LaTeX Math Cheatsheet

package environment command

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List of Symbols

Relation Symbols

$<$	`<`	$>$	`>`	$=$	`=`	$\parallel$	`\parallel`	$\nparallel$	`\nparallel`
$\leq$	`\leq`	$\geq$	`\geq`	$\doteq$	`\doteq`	$\asymp$	`\asymp`	$\bowtie$	`\bowtie`
$\ll$	`\ll`	$\gg$	`\gg`	$\equiv$	`\equiv`	$\vdash$	`\vdash`	$\dashv$	`\dashv`
$\subset$	`\subset`	$\supset$	`\supset`	$\approx$	`\approx`	$\in$	`\in`	$\ni$	`\ni`
$\subseteq$	`\subseteq`	$\supseteq$	`\supseteq`	$\cong$	`\cong`	$\smile$	`\smile`	$\frown$	`\frown`
$\nsubseteq$	`\nsubseteq`	$\nsupseteq$	`\nsupseteq`	$\simeq$	`\simeq`	$\models$	`\models`	$\notin$	`\notin`
$\sqsubset$	`\sqsubset`	$\sqsupset$	`\sqsupset`	$\sim$	`\sim`	$\perp$	`\perp`	$\mid$	`\mid`
$\sqsubseteq$	`\sqsubseteq`	$\sqsupseteq$	`\sqsupseteq`	$\propto$	`\propto`	$\prec$	`\prec`	$\succ$	`\succ`
$\preceq$	`\preceq`	$\succeq$	`\succeq`	$\neq$	`\neq`	$\sphericalangle$	`\sphericalangle`	$\measuredangle$	`\measuredangle`

Delimiters

$\|$	`|` or `\mid`	$\Vert$	`\\|`	$/$	`/`	$\backslash$	`\backslash`
$\{$	`\{`	$\}$	`\}`	$\langle$	`\langle`	$\rangle$	`\rangle`
$\uparrow$	`\uparrow`	$\Uparrow$	`\Uparrow`	$\lceil$	`\lceil`	$\rceil$	`\rceil`
$\downarrow$	`\downarrow`	$\Downarrow$	`\Downarrow`	$\lfloor$	`\lfloor`	$\rfloor$	`\rfloor`

Greek Letters

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

Set and Logic Notations

$\exists$	`\exists`	$\rightarrow$	`\rightarrow` or `\to`	$\neg$	`\neg`
$\nexists$	`\nexists`	$\leftarrow$	`\leftarrow` or `\gets`	$\land$	`\land`
$\forall$	`\forall`	$\mapsto$	`\mapsto`	$\lor$	`\lor`
$\subset$	`\subset`	$\Rightarrow$	`\Rightarrow` or `\implies`	$\top$	`\top`
$\supset$	`\supset`	$\leftrightarrow$	`\leftrightarrow`	$\bot$	`\bot`
$\in$	`\in`	$\Longleftrightarrow$	`\iff`	$\emptyset$ and $\varnothing$	`\emptyset` and `\varnothing`
$\notin$	`\notin`	$\Leftrightarrow$	`\Leftrightarrow`		
$\ni$	`\ni`	$\Longrightarrow$	`\implies`		

Binary Operations

$\pm$	`\pm`	$\cap$	`\cap`	$\diamond$	`\diamond`	$\oplus$	`\oplus`	$\dagger$	`\dagger`
$\mp$	`\mp`	$\cup$	`\cup`	$\triangle$	`\bigtriangleup`	$\ominus$	`\ominus`	$\ddagger$	`\ddagger`
$\times$	`\times`	$\uplus$	`\uplus`	$\triangledown$	`\bigtriangledown`	$\otimes$	`\otimes`	$\wr$	`\wr`
$\div$	`\div`	$\sqcap$	`\sqcap`	$\triangleleft$	`\triangleleft`	$\oslash$	`\oslash`	$\amalg$	`\amalg`
$*$	`\ast`	$\sqcup$	`\sqcup`	$\triangleright$	`\triangleright`	$\odot$	`\odot`		
$\star$	`\star`	$\vee$	`\vee`	$\bigcirc$	`\bigcirc`	$\circ$	`\circ`		
$\cdot$	`\cdot`	$\wedge$	`\wedge`	$\bullet$	`\bullet`	$\setminus$	`\setminus`		

Trigonometric Functions

sin	`\sin`	arcsin	`\arcsin`	sinh	`\sinh`	sec	`\sec`
cos	`\cos`	arccos	`\arccos`	cosh	`\cosh`	csc	`\csc`
tan	`\tan`	arctan	`\arctan`	tanh	`\tanh`		
cot	`\cot`			coth	`\coth`		

Other symbols

∂	`\partial`	$\imath$	`\imath`	$\Re$	`\Re`	∇	`\nabla`	$\aleph$	`\aleph`
$\eth$	`\eth`	$\jmath$	`\jmath`	$\Im$	`\Im`	$\Box$	`\Box*`	$\beth$	`\beth`
$\hbar$	`\hbar`	ℓ	`\ell`	$\wp$	`\wp`	∞	`\infty`	$\gimel$	`\gimel`

Mathematics Environments

Canonical Environments

Type	Inline formulas	Displayed equations	Numbered equations
Environment	`math`	`displaymath`	`equation`
LaTeX shorthand	`\(...\)`	`\[...\]`	
TeX shorthand	`$...$`	`$$...$$`	
Comment			`equation*` (`amsmath`)

Other Environments

Environment name	Description
`align` and `align*`	(`amsmath`) multiple lines.
`cases` and `cases*`	(`amsmath`) piecewise functions.
`dcases` and `dcases*`	(`mathtools`) piecewise functions (`\displaystyle`).

Manual Sizing

Brackets, Braces and Delimiters

(`\big( \Big( \bigg( \Bigg(`

Spaces

`\,`	3/18 `\quad`	`\:`	4/18 `\quad`
`\;`	5/18 `\quad`	`\!`	-3/18 `\quad`

Formatting

Math Fonts

LaTeX command	Sample	Description	Common use
`\mathnormal{...}`	$ABCDEF\ abcdef\ 123456$	Default math font	Most mathematical notation
`\bm{...}`	$\boldsymbol{ABCDEF\ abcdef\ 123456}$	Bold font	Vectors (`bm`)
`\mathrm{...}`	$\mathrm{ABCDEF\ abcdef\ 123456}$	Normal text font	Units, one word functions
`\mathsf{...}`	$\mathsf{ABCDEF\ abcdef\ 123456}$	sans-serif	
`\mathtt{...}`	$\mathtt{ABCDEF\ abcdef\ 123456}$	Monospace font	
`\mathfrak{...}`	$\mathfrak{ABCDEF\ abcdef\ gyvw}\mathfrak{C}$	Fraktur	Canonical for Lie algebras
`\mathcal{...}`	$\mathcal{ABCDEF}$	Calligraphy (U)	sheaves/schemes, categories and transforms
`\mathbb{...}`	$\mathbb{ABCDEF}$	Blackboard (U)	special sets (e.g. real numbers)

Operators

Sums and Integrals

$\sum$	`\sum`	$\prod$	`\prod`	$\coprod$	`\coprod`
$\bigoplus$	`\bigoplus`	$\bigotimes$	`\bigotimes`	$\bigodot$	`\bigodot`
$\bigcup$	`\bigcup`	$\bigcap$	`\bigcap`	$\biguplus$	`\biguplus`
$\bigsqcup$	`\bigsqcup`	$\bigvee$	`\bigvee`	$\bigwedge$	`\bigwedge`
$\int$	`\int`	$\oint$	`\oint`	$\iint$	`\iint`
$\iiint$	`\iiint`	$\iiiint$	`\iiiint`	$\int\cdots\int$	`\idotsint`

Accents

a'	`a'`	a''	`a''`
$\hat{a}$	`\hat{a}`	$\bar{a}$	`\bar{a}`
$\dot{a}$	`\dot{a}`	$\ddot{a}$	`\ddot{a}`
$\overrightarrow{AB}$	`\overrightarrow{AB}`	$\overleftarrow{AB}$	`\overleftarrow{AB}`
$\overline{aaa}$	`\overline{aaa}`	$\vec{a}$	`\vec{a}`
$\widehat{AAA}$	`\widehat{AAA}`	$\tilde{a}$	`\tilde{a}`