LaTeX Math Symbols

Prepared by L. Kocbach, on the basis of [this document](#) (origin: David Carlisle, Manchester University)

[File A.tex contains all necessary code](#)
This file is prepared by running
latex A.tex
and cutting the pictures out of the resulting preview. Relevant parts of the latex code are reproduced under each of the pictures.
Some of the symbols have an explanatory text. This text is found in the latex code, mostly stating that they are parts of some spacial setup and cannot be used in standard LaTeX. Each of the figures also has a link to itself.

Greek Letters

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

Table 1: Greek Letters

[t1.gif](#)

```
\alpha              \theta              o                   \tau
\beta               \vartheta           \pi                 \upsilon
\gamma              \gamma              \varpi              \phi
\delta              \kappa              \rho                \varphi
\epsilon            \lambda             \varrho             \chi
\varepsilon         \mu                 \sigma              \psi
\zeta               \nu                 \varsigma           \omega
\eta                \xi

\Gamma              \Lambda             \Sigma              \Psi
\Delta              \Xi                 \Upsilon            \Omega
\Theta              \Pi                 \Phi
```

Binary Operation Symbols

±	\pm	∩	\cap	◇	\diamond	⊕	\oplus
∓	\mp	∪	\cup	△	\bigtriangleup	⊖	\ominus
×	\times	⊎	\uplus	▽	\bigtriangledown	⊗	\otimes
÷	\div	⊓	\sqcap	◁	\triangleleft	⊘	\oslash
∗	\ast	⊔	\sqcup	▷	\triangleright	⊙	\odot
⋆	\star	∨	\vee	◁	\lhd^b	○	\bigcirc
∘	\circ	∧	\wedge	▷	\rhd^b	†	\dagger
•	\bullet	\	\setminus	⊴	\unlhd^b	‡	\ddagger
·	\cdot	≀	\wr	⊵	\unrhd^b	⨿	\amalg
+	+	—	−				

[t2.gif](t2.gif)

```
\pm             \cap            \diamond            \oplus
\mp             \cup            \bigtriangleup      \ominus
\times          \uplus          \bigtriangledown    \otimes
\div            \sqcap          \triangleleft       \oslash
\ast            \sqcup          \triangleright      \odot
\star           \vee            \lhd$^b$            \bigcirc
\circ           \wedge          \rhd$^b$            \dagger
\bullet         \setminus       \unlhd$^b$          \ddagger
\cdot           \wr             \unrhd$^b$          \amalg
+               -
```

```
$^b$ Not predefined in a format based on {\tt basefont.tex}.
    Use one of the style options
    {\tt oldlfont}, {\tt newlfont}, {\tt amsfonts} or {\tt amssymb}.
```

Relation Symbols

≤	\leq	≥	\geq	≡	\equiv	⊨	\models
≺	\prec	≻	\succ	∼	\sim	⊥	\perp
⪯	\preceq	⪰	\succeq	≃	\simeq	|	\mid
≪	\ll	≫	\gg	≍	\asymp	‖	\parallel
⊂	\subset	⊃	\supset	≈	\approx	⋈	\bowtie
⊆	\subseteq	⊇	\supseteq	≅	\cong	⋈	\Join^b
⊏	\sqsubset^b	⊐	\sqsupset^b	≠	\neq	⌣	\smile
⊑	\sqsubseteq	⊒	\sqsupseteq	≐	\doteq	⌢	\frown
∈	\in	∋	\ni	∝	\propto	=	=
⊢	\vdash	⊣	\dashv	<	<	>	>
:	:						

[t3.gif](t3.gif)

```
\leq             \geq            \equiv          \models
\prec            \succ           \sim            \perp
\preceq          \succeq         \simeq          \mid
\ll              \gg             \asymp          \parallel
\subset          \supset         \approx         \bowtie
\subseteq        \supseteq       \cong           \Join$^b$
\sqsubset$^b$    \sqsupset$^b$   \neq            \smile
\sqsubseteq      \sqsupseteq     \doteq          \frown
\in              \ni             \propto         =
```

```
\vdash               \dashv               <                    >
 :
```

```
$^b$ Not predefined in a format based on {\tt basefont.tex}.
     Use one of the style options
     {\tt oldlfont}, {\tt newlfont}, {\tt amsfonts} or {\tt amssymb}.
```

Punctuation Symbols

, ,   ; ;   : \colon   . \ldotp   · \cdotp

Table 4: Punctuation Symbols

[t4.gif](t4.gif)

```
,            ;              \colon              \ldotp              \cdotp
```

Arrow Symbols

←	\leftarrow	←—	\longleftarrow	↑	\uparrow
⇐	\Leftarrow	⇐=	\Longleftarrow	⇑	\Uparrow
→	\rightarrow	—→	\longrightarrow	↓	\downarrow
⇒	\Rightarrow	=⇒	\Longrightarrow	⇓	\Downarrow
↔	\leftrightarrow	←—→	\longleftrightarrow	↕	\updownarrow
⇔	\Leftrightarrow	⇐=⇒	\Longleftrightarrow	⇕	\Updownarrow
↦	\mapsto	↦—→	\longmapsto	↗	\nearrow
↩	\hookleftarrow	↪	\hookrightarrow	↘	\searrow
↼	\leftharpoonup	⇀	\rightharpoonup	↙	\swarrow
↽	\leftharpoondown	⇁	\rightharpoondown	↖	\nwarrow
⇌	\rightleftharpoons	⤳	\leadsto^b		

[t5.gif](t5.gif)

```
\leftarrow              \longleftarrow          \uparrow
\Leftarrow              \Longleftarrow          \Uparrow
\rightarrow             \longrightarrow         \downarrow
\Rightarrow             \Longrightarrow         \Downarrow
\leftrightarrow         \longleftrightarrow     \updownarrow
\Leftrightarrow         \Longleftrightarrow     \Updownarrow
\mapsto                 \longmapsto             \nearrow
\hookleftarrow          \hookrightarrow         \searrow
\leftharpoonup          \rightharpoonup         \swarrow
\leftharpoondown        \rightharpoondown       \nwarrow
\rightleftharpoons      \leadsto$^b$

$^b$ Not predefined in a format based on {\tt basefont.tex}.
     Use one of the style options
     {\tt oldlfont}, {\tt newlfont}, {\tt amsfonts} or {\tt amssymb}.
```

Miscellaneous Symbols

...	\ldots	⋯	\cdots	⋮	\vdots	⋰	\ddots
ℵ	\aleph	′	\prime	∀	\forall	∞	\infty
ℏ	\hbar	∅	\emptyset	∃	\exists	□	\Box[b]
ı	\imath	∇	\nabla	¬	\neg	◇	\Diamond[b]
ȷ	\jmath	√	\surd	♭	\flat	△	\triangle
ℓ	\ell	⊤	\top	♮	\natural	♣	\clubsuit
℘	\wp	⊥	\bot	♯	\sharp	◇	\diamondsuit
ℜ	\Re	‖	|	\	\backslash	♡	\heartsuit
ℑ	\Im	∠	\angle	∂	\partial	♠	\spadesuit
℧	\mho[b]	.	.					

t6.gif

```
\ldots              \cdots              \vdots              \ddots
\aleph              \prime              \forall             \infty
\hbar               \emptyset           \exists             \Box$^b$
\imath              \nabla              \neg                \Diamond$^b$
\jmath              \surd               \flat               \triangle
\ell                \top                \natural            \clubsuit
\wp                 \bot                \sharp              \diamondsuit
\Re                 \|                  \backslash          \heartsuit
\Im                 \angle              \partial            \spadesuit
\mho$^b$            .                   |
```

```
$^b$ Not predefined in a format based on {\tt basefont.tex}.
    Use one of the style options
    {\tt oldlfont}, {\tt newlfont}, {\tt amsfonts} or {\tt amssymb}.
```

Variable–sized Symbols

∑	\sum	⋂	\bigcap	⊙	\bigodot
∏	\prod	⋃	\bigcup	⊗	\bigotimes
∐	\coprod	⊔	\bigsqcup	⊕	\bigoplus
∫	\int	⋁	\bigvee	⊎	\biguplus
∮	\oint	⋀	\bigwedge		

Table 7: Variable-sized Symbols

t7.gif

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

Log–like Symbols

\arccos	\cos	\csc	\exp	\ker	\limsup	\min	\sinh
\arcsin	\cosh	\deg	\gcd	\lg	\ln	\Pr	\sup
\arctan	\cot	\det	\hom	\lim	\log	\sec	\tan
\arg	\coth	\dim	\inf	\liminf	\max	\sin	\tanh

Table 8: Log-like Symbols

[t8.gif](t8.gif)

\arccos	\cos	\csc	\exp	\ker	\limsup	\min	\sinh
\arcsin	\cosh	\deg	\gcd	\lg	\ln	\Pr	\sup
\arctan	\cot	\det	\hom	\lim	\log	\sec	\tan
\arg	\coth	\dim	\inf	\liminf	\max	\sin	\tanh

Delimiters

(	(	)	)	↑	\uparrow	⇑	\Uparrow
[	[	]	]	↓	\downarrow	⇓	\Downarrow
{	\{	}	\}	↕	\updownarrow	⇕	\Updownarrow
⌊	\lfloor	⌋	\rfloor	⌈	\lceil	⌉	\rceil
⟨	\langle	⟩	\rangle	/	/	\	\backslash
|	|	‖	\\|				

Table 9: Delimiters

[t9.gif](t9.gif)

(	)	\uparrow	\Uparrow
[	]	\downarrow	\Downarrow
\{	\}	\updownarrow	\Updownarrow
\lfloor	\rfloor	\lceil	\rceil
\langle	\rangle	/	\backslash
|	\\|		

Large Delimiters

⎱	\rmoustache	⎰	\lmoustache	⎞	\rgroup	⎛	\lgroup
⎪	\arrowvert	‖	\Arrowvert	⎪	\bracevert		

Table 10: Large Delimiters

[t10.gif](t10.gif)

\rmoustache	\lmoustache	\rgroup	\lgroup
\arrowvert	\Arrowvert	\bracevert	

Math mode accents

$\hat{a}$	\hat{a}	$\acute{a}$	\acute{a}	$\bar{a}$	\bar{a}	$\dot{a}$	\dot{a}	$\breve{a}$	\breve{a}
$\check{a}$	\check{a}	$\grave{a}$	\grave{a}	$\vec{a}$	\vec{a}	$\ddot{a}$	\ddot{a}	$\tilde{a}$	\tilde{a}

Table 11: Math mode accents

```
\hat{a}         \acute{a}       \bar{a}         \dot{a}         \breve{a}
\check{a}       \grave{a}       \vec{a}         \ddot{a}        \tilde{a}
```

Some other constructions

$\widetilde{abc}$	\widetilde{abc}	$\widehat{abc}$	\widehat{abc}
$\overleftarrow{abc}$	\overleftarrow{abc}	$\overrightarrow{abc}$	\overrightarrow{abc}
$\overline{abc}$	\overline{abc}	$\underline{abc}$	\underline{abc}
$\overbrace{abc}$	\overbrace{abc}	$\underbrace{abc}$	\underbrace{abc}
$\sqrt{abc}$	\sqrt{abc}	$\sqrt[n]{abc}$	\sqrt[n]{abc}
f'	f'	$\frac{abc}{xyz}$	\frac{abc}{xyz}

Table 12: Some other constructions

```
\widetilde{abc}             \widehat{abc}
\overleftarrow{abc}         \overrightarrow{abc}
\overline{abc}              \underline{abc}
\overbrace{abc}             \underbrace{abc}
\sqrt{abc}                  \sqrt[n]{abc}
$f'$                        \frac{abc}{xyz}
```