\$...\$\$, or environments like \begin{equation}...\end{equation}, \begin{align}...\end{align}. Read more in the commands section of the guide about how symbols which take arguments above and below the symbols, such as a summation symbol, behave in the two modes.

In each of the following, the two images show the symbol in display mode, then in inline mode.

Symbol Command Symbol Command Symbol Command

\sum	\sum	{\sum}	\int	\int	{\int}	\oint	\oint	{\oint}
\prod	\prod	{\prod}	\coprod	\coprod	{\coprod}	\bigcap	\bigcap	{\bigcap}
\bigcup	\bigcup	{\bigcup}	\bigsqcup	\bigsqcup	{\bigsqcup}	\bigvee	\bigvee	{\bigvee}
\bigwedge	\bigwedge	{\bigwedge}	\bigodot	\bigodot	{\bigodot}	\bigotimes	\bigotimes	{\bigotimes}

$\bigoplus \bigoplus$ `\bigoplus` $\biguplus \biguplus$ `\biguplus`

See Also

- Next: Commands
- Previous: Layout

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