# $Emacs\ TeQ:\ (T_{\hbox{\footnotesize E}}X\ +\ Quail)$

Input Method written in Quail for entering  $\LaTeX$  math expressions

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1	$\mathbf{A}$	lphabet related stuff:	
1.	L (	Greek	
σi.	fs/e	xample-greek.gif	

Table 1: Main Greek letters						
key	sym	latex (lower greek)	key	sym	latex (upper greek)	
a.	$\alpha$	\alpha	Α.	A	A	
b.	$\beta$	\beta	В.	B	В	
c.	$\psi$	\psi	C.	$\Psi$	\Psi	
d.	$\delta$	\delta	D.	$\Delta$	\Delta	
e.	$\epsilon$	\epsilon	E.	E	E	
f.	$\phi$	\phi	F.	$\Phi$	\Phi	
g.	$\gamma$	\gamma	G.	$\Gamma$	\Gamma	
h.	$\eta$	\eta	Н.	H	H	
i.	$\iota$	\iota	I.	I	I	
j.	ξ	\xi	J.	Ξ	\Xi	
k.	$\kappa$	\kappa	K.	K	K	
1.	$\lambda$	\lambda	L.	$\Lambda$	\Lambda	
m.	$\mu$	\mu	M.	M	M	
n.	$\nu$	\nu	N.	N	N	
ο.	0	0	0.	O	0	
p.	$\pi$	\pi	P.	Π	\Pi	
r.	$\rho$	\rho	R.	P	P	
s.	$\sigma$	\sigma	S.	$\sum$	\Sigma	
t.	au	\tau	T.	T	T	
th.	$\theta$	\theta	Th.	Θ	\Theta	
u.	v	\upsilon	U.	Υ	$\Upsilon$	
w.	$\omega$	\omega	W.	$\Omega$	\Omega	
x.	χ	\chi	Х.	X	X	
z.	$\zeta$	\zeta	Z.	Z	Z	

Table 2: Variation Greek letters				
key	$\operatorname{sym}$	latex (lower greek)		
е	$\varepsilon$	\varepsilon		
f	$\varphi$	\varphi		
s	ς	\varsigma		
t	$\vartheta$	\vartheta		
r	$\varrho$	\varrho		
p	$\varpi$	\varpi		
k	×	\varkappa		

#### Matrix (aka bold) 1.2

Table 3:	Matrix
\	_

1		<u>Table 3:</u>			1 / /1 1 1 1 1
key	sym	latex (upper bold)	key	sym	latex (lower bold)
Am	$\mathbf{A}$	\mathbf{A}	am	$\mathbf{a}$	\mathbf{a}
Bm	$\mathbf{B}$	\mathbf{B}	bm	$\mathbf{b}$	$\mathbf{b}$
Cm	${f C}$	\mathbf{C}	cm	$\mathbf{c}$	\mathbf{c}
Dm	$\mathbf{D}$	$\mathbf{D}$	dm	$\mathbf{d}$	$\mathbf{d}$
Em	${f E}$	\mathbf{E}	em	$\mathbf{e}$	\mathbf{e}
Fm	${f F}$	$mathbf\{F\}$	fm	${f f}$	$\mathbf{f}$
Gm	${f G}$	$Mathbf\{G\}$	gm	${f g}$	$\mathbf{g}$
Hm	$\mathbf{H}$	\mathbf{H}	hm	${f h}$	$\mathbf{h}$
Im	$\mathbf{I}$	$\mathbf{I}$	im	i	$\mathbf{i}$
Jm	${f J}$	$\mathbf{J}$	jm	j	$\mathbf{j}$
Km	$\mathbf{K}$	$Mathbf\{K\}$	km	$\mathbf{k}$	$\mathbf{k}$
Lm	${f L}$	$\mathbf{L}$	lm	1	<b>1</b>
Mm	${f M}$	\mathbf{M}	mm	$\mathbf{m}$	$\mathbf{m}$
Nm	${f N}$	$\mathbf{N}$	nm	${f n}$	$\mathbf{n}$
Om	Ο	<b>0</b>	om	O	<b>0</b>
Pm	$\mathbf{P}$	\mathbf{P}	pm	$\mathbf{p}$	$\mathbf{p}$
Qm	${f Q}$	$Mathbf\{Q\}$	qm	${f q}$	$\mathbf{q}$
Rm	${f R}$	$\mathbf{R}$	rm	${f r}$	$\mathbf{r}$
Sm	$\mathbf{S}$	$Mathbf\{S\}$	sm	$\mathbf{s}$	$\mathbf{s}$
Tm	${f T}$	$\mathbf{T}$	tm	$\mathbf{t}$	$\mathbf{t}$
Um	${f U}$	$D_{U}$	um	$\mathbf{u}$	$\mathbf{u}$
Vm	${f V}$	\mathbf{V}	vm	$\mathbf{v}$	$\mathbf{v}$
Wm	$\mathbf{W}$	$\mathbf{W}$	wm	$\mathbf{w}$	$\mathbf{w}$
Xm	$\mathbf{X}$	$\mathbf{X}$	xm	X	$\mathbf{x}$
Ym	$\mathbf{Y}$	$\mathbf{Y}$	ym	$\mathbf{y}$	$\mathbf{y}$
Zm	${f Z}$	$\mathbf{Z}$	zm	${f z}$	$\mathbf{z}$
Om	0	<b>0</b>	Om	0	<b>0</b>

#### 1.3 Vector & Hat

		Table 4: Vect	tors a	nd Hat	S
key	sym	latex (vec)	key	sym	latex (hat)
av	$\vec{a}$	\vec{a}	ah	$\hat{a}$	\hat{a}
bv	$ec{b}$	$\vec{b}$	bh	$\hat{b}$	\hat{b}
cv	$\vec{c}$	\vec{c}	ch	$\hat{c}$	\hat{c}
dv	$ec{d}$	$\vec{d}$	dh	$\hat{d}$	$\hat{d}$
ev	$\vec{e}$	\vec{e}	eh	$\hat{e}$	\hat{e}
fv	$ec{f}$	$\vec{f}$	fh	$\hat{f}$	$\hat{f}$
gv	$ec{g}$	$\vec{g}$	gh	$\hat{g}$	$\hat{g}$
hv	$ec{h}$	$\operatorname{\vec}\{h\}$	hh	$\hat{h}$	$\hat{h}$
iv	$ec{i}$	$\vec{i}$	ih	$\hat{i}$	\hat{i}
jv	$ec{j}$	\vec{j}	jh	$\hat{j}$	$\hat{j}$
kv	$ec{k}$	$\vec{k}$	kh	$\hat{k}$	$\hat{k}$
lv	$ec{l}$	$\vec{1}$	1h	$\hat{l}$	\hat{1}
mv	$\vec{m}$	$\operatorname{\vec}\{m\}$	mh	$\hat{m}$	$\hat{m}$
nv	$\vec{n}$	$\operatorname{vec}\{n\}$	nh	$\hat{n}$	$\hat{n}$
ov	$\vec{o}$	\vec{o}	oh	$\hat{o}$	\hat{o}
pv	$ec{p}$	$\vec{p}$	ph	$\hat{p}$	$\hat{p}$
qv	$ec{q}$	$\vec{q}$	qh	$\hat{q}$	$\hat{q}$
rv	$ec{r}$	$\vec{r}$	rh	$\hat{r}$	$\hat{r}$
sv	$\vec{s}$	\vec{s}	sh	$\hat{s}$	\hat{s}
tv	$\vec{t}$	$\vec{t}$	th	$\hat{t}$	\hat{t}
uv	$\vec{u}$	$\vec{u}$	uh	$\hat{u}$	\hat{u}
vv	$\vec{v}$	$\vec{v}$	vh	$\hat{v}$	\hat{v}
WV	$\vec{w}$	$\vec{w}$	wh	$\hat{w}$	\hat{w}
xv	$\vec{x}$	\vec{x}	xh	$\hat{x}$	\hat{x}
yv	$ec{y}$	\vec{y}	yh	$\hat{y}$	\hat{y}
ΖV	$ec{z}$	$\vec{z}$	zh	$\hat{z}$	\hat{z}

#### 1.4 Dots

Table 5: Dots						
key	sym	latex (vec)	key	sym	latex (hat)	
ad	$\dot{a}$	$\det\{a\}$	Ad	À	\dot{A}	
bd	$\dot{b}$	$\det\{b\}$	Bd	$\dot{B}$	\dot{B}	
cd	$\dot{c}$	\dot{c}	Cd	$\dot{C}$	\dot{C}	
dd	$\dot{d}$	$\det\{d\}$	Dd	$\dot{D}$	\dot{D}	
ed	$\dot{e}$	$\dot{e}$	Ed	$\dot{E}$	\dot{E}	
fd	$\dot{f}$	$\det\{f\}$	Fd	$\dot{F}$	\dot{F}	
gd	$\dot{g}$	$\det\{g\}$	Gd	$\dot{G}$	\dot{G}	
hd	h	$\det\{h\}$	Hd	$\dot{H}$	\dot{H}	
id	$\dot{i}$	\dot{i}	Id	İ	\dot{I}	
jd	$\dot{j}$	\dot{j}	Jd	$\dot{J}$	\dot{J}	
kd	$\dot{k}$	$\det\{k\}$	Kd	$\dot{K}$	\dot{K}	
ld	$\dot{l}$	$\det\{1\}$	Ld	$\dot{L}$	\dot{L}	
md	$\dot{m}$	$\det\{m\}$	Md	$\dot{M}$	\dot{M}	
nd	$\dot{n}$	$\det\{n\}$	Nd	$\dot{N}$	\dot{N}	
od	$\dot{o}$	\dot{o}	Od	Ò	$\dot{0}$	
pd	$\dot{p}$	$\det\{p\}$	Pd	$\dot{P}$	\dot{P}	
qd	$\dot{q}$	$\det{q}$	Qd	$\dot{Q}$	\dot{Q}	
rd	$\dot{r}$	$\det\{r\}$	Rd	$\dot{R}$	\dot{R}	
sd	$\dot{s}$	\dot{s}	Sd	$\dot{S}$	\dot{S}	
td	$\dot{t}$	$\det\{t\}$	Td	$\dot{T}$	\dot{T}	
ud	$\dot{u}$	$\det\{u\}$	Ud	$\dot{U}$	\dot{U}	
vd	$\dot{v}$	$\det\{v\}$	Vd	$\dot{V}$	\dot{V}	
wd	$\dot{w}$	$\det\{w\}$	Wd	$\dot{W}$	\dot{W}	
xd	$\dot{x}$	$\det\{x\}$	Xd	$\dot{X}$	\dot{X}	
yd	$\dot{y}$	\dot{y}	Yd	$\dot{Y}$	\dot{Y}	
zd	$\dot{z}$	$\det\{z\}$	Zd	$\dot{Z}$	\dot{Z}	

#### 1.5 DDots

Table 6: DDots						
key	sym	latex (vec)	key	sym	latex (hat)	
ad.	$\ddot{a}$	$\dot{a}$	Ad.	Ä	\ddot{A}	
bd.	$\ddot{b}$	\ddot{b}	Bd.	$\ddot{B}$	\ddot{B}	
cd.	$\ddot{c}$	\ddot{c}	Cd.	$\ddot{C}$	\ddot{C}	
dd.	$\ddot{d}$	$\dot{d}$	Dd.	$\ddot{D}$	\ddot{D}	
ed.	$\ddot{e}$	\ddot{e}	Ed.	$\ddot{E}$	\ddot{E}	
fd.	$\ddot{f}$	$\dot{f}$	Fd.	$\ddot{F}$	\ddot{F}	
gd.	$\ddot{\ddot{g}}$ $\ddot{\ddot{h}}$	$\dot{g}$	Gd.	$\ddot{G}$	\ddot{G}	
hd.		$\displaystyle \dot\{h\}$	Hd.	$\ddot{H}$	\ddot{H}	
id.	$\ddot{i}$	\ddot{i}	Id.	Ϊ	\ddot{I}	
jd.	$\ddot{j}$	\ddot{j}	Jd.	$\ddot{J}$	\ddot{J}	
kd.	k	$\dot{k}$	Kd.	$\ddot{K}$	\ddot{K}	
ld.	$\ddot{l}$	$\dot{1}$	Ld.	$\ddot{L}$	\ddot{L}	
md.	$\ddot{m}$	$\dot\{m\}$	Md.	$\ddot{M}$	\ddot{M}	
nd.	$\ddot{n}$	$\displaystyle \dot\{n\}$	Nd.	$\ddot{N}$	\ddot{N}	
od.	$\ddot{o}$	\ddot{o}	Od.	$\ddot{O}$	\ddot{0}	
pd.	$\ddot{p}$	$\displaystyle \dot{p}$	Pd.	$\ddot{P}$	\ddot{P}	
qd.	$\ddot{q}$	$\dot{q}$	Qd.	$\ddot{Q} \ \ddot{R}$	\ddot{Q}	
rd.	$\ddot{r}$	$\dot{r}$	Rd.		\ddot{R}	
sd.	$\ddot{s}$	\ddot{s}	Sd.	$\ddot{S}$	\ddot{S}	
td.	$\ddot{t}$	$\dot{t}$	Td.	$\ddot{T}$	\ddot{T}	
ud.	$\ddot{u}$	$\displaystyle \dot\{u\}$	Ud.	$\ddot{U}$	\ddot{U}	
vd.	$\ddot{v}$	$\dot{v}$	Vd.	$\ddot{V}$	\ddot{V}	
wd.	$\ddot{w}$	$\dot{w}$	Wd.	$\ddot{W}$	\ddot{W}	
xd.	$\ddot{x}$	$\displaystyle \texttt{ddot}\{x\}$	Xd.	$\ddot{X}$	\ddot{X}	
yd.	$\ddot{y}$	$\displaystyle \texttt{\ddot}\{y\}$	Yd.	$\ddot{Y}$	\ddot{Y}	
zd.	$\ddot{z}$	\ddot{z}	Zd.	$\ddot{Z}$	\ddot{Z}	

## 2 Function Expansion

Table 7: Keys that will execute some elisp functions

key	sym	latex	description
/		quail-TeQ-frac	fraction on previous
eq		quail-TeQ-equation	equation environment
al		quail-TeQ-aligned	aligned environment
el		quail-TeQ-endofline	end of line

## 3 Symbols:

#### 3.1 Dots related

Table 8: Multiple Dots Related

key	sym	latex	description
		\dots	3 dots
.v	•	\vdots	vertical dots
.d	٠		diagonale dots
1.1		\1dots	low dots

### 3.2 Geometry

Table 9:

key	$\operatorname{sym}$	latex	description
perp	$\perp$	\perp	
perpn	1	\perp	⊥ n (neg)
para		\parallel	
paran	#	nparallel	n (neg)
ang	_	\angle	
ang.	4	\measuredangle	$\angle$ . (var)
tri	Δ	$\vartriangle$	
trin	$\nabla$	\triangledown	△ n (neg)
squ		\square	
tri.	<b>A</b>	\blacktriangle	$\triangle$ . (var)
trin.	lacktriangle	\blacktriangledown	△ n. (neg,var)
squ.		\blacksquare	$\Box$ . (var)

#### 3.3 Letter like

Table 10: Letter-like Symbold

			<u> </u>
key	sym	latex	description
inf	$\infty$	\infty	
ex	3	\exists	
exn	∄	$\nexists$	$\exists + \underline{\mathbf{n}} \; (\text{neg})$
fa	$\forall$	\forall	
hb	$\hbar$	\hbar	
hb.	$\hbar$	\hslash	$\hbar + \underline{\cdot} \text{ (var)}$
dd	d	$\mathbf{d}$	
dd.	$\partial$	$\operatorname{ar{partial}}$	$d + \underline{\cdot} (var)$
ii	$\imath$	$\$ imath	
jj	$\jmath$	$\$ jmath	
nab	$\nabla$	\nabla	
cm	✓	\checkmark	

### 3.4 Spaces

Table 11: Space Symbold

	10010 1	i. Space	0,1110014
key	$\operatorname{sym}$	latex	description
qu			
quu		\qquad	

#### 3.5 Arrows:

### 3.5.1 Single:

Table 12: Single Line arrows

key	sym	latex	description
<-	$\leftarrow$	\leftarrow	
->	$\rightarrow$	\rightarrow	
_^	$\uparrow$	\uparrow	^ looks like up arrow head
-v	$\downarrow$	\downarrow	v looks like down arrow head
<->	$\leftrightarrow$	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	
<-n	↔	\nleftarrow	negate (n) of prev. section
->n	$\rightarrow \rightarrow$	\nrightarrow	$\operatorname{arrows} + \underline{\mathrm{n}}$
-^n	7	\nuparrow	
-vn	ŧ	\ndownarrow	
<->	$\leftrightarrow \rightarrow$	$\nleftrightarrow$	
>	$\longrightarrow$	\longrightarrow	longer arrows, with 2 dashes
<	$\longleftarrow$	$\label{longleftarrow}$	
->	$\mapsto$	\mapsto	vertical-bar + -> (this might rendered wrongly on Github)

#### 3.5.2 Double:

Table 13: Double Line arrows

1	G###00	later	
key	sym	latex	description
<=	$\Leftarrow$	\Leftarrow	compared to single arrrow
=>	$\Rightarrow$	$\Rightarrow$	these uses = as the arrow shaft
=^	$\uparrow$	\Uparrow	
=v	$\downarrow$	\Downarrow	
<=>	$\Leftrightarrow$	$\Leftrightarrow$	
iff	$\Leftrightarrow$	$\Leftrightarrow$	
<=n	#	\nLeftarrow	negate (n) of prev. section
=>n	$\Rightarrow$	$\n$ Rightarrow	$arrows + \underline{n}$
<=>n	<b>⇔</b>	$\n$ Leftrightarrow	
iffn	$\iff$	$\n \$	
<==>	$\iff$	\Longleftrightarrow	longer arrows, with 2 dashes
<==	$\leftarrow$	$\Longleftarrow$	
==>	$\Longrightarrow$	$\Longrightarrow$	

#### 3.5.3 Long arrow with top-bottom entries

Table 14: Long arrow Line arrows

key	sym	latex	description
<	-	\xleftarrow[]{}	these uses triple - or $=$
>	$\xrightarrow{\square}$	<pre>\xrightarrow[]{ }</pre>	
===>	$\stackrel{\square}{\Rightarrow}$	<pre>\xRightarrow[]{ }</pre>	mathtools lib required
<===	=	<pre>\xLeftarrow[ ]{ }</pre>	mathtools lib required

## 4 Symbol Modification

### 4.1 Accents (variable decoration?)

		Table 15:	
key	sym	latex	description
vec			
bar			
hat	$\hat{\Box}$	$\hat{\}$	
dot	$\dot{\Box}$		
dot.	$\ddot{\Box}$		
dot	$\Box$		
dot			
dag	□†	^\dagger	
dag.	<b>□</b> ‡	$^\delta$	
*	_*	^*	
deg	0	^\circ	
tr	$\Box^T$	^T	
tr.	$\Box^{-T}$	^{-T}	

### 4.2 Superscripts & Subsripts (power & lower)

		Table	16:		
key	$\operatorname{sym}$	latex	key	$\operatorname{sym}$	latex
^		^{	_		_{
pp		^{	11	$\Box_{\Box}$	_{
p0	$\Box^0$	<b>^</b> 0	10	$\Box_0$	_0
p1	$\Box^1$	^1	11	$\square_1$	_1
p2	$\Box^2$	^2	12	$\square_2$	_2
р3	$\square^3$	^3	13	$\square_3$	_3
p4	$\Box^4$	^4	14	$\square_4$	_4
pn	$\Box^n$	^n	lnn	$\square_n$	_n
px	$\Box^x$	^X	li	$\Box_i$	_i
		{ }	^^		{ }
		<pre>_{ } }</pre>	<b>^^</b> .		^{ }
			^^		

## 5 Binary Operation Symbols

### 5.1 Simple Arithmetics:

Table 17: Simple Arithmetics operations

key	sym	latex
+-	$\pm$	\pm
-+	干	\mp
*x	×	\times
::	÷	\div
**		\cdot

### 5.2 Binary Relations:

		Table 18:	
key	sym	latex	description
<.	$\leq$	\leq	<=>
>.	$\geq$	\geq	symbols
«	«	\11	
>	>>	\gg	
=n	$\neq$	\neq	negation
~n	<b>≁</b>	\nsim	
<n< td=""><td><b>*</b></td><td>\nless</td><td></td></n<>	<b>*</b>	\nless	
>n	<i>}</i>	\ngtr	
<.n	\$	\nleq	
>.n	<u>₹</u>	\ngeq	
=?	Ė	\stackrel{?}{=}	with question mark
</td <td>· (</td> <td>\stackrel{?}{&lt;}</td> <td></td>	· (	\stackrel{?}{<}	
>?	> ?	\stackrel{?}{>}	
<.?	<u>{</u>	$\stackrel{?}{\leq}$	
>.?	<u>}</u>	\stackrel{?}{\geq}	
«?	? «	$\stackrel{?}{\ll}$	
»?	<i>?</i> ≫	\stackrel{?}{\gg}	
=y	<b>√</b>	\stackrel{\checkmark}{=}	with check mark
<у	<	\stackrel{\checkmark}{<}	
>y	>	\stackrel{\checkmark}{>}	
<.y	★ ★ ★ ★ ? : : : : : : : : : : : : : : :	\stackrel{\checkmark}{\leq}	
>.y	<u>&gt;</u>	\stackrel{\checkmark}{\geq}	
≪y	<b>«</b>	$\stackrel{\checkmark}{\ll}$	
>y	<b>√</b> ≫	\stackrel{\checkmark}{\gg}	
=.	≡	\equiv	Variation on
	$\sim$	\sim	Another variations
=	$\approx$	\approx	on =
3=	≡	\equiv	
=:	:=	\coloneqq	
:=	:=	\coloneqq	

### 5.3 Set symbols

Table 19:

key	sym	latex	description
in	$\in$	\in	
in.	$\ni$	\ni	
ni	∋	\ni	
inn	∉	$\n$	(neg)
0/	$\emptyset$	\emptyset	
nsr	$\mathbb{R}$	$\mathbb{R}$	(n)umber (s)et (r)eal
nsc	$\mathbb{C}$	$\mathbb{C}$	(n)umber (s)et (c)omplex
nsn	$\mathbb{N}$	$\mathbb{N}$	
nsp	$\mathbb{P}$	$\mathbb{P}$	
nsz	$\mathbb{Z}$	$\mathbb{Z}$	
nsi	$\mathbb{I}$	$\mathbb{I}$	
sub	$\subset$	\subset	
subn	⊈	\nssubseteq	(neg)
sub.	$\subseteq$	\subseteq	(var)
sub.n	$\not\sqsubseteq \subseteq \not\sqsubseteq \not\sqsubseteq$	\nsubseteq	(var, neg)
subn.	⊈	\nsubseteq	(neg, var)
sup	$\supset$	\supset	
supn	ot = 1	\nsupseteq	(neg)
sup.	⊉⊇⊉	\supeseteq	(var)
sup.n	$\not\supseteq$	$\nsupseteq$	(var, neg)
supn.	⊉	\nsupseteq	(neg, var)

## 5.4 Logic

Table 20:

key	sym	latex	description
or	V	\lor	
and	$\wedge$	\lnd	
not	$\neg$	\neg	
or.	or	<pre>\text{ or }</pre>	(var)
and.	and	<pre>\text{ and }</pre>	(var)
not.	$\operatorname{not}$	<pre>\text{ not }</pre>	(var)

## 6 Functions

#### 6.1 Function

	r	Γable 21:	
key	sym	latex	description
rank	rank	\mathrm{rank}	
arg	arg	\arg	
det	det	\det	
dim	$\dim$	\dim	
exp	$\exp$	\exp(	
Im	$\operatorname{Im}$	\mathrm{Im}(	
Re	Re	\mathrm{Re}(	
ln	ln	$\ln($	
log	$\log$	\log(	
max	max	\max(	
min	$\min$	\min(	
dim	$\dim$	\dim(	
sqrt	$\nabla \Box$	\sqrt(	
mod	$\square \pmod{\square}$	\pmod(	
mod.	$\square \mod \square$	\mod	
mod	$\square \bmod \square$	\bmod	

## 6.2 Trignometry: function

Table 22:					
key	sym	latex	key	sym	latex
cos	$\cos(\Box)$	\cos(	cosh	$\cosh(\Box)$	\cosh(
sin	$\sin(\Box)$	$\sin($	sinh	$\sinh(\Box)$	\sinh(
tan	$\tan(\Box)$	an(	tanh	$\tanh(\Box)$	\tanh(
cot	$\cot(\Box)$	\cot(	coth	$\coth(\Box)$	\coth(
acos	$\arccos(\Box)$	\arccos(	cos.	$\arccos(\Box)$	\arccos(
asin	$\arcsin(\Box)$	\arcsin(	sin.	$\arcsin(\Box)$	\arcsin(
atan	$\arctan(\Box)$	\arctan(	tan.	$\arctan(\Box)$	\arctan(

## 6.3 Iterative-like operation:

Table 23: Integrals, Sums, Products

		Table 23: Integrals, Sums, Products	
key	sym	latex	description
il		\limits_{ }	
il		\limits_{ }^{ }	
lim	$\lim$	\lim	
sum	$\sum_{\prod}$	\sum	
prod	$\prod$	\prod	
int	$\int_{-\infty}^{\infty}$	\int	
inti	$\iint$	\iint	
intii	$\int\!\!\int\!\!\int$	\iiint	
intiii	ſſſſ	\iiiint	
into	∮	\oint	
sum.	$\sum_{i=1}^{n}$	$\sum_{i=1}^{n} i=1 $	
prod.	$ \prod_{i=1}^{n} $ $ \int_{-+\infty} $	$\prod\limits_{ i=1 }^{ n }$	
int.	$\int_{\Box}$	$\int \int \int \int dx  dx  dx  dx$	
int	$\int_{0}^{+\infty}$	$\int \int \int d^2 t dt dt$	
int	$\int_{-\infty}^{+\infty}$	$\label{limits_{-infty}^{+infty}} $$ \left( -\right) ^{+infty} $$$	
inti.	$ \begin{array}{c} \stackrel{\circ}{\downarrow} \\ +\infty \\ -\infty \\ \downarrow \\ C	\iint\limits_{ }	
intii.	$\int\limits_{C}\int\limits_{C}\int$	<pre>\iiint\limits_{ }</pre>	
intiii.	$\int \int $	<pre>\iiiint\limits_{ }</pre>	
into.	$_{C}^{\oint}$	\oint\limits_{ }	

## 7 Structural:

#### 7.1 Parenthesis Related

Table 24:

key	sym	latex	description
().	( )	\left( \right)	<del>_</del>
()	$(\Box \Box)$	<pre>\left( \middle\vert \right)</pre>	
[].		\left[\right]	
[]		<pre>\left[ \middle\vert \right]</pre>	(var)
[].c		\lceil \rceil	(var) (ceil)
[].f		\lfloor \rfloor	(var) (floor)
{}.	$\{\Box\}$	<pre>\left\{ \right\}</pre>	
{}	$\{\Box  \Box\}$	<pre>\left\{ \middle\vert \right\}</pre>	(var)
<>.	$\langle \Box \rangle$	\left< \right>	
<>	$\langle \Box   \Box \rangle$	<pre>\left&lt; \middle\vert \right&gt;</pre>	(var)
11.		<pre>\left\vert \right\vert</pre>	
11		<pre>\left\Vert \right\Vert</pre>	(var)
(.	(	\left(	half (
).	$\Box$ )	\right)	half)
[.		\left[	half [
].		\right]	half]
{.	${\Box}$	\left\{	half {
}.	$\square$ }	\right\}	half }
<.	$\langle \Box$	\left<	$\mathrm{half} <$
>.	$\Box\rangle$	\right>	$\mathrm{half} >$
(		\left.	half left .
)		\right.	half right .
١.		\Bigg\vert_{ }^{ }	definite integral range

#### **7.2** Texts:

Table 25:				
key	sym	latex	description	
te	$\Box + \text{text}$		(te)xt	
tr	$\Box + \mathrm{mathrm}$	$\mathbf{mathrm}$	(t)ext (r)oman	
tb	$\Box + \mathbf{mathbf}$	$\mathbf{mathbf}$	(t)ext (b)old	
ti	$\Box + mathit$	$\mathbf{mathit}$	(t)ext (i)talics	

#### 7.3 Misc.

Table 26:				
key	$\operatorname{sym}$	latex	description	
binom		{	Binom	
box		{	Putting box around object	
fr		{	Fractions	
can	Ī	\cancel		
&=		&=\n\\\\		
=&		&=\n\\\\		

#### 7.4 xy Diagram related

Table 27:			
key	$\operatorname{sym}$	latex	description
ху		$\xymatrix{\n\n}$	
bu	•	\bullet	
ar		\ar	

### 8 Formatting Table into Elisp

```
trans = repr(trans).replace("\'", "\"").replace("~", "")
        trans1 = repr(trans1).replace("\'", "\"").replace("~", "")
        print(f"({key:<7} [{trans:<17}]) ({key1:<7} [{trans1:<17}])")</pre>
def format_table_to_elisp_type3col_type1(headcomment, table):
    print(f";; {headcomment}")
    table = table[1:]
    for line in table:
        key, sym, trans, description = line
            = repr(key).replace("\'", "\"").replace("~", "").replace("\\\\texttt{\\\\
        trans = repr(trans).replace("\'", "\"").replace("~", "")
        print(f"({key:<8} [{trans:<22}]) ; {description}")</pre>
def format_table_to_elisp_type3col_type2(headcomment, table):
    print(f";; {headcomment}")
    table = table[1:]
    for line in table:
        key, sym, trans, description = line
        key = repr(key).replace("\'", "\"").replace("~", "").replace("\\\\texttt{\\\\"
        trans = trans.replace("~", "")
        print(f"({key:<8} {trans:<22}) ; {description}")</pre>
format_table_to_elisp_type6col("Greek", tbl_1_greek)
format_table_to_elisp_type6col("Matrix", tbl_1_matrix)
format_table_to_elisp_type6col("Vector & Hat", tbl_1_vec)
format_table_to_elisp_type6col("Dot", tbl_alphabet_dot_6column)
format_table_to_elisp_type6col("DDot", tbl_alphabet_ddot_6column)
format_table_to_elisp_type3col_type2("Expanding Func", tbl2_exec_func)
format_table_to_elisp_type3col_type1("Symbols-dots", tbl_3_sym_dots)
format_table_to_elisp_type3col_type1("Symbols-geo", tbl_3_sym_geo)
format_table_to_elisp_type3col_type1("Symbols", tbl_3_sym_letter)
format_table_to_elisp_type3col_type1("Symbols spaces", tbl_3_sym_spc)
format_table_to_elisp_type3col_type1("Symbols arrow1", tbl_3_sym_arrow_1)
format_table_to_elisp_type3col_type1("Symbols arrow2", tbl_3_sym_arrow_2)
format_table_to_elisp_type3col_type1("Symbols arrow3", tbl_3_sym_arrow_3)
```

```
format_table_to_elisp_type3col_type1("Symbols arrow3", tbl_4_sym_mod_1)
format_table_to_elisp_type3col_type1("Operation: arith", tbl_5_op_arith)
format_table_to_elisp_type3col_type1("Operation: arith", tbl_5_op_bin)
format_table_to_elisp_type3col_type1("Operation: arith", tbl_5_op_set)
format_table_to_elisp_type3col_type1("Operation: arith", tbl_5_op_logic)
format_table_to_elisp_type3col_type1("Func: main", tbl_6_func)
format_table_to_elisp_type6col("Func: Trig", tbl_6_func_trig_6col)
format_table_to_elisp_type3col_type1("Func: iter", tbl_6_func_iter)
format_table_to_elisp_type3col_type1("Structural: Parenthesis", tbl_7_parenthesis)
format_table_to_elisp_type3col_type1("Structural: Text", tbl_7_text)
format_table_to_elisp_type3col_type1("Structural: Text", tbl_7_text)
format_table_to_elisp_type6col("Structural: Sub-sup-scripts", tbl_7_supsubscripts)
format_table_to_elisp_type3col_type1("Structural: misc", tbl_7_misc)
format_table_to_elisp_type3col_type1("Structural: xy", tbl_7_xy)
;; Greek
("a."
          ["\\alpha"
                            ]) ("A."
                                          Γ"A"
                                                            ])
("b."
          ["\\beta"
                            1) ("B."
                                          ["B"
                                                            1)
                                          ["\\Psi"
("c."
          ["\\psi"
                            ]) ("C."
                                                            ])
("d."
          ["\\delta"
                            1) ("D."
                                          ["\\Delta"
                                                            1)
("e."
          ["\\epsilon"
                            ]) ("E."
                                          I"E"
                                                            ])
          ["\\phi"
("f."
                            ]) ("F."
                                          ["\\Phi"
                                                            ])
          ["\\gamma"
                                          ["\\Gamma"
                                                            ])
("g."
                            ]) ("G."
          ["\\eta"
                            ]) ("H."
                                          ["H"
                                                            ])
("h."
("i."
          ["\\iota"
                            ]) ("I."
                                          ["I"
                                                            ])
("j."
          ["\\xi"
                            ]) ("J."
                                          ["\\Xi"
                                                            ])
                                          ["K"
("k."
          ["\\kappa"
                            ]) ("K."
                                                            ])
("1."
          ["\\lambda"
                            ]) ("L."
                                          ["\\Lambda"
                                                            ])
("m."
          ["\\mu"
                            ]) ("M."
                                                            ])
                                          "M"
("n."
          ["\\nu"
                                          ["N"
                                                            ])
                            ]) ("N."
("o."
          Γ"ο"
                            1) ("0."
                                                            1)
                                          Γ"0"
("p."
          ["\\pi"
                            ]) ("P."
                                          ["\\Pi"
                                                            1)
("r."
          ["\\rho"
                            ]) ("R."
                                          ["P"
                                                            1)
("s."
          ["\\sigma"
                            1) ("S."
                                          ["\\Sigma"
                                                            ])
("t."
          ["\\tau"
                            ]) ("T."
                                          ["T"
                                                            1)
("th."
          ["\\theta"
                            ]) ("Th."
                                          ["\\Theta"
                                                            1)
```

```
("u."
           ["\\upsilon"
                                    ("U."
                                ])
                                                ["\\Upsilon"
                                                                     ])
("w."
           ["\\omega"
                                ])
                                    ("W."
                                                ["\\Omega"
                                                                     ])
                                                ["X"
                                                                     ])
("x."
           ["\\chi"
                                ])
                                    ("X."
("z."
           ["\\zeta"
                                1)
                                    ("Z."
                                                ["Z"
                                                                     ])
;; Matrix
("Am"
           ["\\mathbf{A}"
                                1)
                                     ("am"
                                                ["\\mathbf{a}"
                                                                     ])
                                                                     ])
("Bm"
           ["\\mathbf{B}"
                                1)
                                     ("bm"
                                                ["\\mathbf{b}"
           ["\\mathbf{C}"
                                                ["\\mathbf{c}"
("Cm"
                                ])
                                    ("cm"
                                                                     ])
("Dm"
           ["\\mathbf{D}"
                                1)
                                    ("dm"
                                                ["\\mathbf{d}"
                                                                     ])
("Em"
           ["\mbox{\mbox{$\mathbb{E}$}}"
                                ])
                                     ("em"
                                                ["\\mathbf{e}"
                                                                     ])
("Fm"
           ["\mathbf{F}"
                                ])
                                    ("fm"
                                                ["\\mathbf{f}"
                                                                     ])
("Gm"
           ["\\mathbf{G}"
                                ])
                                                ["\mbox{\mbox{$m$}athbf{g}}"
                                                                     ])
                                     ("gm"
("Hm"
           ["\\mathbf{H}"
                                ])
                                     ("hm"
                                                ["\\mathbf{h}"
                                                                     ])
                                ])
                                     ("im"
                                                ["\\mathbf{i}"
                                                                     ])
("Im"
           ["\mathbf{I}"
                                                                     ])
("Jm"
           ["\\mathbf{J}"
                                ])
                                    ("jm"
                                                ["\\mathbf{j}"
("Km"
           ["\\mathbf{K}"
                                ])
                                     ("km"
                                                ["\mbox{\mbox{$m$}athbf{k}"}
                                                                     ])
("Lm"
           ["\\mathbf{L}"
                                1)
                                     ("lm"
                                                ["\mathbf{1}"
                                                                     ])
("Mm"
           ["\\mathbf{M}"
                                1)
                                    ("mm"
                                                ["\mbox{mathbf{m}}"
                                                                     ])
("Nm"
           ["\\mathbf{N}"
                                1)
                                    ("nm"
                                                ["\\mathbf{n}"
                                                                     ])
("Om"
           ["\\mathbf{0}"
                                ])
                                    ("om"
                                                ["\\mathbf{o}"
                                                                     ])
("Pm"
           ["\\mathbf{P}"
                                ])
                                     ("pm"
                                                ["\\mathbf{p}"
                                                                     ])
                                                ["\\mathbf{q}"
                                                                     ])
("Qm"
           ["\\mathbf{Q}"
                                ])
                                    ("qm"
                                                ["\\mathbf{r}"
                                                                     ])
("Rm"
           ["\mathbf{R}]"
                                ])
                                     ("rm"
("Sm"
           ["\\mathbf{S}"
                                1)
                                     ("sm"
                                                ["\\mathbf{s}"
                                                                     1)
("Tm"
           ["\\mathbf{T}"
                                1)
                                     ("tm"
                                                ["\mbox{\mbox{$m$}athbf{t}"}
                                                                     ])
           ["\\mathbf{U}"
("Um"
                                ])
                                    ("um"
                                                ["\mbox{\mbox{$"}}]
                                                                     ])
("Vm"
           ["\\mathbf{V}"
                                ])
                                     ("vm"
                                                ["\\mathbf{v}"
                                                                     ])
                                                                     ])
("Wm"
           ["\\mathbf{W}"
                                ])
                                     ("wm"
                                                ["\\mathbf{w}"
                                ])
                                    ("xm"
                                                                     ])
("Xm"
           ["\\mathbf{X}"
                                                ["\mathbf{x}]"
           ["\\mathbf{Y}"
("Ym"
                                ])
                                                ["\\mathbf{y}"
                                                                     ])
                                     ("ym"
("Zm"
           ["\mathbf{Z}"]
                                ])
                                     ("zm"
                                                ["\mathbf{z}"
                                                                     ])
("Om"
           ["\mathbf{0}]"
                                ])
                                     ("Om"
                                                ["\\mathbf{0}"
                                                                     ])
;; Vector & Hat
("av"
           ["\\vec{a}"
                                1)
                                    ("ah"
                                                ["\\hat{a}"
                                                                     ])
           ["\\vec{b}"
                                                                     ])
("bv"
                                ])
                                    ("bh"
                                                ["\\hat{b}"
("cv"
           ["\\vec{c}"
                                ])
                                    ("ch"
                                                ["\\hat{c}"
                                                                     ])
("dv"
           ["\\vec{d}"
                                ])
                                    ("dh"
                                                ["\\hat{d}"
                                                                     ])
           ["\\vec{e}"
                                ])
                                    ("eh"
                                                ["\\hat{e}"
                                                                     ])
("ev"
("fv"
           ["\\vec{f}"
                                1)
                                     ("fh"
                                                ["\\ hat{f}"
                                                                     ])
("gv"
           ["\\vec{g}"
                                ])
                                    ("gh"
                                                ["\\hat{g}"
                                                                     ])
```

```
["\\vec{h}"
                                   ("hh"
                                               ["\\hat{h}"
                                                                  ])
("hv"
                               ])
                                                                  ])
("iv"
           ["\\vec{i}"
                               ])
                                   ("ih"
                                               ["\\hat{i}"
           ["\\vec{j}"
                                   ("jh"
                                               ["\\hat{j}"
                                                                  ])
("jv"
                               ])
("kv"
           ["\\vec{k}"
                               1)
                                   ("kh"
                                               ["\\hat{k}"
                                                                  ])
("lv"
           ["\\vec{1}"
                               ])
                                   ("lh"
                                               ["\\hat{1}"
                                                                  ])
                                                                  ])
           ["\\vec{m}"
                               1)
                                   ("mh"
                                               ["\\hat{m}"
("mv"
                                                                  ])
("nv"
           ["\vec{n}"]
                               ])
                                   ("nh"
                                               ["\\ hat{n}"
                                                                  ])
("ov"
           ["\\vec{o}"
                               ])
                                   ("oh"
                                               ["\\hat{o}"
                                               ["\\ hat{p}"
                                                                  ])
("pv"
           ["\\vec{p}"
                               ])
                                   ("ph"
           ["\\vec{q}"
                               ])
                                   ("qh"
                                               ["\\hat{q}"
                                                                  ])
("qv"
                                                                  ])
("rv"
           ["\\vec{r}"
                               ])
                                   ("rh"
                                               ["\\hat{r}"
           ["\\vec{s}"
                               ])
                                   ("sh"
                                               ["\\hat{s}"
                                                                  ])
("sv"
("tv"
           ["\\vec{t}"
                               ])
                                   ("th"
                                               ["\\hat{t}"
                                                                  ])
                                                                  ])
           ["\\vec{u}"
                               ])
                                   ("uh"
                                               ["\\hat{u}"
("uv"
                                                                  ])
("vv")
           ["\\vec{v}"
                               ])
                                   ("vh"
                                               ["\\hat{v}"
                                                                  ])
("wv")
           ["\\vec{w}"
                               ])
                                   ("wh"
                                               ["\\hat{w}"
                                                                  ])
("xv")
           ["\vec{x}"]
                               ])
                                   ("xh"
                                               ["\\ hat{x}"
("yv"
           ["\\vec{y}"
                               ])
                                   ("yh"
                                               ["\\hat{y}"
                                                                  ])
("zv"
           ["\\vec{z}"
                               ])
                                   ("zh"
                                               ["\\ hat{z}"
                                                                  ])
;; Dot
                                   ("Ad"
                                                                  ])
("ad"
           ["\\dot{a}"
                               ])
                                               ["\\dot{A}"
           ["\\dot{b}"
                                   ("Bd"
                                               ["\\dot{B}"
                                                                  ])
("bd"
                               ])
           ["\\dot{c}"
                               ])
                                   ("Cd"
                                               ["\\dot{C}"
                                                                  ])
("cd"
           ["\\dot{d}"
                               1)
                                                                  1)
("dd"
                                   ("Dd"
                                               ["\\dot{D}"
("ed"
           ["\\dot{e}"
                               ])
                                   ("Ed"
                                               ["\\dot{E}"
                                                                  ])
("fd"
           ["\\dot{f}"
                               ])
                                   ("Fd"
                                               ["\\dot{F}"
                                                                  ])
           ["\\dot{g}"
                               ])
                                   ("Gd"
                                               ["\\dot{G}"
                                                                  ])
("gd"
("hd"
                               ])
                                   ("Hd"
                                                                  ])
           ["\\dot{h}"
                                               ["\\dot{H}"
("id"
           ["\\dot{i}"
                               ])
                                   ("Id"
                                               ["\\dot{I}"
                                                                  ])
                                                                  ])
           ["\\dot{j}"
                               ])
                                   ("Jd"
                                               ["\\dot{J}"
("jd"
("kd"
           ["\\dot{k}"
                               ])
                                   ("Kd"
                                               ["\\dot{K}"
                                                                  ])
                                                                  ])
("ld"
           ["\\dot{1}"
                               ])
                                   ("Ld"
                                               ["\\dot{L}"
                                   ("Md"
("md"
           ["\\dot{m}"
                               ])
                                               ["\\dot{M}"
                                                                  ])
                                                                  ])
("nd"
           ["\\dot{n}"
                               1)
                                   ("Nd"
                                               ["\\dot{N}"
           ["\\dot{o}"
                               ])
                                   ("0d"
                                               ["\\dot{0}"
                                                                  ])
("od"
("pd"
           ["\\dot{p}"
                               ])
                                   ("Pd"
                                               ["\\dot{P}"
                                                                  ])
                                                                  ])
("qd"
           ["\\dot{q}"
                               ])
                                   ("Qd"
                                               ["\\dot{Q}"
                                                                  ])
                               ])
                                   ("Rd"
("rd"
           ["\\dot{r}"
                                               ["\\dot{R}"
("sd"
           ["\\dot{s}"
                               1)
                                   ("Sd"
                                               ["\\dot{S}"
                                                                  ])
("td"
           ["\\dot{t}"
                               ])
                                   ("Td"
                                               ["\\dot{T}"
                                                                  ])
```

```
["\\dot{u}"
                                   ("Ud"
                                                                 ])
("ud"
                              ])
                                              ["\\dot{U}"
                                                                 ])
("vd"
           ["\\dot{v}"
                              ])
                                   ("Vd"
                                              ["\\dot{V}"
                                                                 ])
("wd"
           ["\\dot{w}"
                              1)
                                   ("Wd"
                                              ["\\dot{W}"
("xd")
           ["\\dot{x}"
                              1)
                                   ("Xd"
                                              ["\\dot{X}"
                                                                 ])
("yd"
           ["\\dot{y}"
                              ])
                                   ("Yd"
                                              ["\\dot{Y}"
                                                                 ])
                                                                 ])
           ["\\\det{z}"
                              1)
                                   ("Zd"
                                              ["\\dot{Z}"
("zd"
;; DDot
("ad."
           ["\\ddot{a}"
                              ])
                                   ("Ad."
                                              ["\\ddot{A}"
                                                                 ])
                                                                 ])
("bd."
           ["\\ddot{b}"
                              1)
                                   ("Bd."
                                              ["\\ddot{B}"
("cd."
           ["\\ddot{c}"
                              1)
                                   ("Cd."
                                              ["\\ddot{C}"
                                                                 1)
                                                                 ])
("dd."
           ["\\ddot{d}"
                              ])
                                   ("Dd."
                                              ["\\ddot{D}"
("ed."
           ["\\ddot{e}"
                              ])
                                   ("Ed."
                                              ["\\ddot{E}"
                                                                 ])
("fd."
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                              ])
                                   ("Fd."
                                              ["\\ddot{F}"
                                                                 ])
("gd."
           ["\\ddot{g}"
                              ])
                                   ("Gd."
                                                                 ])
                                              ["\\ddot{G}"
                                                                 ])
("hd."
                              ])
                                  ("Hd."
                                              ["\\ddot{H}"
           ["\\ddot{h}"
                                                                 ])
("id."
           ["\\ddot{i}"
                              ])
                                   ("Id."
                                              ["\\ddot{I}"
                                                                 1)
("jd."
           ["\\ddot{j}"
                              1)
                                   ("Jd."
                                              ["\\ddot{J}"
("kd."
           ["\\ddot{k}"
                              1)
                                  ("Kd."
                                              ["\\ddot{K}"
                                                                 ])
("ld."
           ["\\ddot{1}"
                              1)
                                   ("Ld."
                                              ["\\ddot{L}"
                                                                 ])
("md."
           ["\\ddot{m}"
                              ])
                                   ("Md."
                                              ["\\ddot{M}"
                                                                 ])
("nd."
           ["\\ddot{n}"
                              ])
                                   ("Nd."
                                              ["\\ddot{N}"
                                                                 ])
                                  ("Od."
                                                                 ])
("od."
           ["\\ddot{o}"
                              ])
                                              ["\\ddot{0}"
           ["\\ddot{p}"
                                   ("Pd."
                                                                 ])
("pd."
                              ])
                                              ["\\ddot{P}"
                                                                 1)
("qd."
           ["\\ddot{q}"
                              1)
                                   ("Qd."
                                              ["\\ddot{Q}"
("rd."
           ["\\ddot{r}"
                              1)
                                   ("Rd."
                                              ["\\ddot{R}"
                                                                 ])
("sd."
           ["\\ddot{s}"
                              ])
                                   ("Sd."
                                              ["\\ddot{S}"
                                                                 ])
("td."
           ["\\ddot{t}"
                              ])
                                   ("Td."
                                                                 ])
                                              ["\\ddot{T}"
                              ])
                                                                 ])
("ud."
           ["\\ddot{u}"
                                   ("Ud."
                                              ["\\ddot{U}"
("vd."
                              ])
                                   ("Vd."
                                                                 ])
           ["\\ddot{v}"
                                              ["\\ddot{V}"
                                                                 ])
("wd."
                              ])
                                   ("Wd."
           ["\\ddot{w}"
                                              ["\\ddot{W}"
("xd."
           ["\\ddot{x}"
                              ])
                                   ("Xd."
                                              ["\\ddot{X}"
                                                                 ])
("yd."
           ["\\ddot{y}"
                              ])
                                   ("Yd."
                                              ["\\ddot{Y}"
                                                                 ])
("zd."
           ["\dot{z}"
                              1)
                                  ("Zd."
                                              ["\\ddot{Z}"
                                                                 ])
;; Expanding Func
("/"
            quail-TeQ-frac
                                    )
                                       ; fraction on previous
("eq"
                                       ; equation environment
            quail-TeQ-equation
                                    )
("al"
            quail-TeQ-aligned
                                       ; aligned environment
                                       ; end of line
("el"
            quail-TeQ-endofline
;; Symbols-dots
("..."
            ["\\dots"
                                     ])
                                         ; 3 dots
```

```
(".v"
           ["\\vdots"
                                        ; vertical dots
                                   ])
(".d"
           ["\\ddots"
                                   ])
                                        ; diagonale dots
(".1"
           ["\\ldots"
                                   1)
                                        ; low dots
;; Symbols-geo
           ["\\perp"
                                   ])
("perp"
                                   ])
                                        ; $\perp$ ~n~ (neg)
("perpn"
           ["\\perp"
           ["\\parallel"
                                   ])
("para"
                                   ])
("paran"
           ["\\nparallel"
                                        ; parallel ^n (neg)
                                   1)
("ang"
           ["\\angle"
           ["\\measuredangle"
                                   1)
                                        ; $\angle$ ~.~ (var)
("ang."
                                   ])
("tri"
           ["\\vartriangle"
("trin"
           ["\\triangledown"
                                   ])
                                        ; $\vartriangle$ ~n~ (neg)
("squ"
           ["\\square"
                                   ])
                                   ])
                                        ; $\vartriangle$ ~.~ (var)
("tri."
           ["\\blacktriangle"
           ["\\blacktriangledown"
                                   ])
                                        ; $\vartriangle$ ~n.~ (neg,var)
("trin."
                                   ])
                                        ; $\square$ ~.~ (var)
("squ."
           ["\\blacksquare"
;; Symbols
("inf"
           ["\\infty"
                                   ])
("ex"
           ["\\exists"
                                   ])
("exn"
           ["\\nexists"
                                   ])
                                        ; $\exists$ + _n_ (neg)
("fa"
                                   ])
           ["\\forall"
("hb"
                                   ])
           ["\\hbar"
("hb."
           ["\\hslash"
                                   ])
                                        ; $\hbar$ + _._
           ["\\mathrm{d}"
                                   1)
("dd"
("dd."
           ["\\partial"
                                   ])
                                       ; $\mathrm{d}$ + _._ (var)
("ii"
           ["\\imath"
                                   ])
("jj"
                                   ])
           ["\\jmath"
                                   ])
("nab"
           ["\\nabla"
("cm"
                                   ])
           ["\\checkmark"
;; Symbols spaces
("qu"
           ["\\quad"
                                   ])
                                   ])
("quu"
           ["\\qquad"
;; Symbols arrow1
("<-"
           ["\\leftarrow"
                                   ])
("->"
                                   ])
           ["\\rightarrow"
("-^"
           ["\\uparrow"
                                   ])
                                          ~~~ looks like up arrow head
("-v"
                                   ])
           ["\\downarrow"
                                          ~v~ looks like down arrow head
("<->"
                                   ])
           ["\\leftrightarrow"
("<-n"
           ["\\nleftarrow"
                                   1)
                                        ; negate (~n~) of prev. section
("->n"
           ["\\nrightarrow"
                                   ])
                                        ; arrows + _n_
```

```
("-^n"
           ["\\nuparrow"
                                   ])
                                   ])
("-vn"
           ["\\ndownarrow"
("<->"
                                   ])
           ["\\nleftrightarrow"
("-->"
                                   ])
           ["\\longrightarrow"
                                       ; longer arrows, with 2 dashes
("<--"
           ["\\longleftarrow"
                                   ])
("|->"
                                   1)
           ["\\mapsto"
                                        ; vertical-bar + ~->~ (this might rendered wron
;; Symbols arrow2
("<="
           ["\\Leftarrow"
                                   ])
                                        ; compared to single arrrow
("=>"
           ["\\Rightarrow"
                                   ])
                                        ; these uses ~=~ as the arrow shaft
("=~"
           ["\\Uparrow"
                                   1)
("=v"
                                   ])
           ["\\Downarrow"
("<=>"
                                   ])
           ["\\Leftrightarrow"
("iff"
                                   ])
           ["\\Leftrightarrow"
                                   ])
("<=n"
           ["\\nLeftarrow"
                                        ; negate (~n~) of prev. section
("=>n"
           ["\\nRightarrow"
                                   ])
                                        ; arrows + _n_
                                   ])
("<=>n"
           ["\\nLeftrightarrow"
                                   ])
("iffn"
           ["\\nLeftrightarrow"
("<==>"
           ["\\Longleftrightarrow"])
                                        ; longer arrows, with 2 dashes
("<=="
           ["\\Longleftarrow"
                                   ])
("==>"
           ["\\Longrightarrow"
                                   ])
;; Symbols arrow3
("<---"
           ["\\xleftarrow[]{}"
                                   ])
                                        ; these uses triple - or =
("--->"
           ["\\xrightarrow[]{}"])
("===>"
           ["\\xRightarrow[]{}"])
                                        ; ~mathtools~ lib required
("<==="
           ["\\xLeftarrow[]{}"
                                   ])
                                        ; ~mathtools~ lib required
;; Symbols arrow3
("vec"
           ["\\vec{"
                                   ])
                                   ])
("bar"
           ["\\bar{"
("hat"
           ["\\hat{"
                                   ])
           ["\\dot{"
                                   ])
("dot"
("dot."
           ["\\ddot{"
                                   ])
                                   ])
("dot.."
           ["\\dddot{"
("dot..."
           ["\\ddddot{"
                                   ])
("dag"
           ["^\\dagger"
                                   ])
                                   ])
("dag."
           ["^\\ddagger"
("*.."
           \"^*\\
                                   ])
           ["^\\circ"
                                   ])
("deg"
           ["^T"
                                   ])
("tr"
("tr."
           ["^{-T}"
                                   ])
;; Operation: arith
```

```
("+-"
           ["\\pm"
                                    ])
("-+"
                                    ])
           ["\\mp"
("*x"
                                    ])
           ["\\times"
("::"
           ["\\div"
                                    ])
("**"
           ["\\cdot"
                                    ])
;; Operation: arith
("<."
           ["\\leq"
                                    ])
                                        ; < = >
(">."
           ["\\geq"
                                    ])
                                        ; symbols
("<<"
                                    1)
           ["\\11"
(">>"
           ["\\gg"
                                    ])
("=n"
                                    ])
           ["\\neq"
                                        ; negation
("n"
           ["\\nsim"
                                    ])
("<n"
           ["\\nless"
                                    ])
(">n"
                                    ])
           ["\\ngtr"
("<.n"
                                    ])
           ["\\nleq"
(">.n"
                                    ])
           ["\\ngeq"
("=?"
                                    1)
           ["\\stackrel{?}{=}"
                                         ; with question mark
("<?"
           ["\\stackrel{?}{<}"
                                    1)
(">?"
           ["\\stackrel{?}{>}"
                                    1)
("<.?"
           ["\\stackrel{?}{\\leq}"])
(">.?"
           ["\\stackrel{?}{\\geq}"])
("<<?"
           ["\\stackrel{?}{\\ll}" ])
(">>?"
           ["\\stackrel{?}{\\gg}" ])
("=y"
                                               ; with check mark
           ["\\stackrel{\\checkmark}{=}"])
("<y"
           ["\\stackrel{\\checkmark}{<}"])
(">y"
           ["\\stackrel{\\checkmark}{>}"])
("<.y"
           ["\\stackrel{\\checkmark}{\\leq}"])
(">.y"
           ["\\stackrel{\\checkmark}{\\geq}"])
("<<y"
           ["\\stackrel{\\checkmark}{\\ll}"])
(">>y"
           ["\\stackrel{\\checkmark}{\\gg}"])
("=."
           ["\\equiv"
                                    ])
                                        : Variation on
("-."
           ["\\sim"
                                    ])
                                        ; Another variations
("=.."
           ["\\approx"
                                    ])
                                        : on =
("3="
           ["\\equiv"
                                    ])
("=:"
           ["\\coloneqq"
                                    ])
(":="
           ["\\coloneqq"
                                    ])
;; Operation: arith
("in"
           ["\\ in"]
                                    ])
("in."
           ["\\ni"
                                    ])
("ni"
           ["\\ni"
                                    ])
                                        ;
```

```
("inn"
            ["\\notin"
                                         ; (neg)
                                    ])
("0/"
                                    ])
            ["\\emptyset"
                                    ])
                                         ; (n)umber (s)et (r)eal
("nsr"
            ["\\mathbb{R}"
("nsc"
            ["\\mathbb{C}"
                                    1)
                                           (n)umber (s)et (c)omplex
("nsn"
            ["\\mathbb{N}"
                                    ])
                                    1)
("nsp"
            ["\\mathbb{P}"
                                         ; ...
            ["\\mathbb{Z}"
                                    1)
("nsz"
                                         ; . . .
                                    ])
("nsi"
            ["\\mathbb{I}"
                                         ; ...
            ["\\subset"
                                    1)
("sub"
("subn"
            ["\\nssubseteq"
                                    ])
                                         ; (neg)
                                    ])
("sub."
            ["\\subseteq"
                                         ; (var)
("sub.n"
            ["\\nsubseteq"
                                    ])
                                         ; (var, neg)
("subn."
            ["\\nsubseteq"
                                    ])
                                           (neg, var)
                                    ])
("sup"
            ["\\supset"
                                    ])
("supn"
            ["\\nsupseteq"
                                           (neg)
                                    ])
("sup."
            ["\\supeseteq"
                                         ; (var)
                                    ])
("sup.n"
            ["\\nsupseteq"
                                         ; (var, neg)
("supn."
            ["\\nsupseteq"
                                    ])
                                           (neg, var)
;; Operation: arith
("or"
            ["\\lor"
                                    ])
                                    ])
("and"
            ["\\lnd"
("not"
                                    ])
            ["\\neg"
("or."
            ["\\text{ or }"
                                    ])
                                         ; (var)
            ["\\text{ and }"
                                    1)
                                         ; (var)
("and."
("not."
            ["\\text{ not }"
                                    ])
                                         ; (var)
;; Func: main
("rank"
            ["\\mathrm{rank}"
                                    ])
            ["\\arg"
                                    ])
("arg"
("det"
            ["\\det"
                                    ])
                                    ])
("dim"
            ["\\dim"
("exp"
            ["\\exp("
                                    ])
                                    ])
("Im"
            ["\\mathrm{Im}("
("Re"
            ["\\mathrm{Re}("
                                    ])
                                    ])
("ln"
            ["\\ln("
("log"
            ["\\log("
                                    ])
("max"
            ["\\max("
                                    ])
                                    ])
("min"
            ["\\min("
                                    ])
("dim"
            ["\\dim("
("sqrt"
            ["\\sqrt("
                                    ])
("mod"
            ["\\pmod("
                                    ])
```

```
("mod."
           ["\\mod"
                                  ])
                                  ]) ;
("mod.."
           ["\\bmod"
;; Func: Trig
("cos"
          ["\\cos("
                            ]) ("cosh"
                                           ["\\cosh("
                                                             ])
("sin"
          ["\\sin("
                            ])
                                ("sinh"
                                           ["\\sinh("
                                                             ])
                                                             1)
("tan"
          ["\\tan("
                            1)
                                ("tanh"
                                           ["\\tanh("
                                ("coth"
                                                             ])
("cot"
          ["\\cot("
                            1)
                                           ["\\coth("
("acos"
          ["\\arccos("
                            ])
                                ("cos."
                                           ["\\arccos("
                                                             ])
("asin"
          ["\\arcsin("
                            1)
                                ("sin."
                                           ["\\arcsin("
                                                             ])
("atan"
          ["\\arctan("
                            1)
                                ("tan."
                                           ["\\arctan("
                                                             ])
;; Func: iter
("il"
           ["\\limits_{ }"
                                  ])
("il"
           ["\\limits_{ }^{ }"
                                  ])
                                  ])
("lim"
           ["\\lim"
                                  ])
("sum"
           ["\\sum"
                                  ])
("prod"
           ["\\prod"
                                  1)
("int"
           ["\\int"
("inti"
           ["\\iint"
                                  ])
("intii"
           ["\\iiint"
                                  ])
("intiii"
           ["\\iiiint"
                                  ])
("into"
           ["\\oint"
                                  ])
           ["\\sum\\limits_{ i=1 }^{ n }"]) ;
("sum."
           ["\\prod\\limits_{ i=1 }^{ n }"]) ;
("prod."
           ["\\int\\limits_{ }^{ }"]) ;
("int."
("int.."
           ["\\int\\limits_{ 0 }^{ +\\infty }"]) ;
("int..."
           ["\\int\\limits_{ -\\infty }^{ +\\infty }"]) ;
("inti."
           ["\\iint\\limits_{ }" ])
           ["\\iiint\\limits_{ }" ])
("intii."
("intiii." ["\\iiint\\limits_{ }"]) ;
("into."
           ["\\oint\\limits_{ }" ])
;; Structural: Parenthesis
("()."
           ["\\left( \\right)"
                                  ])
           ["\\left( \\middle\\vert \\right)"]) ;
("().."
("[]."
           ["\\left[ \\right]"
                                  ])
("[].."
           ["\\left[ \\middle\\vert \\right]"]) ; (var)
("[].c"
           ["\\lceil \\rceil"
                                  ])
                                      ; (var) (ceil)
("[].f"
           ["\\lfloor \\rfloor"
                                  ])
                                       ; (var) (floor)
("{}."
           ["\\left\\{ \\right\\}"])
("{}.."
           ["\\left\\{ \\middle\\vert \\right\\}"]) ; (var)
("<>."
           ["\\left< \\right>"
                                  ]) ;
```

```
("<>.."
           ["\\left< \\middle\\vert \\right>"]) ; (var)
("||."
           ["\\left\\vert \\right\\vert"]) ;
("||.."
           ["\\left\\Vert \\right\\Vert"]) ; (var)
("(."
           ["\\left("
                                   ])
                                       ; half (
(")."
           ["\\right)"
                                   ])
                                       ; half )
("[."
                                   ])
           ["\\left["
                                       ; half [
("]."
                                   ])
           ["\\right]"
                                      ; half ]
("{."
           ["\\left\\{"
                                   ])
                                       ; half {
                                   ])
("}."
           ["\\right\\}"
                                       ; half }
("<."
           ["\\left<"
                                   ])
                                       ; half <
(">."
                                   ])
                                       ; half >
           ["\\right>"
("(.."
           ["\\left."
                                   ])
                                       ; half left .
(").."
           ["\\right."
                                   ])
                                       ; half right .
("|."
           ["\\Bigg\\vert_{ }^{ }"])
                                       ; definite integral range
;; Structural: Text
           ["\\text{"
("te"
                                   ])
                                       ; (te)xt
                                   ])
("tr"
           ["\\mathrm{"
                                      : (t) ext (r) oman
("tb"
           ["\\mathbf{"
                                   ])
                                      ; (t)ext (b)old
("ti"
           ["\\mathit{"
                                   1)
                                       ; (t)ext (i)talics
;; Structural: Text
("te"
           ["\\text{"
                                   ])
                                       ; (te)xt
("tr"
           ["\\mathrm{"
                                   ])
                                       ; (t)ext (r)oman
("tb"
           ["\\mathbf{"
                                   ])
                                      ; (t)ext (b)old
                                      ; (t)ext (i)talics
                                   1)
("ti"
           ["\\mathit{"
;; Structural: Sub-sup-scripts
("^"
          ["^{"
                                ("_"
                                           ["_{"
                                                              ])
                             ])
          ["~{"
("pp"
                             ])
                                ("11"
                                           ["_{"
                                                              ])
          ["^0"
                             ])
                                           ["_0"
                                                              ])
("p0"
                                ("10"
("p1"
          ["^1"
                            ])
                                ("11"
                                           ["_1"
                                                              ])
          ["^2"
                                                              ])
                             ])
                                ("12"
                                           ["_2"
("p2"
("p3"
          ["^3"
                             ])
                                 ("13"
                                           ["_3"
                                                              ])
          ["~4"
                                                              ])
("p4"
                             ])
                                 ("14"
                                           ["_4"
("pn"
          ["^n"
                            ])
                                 ("lnn"
                                           ["_n"
                                                              ])
          ["^x"
("px")
                             ])
                                 ("li"
                                           ["_i"
                                                              1)
("__"
          ["\\underset{ }{ }"]) ("^~"
                                            ["\\overset{ }{ }"])
("__."
          ["\\underbrace{ }_{ }"]) ("^^."
                                               ["\\overbrace{ }^{ }"])
                                           ["\\overline{ }" ])
("__.."
          ["\\underline{ }" ]) ("^^.."
;; Structural: misc
("binom"
           ["\\binom{}{"
                                   ])
                                      ; Binom
("box"
           ["\\boxed{}{"
                                   ])
                                       ; Putting box around object
```

```
("fr"
          ["\\frac{}{"
                                ]) ; Fractions
                                ]) :
("can"
          ["\\cancel"
("&="
          ["&=\\n\\\\\"
                                ]) ;
("=&"
          ["&=\\n\\\\\"
                                ]) ;
;; Structural: xy
          ["\\xymatrix{\\n\\n}" ]) ;
("xy")
                                ]) ;
("bu"
          ["\\bullet"
("ar"
          ["\\ar"
                                ])
```

#### 9 Executable elisp function definition

```
(defun quail-func-init ()
 (quail-delete-region)
 (setq quail-current-str nil
       quail-converting nil
       quail-conversion-str ""))
(defun quail-func-end ()
 (throw 'quail-tag nil))
(defun quail-TeQ-equation (key idx)
 (quail-func-init)
 (insert "\\begin{equation}\n\n\\end{equation}")
 (previous-line)
 (quail-func-end))
(defun quail-TeQ-aligned (key idx)
 (quail-func-init)
 (insert "\begin{aligned}\n\n\\end{aligned}")
 (previous-line)
 (quail-func-end))
(defun quail-TeQ-endofline (key idx)
 (quail-func-init)
 (end-of-line)
 (insert "\\\\n")
 (quail-func-end))
```

```
(defun quail-TeQ-frac (key idx)
  (quail-func-init)
 (backward-sexp) (kill-sexp)
 (if (looking-back "[a-zA-Z]" 0)
     (progn
      (backward-word)
      (if (= (preceding-char) ?\\ )
          (progn (message "yes") (kill-word 1)
                (backward-delete-char 1) (insert "\\frac{\\")
                (yank 1) (yank 2) (insert "}{}"))
        (progn (message "no") (forward-word)
              (insert "\\frac{") (yank) (insert "}{}")))
   (progn (message "no")
                                  ; (forward-word)
         (insert "\\frac{") (yank) (insert "}{}"))
 (backward-char)
 (quail-func-end))
10
    Making the el
(require 'quail)
(defun quail-func-init ()
 (quail-delete-region)
 (setq quail-current-str nil
      quail-converting nil
      quail-conversion-str ""))
(defun quail-func-end ()
 (throw 'quail-tag nil))
```

```
(defun quail-TeQ-equation (key idx)
  (quail-func-init)
 (insert "\begin{equation}\n\n\\end{equation}")
 (previous-line)
  (quail-func-end))
(defun quail-TeQ-aligned (key idx)
  (quail-func-init)
 (insert "\begin{aligned}\n\n\\end{aligned}")
  (previous-line)
  (quail-func-end))
(defun quail-TeQ-endofline (key idx)
  (quail-func-init)
  (end-of-line)
 (insert "\\\\n")
  (quail-func-end))
(defun quail-TeQ-frac (key idx)
  (quail-func-init)
  (backward-sexp) (kill-sexp)
 (if (looking-back "[a-zA-Z]" 0)
     (progn
       (backward-word)
       (if (= (preceding-char) ?\\ )
           (progn (message "yes") (kill-word 1)
                  (backward-delete-char 1) (insert "\\frac{\\")
                  (yank 1) (yank 2) (insert "}{}"))
         (progn (message "no") (forward-word)
                (insert "\\frac{") (yank) (insert "}{}")))
   (progn (message "no")
                                     ; (forward-word)
          (insert "\\frac{") (yank) (insert "}{}"))
   )
  (backward-char)
  (quail-func-end))
```

```
(quail-define-package
"TeQ-Math" "Emacs-Teq-Latex" "TeQ-" t
 "TeQ-Math input"
nil t t t t nil nil nil nil nil t)
(quail-define-rules
   ;; Greek Alphabets
   ;; Greek
                                           ["A"
                              ])
                                  ("A."
                                                            ])
   ("a."
             ["\\alpha"
   ("b."
                              ])
                                  ("B."
                                           ["B"
                                                            ])
             ["\\beta"
   ("c."
                              ])
                                  ("C."
                                           ["\\Psi"
                                                            ])
             ["\\psi"
                                                            ])
   ("d."
             ["\\delta"
                              1)
                                  ("D."
                                           ["\\Delta"
   ("e."
             ["\\epsilon"
                              1)
                                 ("E."
                                           ["E"
                                                            ])
   ("f."
                                           ["\\Phi"
                                                            ])
             ["\\phi"
                              ])
                                 ("F."
   ("g."
             ["\\gamma"
                              ])
                                 ("G."
                                           ["\\Gamma"
                                                            ])
                                           ["H"
                                                            ])
   ("h."
             ["\\eta"
                              ])
                                 ("H."
                                                            ])
   ("i."
             ["\\iota"
                              ])
                                 ("I."
                                           ["I"
   ("j."
             ["\\xi"
                              ])
                                 ("J."
                                           ["\\Xi"
                                                            ])
                                                            ])
   ("k."
                              1)
                                  ("K."
                                           ["K"
             ["\\kappa"
                                                            ])
   ("1."
             ["\\lambda"
                              ])
                                 ("L."
                                           ["\\Lambda"
   ("m."
             ["\\mu"
                              ])
                                 ("M."
                                           "M"
                                                            ])
                                                            ])
   ("n."
             ["\\nu"
                              ])
                                  ("N."
                                           ["N"
   ("o."
             ["o"
                              ])
                                 ("0."
                                           ["0"
                                                            ])
             ["\\pi"
   ("p."
                              ])
                                 ("P."
                                           ["\\Pi"
                                                            ])
                                                            ])
                                           ["P"
   ("r."
             ["\\rho"
                              ])
                                 ("R."
   ("s."
             ["\\sigma"
                              ])
                                  ("S."
                                           ["\\Sigma"
                                                            ])
                                           ["T"
                                                            ])
   ("t."
             ["\\tau"
                              ])
                                 ("T."
             [" \ theta"
   ("th."
                              ])
                                 ("Th."
                                           ["\\Theta"
                                                            ])
                                                            ])
   ("u."
             ["\\upsilon"
                              ])
                                  ("U."
                                           ["\\Upsilon"
                                 ("W."
                                           ["\\Omega"
                                                            ])
   ("w."
             ["\\omega"
                              ])
   ("x.")
             ["\\chi"
                              ])
                                  ("X."
                                           ["X"
                                                            ])
             ["\\zeta"
                                  ("Z."
                                           ["Z"
                                                            ])
   ("z."
                              ])
   ;; Matrix
   ("Am"
             ["\\mathbf{A}"
                              1)
                                  ("am"
                                           ["\\mathbf{a}"
                                                            ])
   ("Bm"
             ["\\mathbf{B}"
                              ])
                                  ("bm"
                                           ["\\mathbf{b}"
                                                            ])
```

```
("Cm"
           ["\\mathbf{C}"
                               ])
                                               ["\\mathbf{c}"
                                                                   ])
                                   ("cm"
                                                                   ])
("Dm"
           ["\\mathbf{D}"
                               ])
                                   ("dm"
                                               ["\\mathbf{d}"
                                                                   ])
("Em"
           ["\\mathbf{E}"
                               ])
                                   ("em"
                                               ["\\mathbf{e}"
("Fm"
           ["\\mathbf{F}"
                               ])
                                   ("fm"
                                               ["\\mathbf{f}"
                                                                   ])
("Gm"
           ["\\mathbf{G}"
                               ])
                                   ("gm"
                                               ["\\mathbf{g}"
                                                                   ])
("Hm"
           ["\\mathbf{H}"
                               ])
                                               ["\\mathbf{h}"
                                                                   ])
                                   ("hm"
                                                                   ])
("Im"
           ["\mathbf{I}"]
                               ])
                                   ("im"
                                               ["\\mathbf{i}"
                                                                   ])
("Jm"
           ["\\mathbf{J}"
                               ])
                                   ("jm"
                                               ["\\mathbf{j}"
                                                                   ])
("Km"
           ["\\mathbf{K}"
                               ])
                                   ("km"
                                               ["\mathbf{k}]"
("Lm"
           ["\\mathbf{L}"
                               ])
                                   ("lm"
                                               ["\mbox{\mbox{$m$}athbf{1}}"
                                                                   ])
                                                                   ])
("Mm"
           ["\\mathbf{M}"
                               ])
                                   ("mm"
                                               ["\\mathbf{m}"
("Nm"
           ["\\mathbf{N}"
                               ])
                                   ("nm"
                                               ["\mathbf{n}"
                                                                   ])
("Om"
           ["\\mathbf{0}"
                               ])
                                   ("om"
                                               ["\\mathbf{o}"
                                                                   ])
                                                                   ])
("Pm"
           ["\\mathbf{P}"
                               ])
                                   ("pm"
                                               ["\\mathbf{p}"
           ["\\mathbf{Q}"
                                                                   ])
("Qm"
                               ])
                                               ["\\mathbf{q}"
                                   ("qm"
                                                                   ])
("Rm"
           ["\mathbf{R}]"
                               ])
                                   ("rm"
                                               ["\mathbf{r}]"
                                                                   ])
("Sm"
           ["\\mathbf{S}"
                               ])
                                   ("sm"
                                               ["\\mathbf{s}"
("Tm"
           ["\\mathbf{T}"
                               ])
                                   ("tm"
                                               ["\\mathbf{t}"
                                                                   ])
("Um"
           ["\\mathbf{U}"
                               ])
                                   ("um"
                                               ["\\mathbf{u}"
                                                                   ])
("Vm"
           ["\\mathbf{V}"
                               ])
                                   ("vm"
                                               ["\\mathbf{v}"
                                                                   ])
                                                                   ])
("Wm"
           ["\\mathbf{W}"
                               ])
                                   ("wm"
                                               ["\\mathbf{w}"
                                   ("xm"
                                                                   ])
("Xm"
           ["\\mathbf{X}"
                               ])
                                               ["\mathbf{x}]"
("Ym"
                               ])
                                                                   ])
           ["\\mathbf{Y}"
                                   ("ym"
                                               ["\\mathbf{y}"
("Zm"
                                                                   ])
           ["\mathbf{Z}]"
                               ])
                                   ("zm"
                                               ["\mathbf{z}"
("Om"
           ["\\mathbf{0}"
                               ])
                                   ("Om"
                                               ["\\mathbf{0}"
                                                                   ])
;; Vector & Hat
                                                                   ])
("av"
           ["\\vec{a}"
                               ])
                                   ("ah"
                                               ["\\hat{a}"
           ["\\vec{b}"
                               ])
                                                                   ])
("bv"
                                   ("bh"
                                               ["\\hat{b}"
("cv"
           ["\\vec{c}"
                               ])
                                   ("ch"
                                               ["\\hat{c}"
                                                                   ])
                                                                   ])
("dv"
           ["\\vec{d}"
                               ])
                                   ("dh"
                                               ["\\hat{d}"
("ev"
           ["\\vec{e}"
                               ])
                                   ("eh"
                                               ["\\hat{e}"
                                                                   ])
                                                                   ])
("fv"
           ["\\vec{f}"
                               ])
                                   ("fh"
                                               ["\\hat{f}"
("gv"
           ["\\vec{g}"
                               ])
                                   ("gh"
                                               ["\\hat{g}"
                                                                   ])
("hv"
           ["\\vec{h}"
                               ])
                                   ("hh"
                                               ["\\hat{h}"
                                                                   ])
("iv"
           ["\\vec{i}"
                               ])
                                   ("ih"
                                               ["\\hat{i}"
                                                                   ])
("jv"
           ["\\vec{j}"
                               ])
                                   ("jh"
                                               ["\\hat{j}"
                                                                   ])
                                                                   ])
("kv"
           ["\\vec{k}"
                               ])
                                   ("kh"
                                               ["\\hat{k}"
                                                                   ])
           ["\\vec{1}"
                               ])
                                   ("lh"
("lv"
                                               ["\\hat{1}"
           ["\\vec{m}"
("mv"
                               ])
                                   ("mh"
                                               ["\\hat{m}"
                                                                   ])
("nv"
           ["\vec{n}"]
                               ])
                                   ("nh"
                                               ["\\ hat{n}"
                                                                   ])
```

```
["\\vec{o}"
                               ])
                                   ("oh"
                                               ["\\hat{o}"
                                                                  ])
("ov"
                                                                  ])
("pv"
           ["\\vec{p}"
                               ])
                                   ("ph"
                                               ["\\hat{p}"
                                                                  ])
("qv"
           ["\\vec{q}"
                               ])
                                   ("qh"
                                               ["\\hat{q}"
                                                                  ])
("rv"
           ["\\vec{r}"
                               ])
                                   ("rh"
                                               ["\\hat{r}"
("sv"
           ["\\vec{s}"
                               ])
                                   ("sh"
                                               ["\\hat{s}"
                                                                  ])
                               ])
                                   ("th"
                                               ["\\hat{t}"
                                                                  ])
("tv"
           ["\\vec{t}"
                                                                  ])
("uv"
           ["\\vec{u}"
                               ])
                                   ("uh"
                                               ["\\hat{u}"
                                                                  ])
("vv")
           ["\\vec{v}"
                               ])
                                   ("vh"
                                               ["\\hat{v}"
           ["\\vec{w}"
                                                                  ])
("wv"
                               ])
                                   ("wh"
                                               ["\\hat{w}"
("xv")
           ["\\vec{x}"
                               ])
                                   ("xh"
                                               ["\\hat{x}"
                                                                  ])
           ["\\vec{y}"
                               ])
                                   ("yh"
                                               ["\\hat{y}"
                                                                  ])
("yv"
                                   ("zh"
("zv"
           ["\vec{z}"]
                               ])
                                               ["\\ hat{z}"
                                                                  ])
;; Dot
           ["\\dot{a}"
                                   ("Ad"
                                               ["\\dot{A}"
                                                                  ])
("ad"
                               ])
           ["\\dot{b}"
                               ])
                                   ("Bd"
                                               ["\\dot{B}"
                                                                  ])
("bd"
("cd"
           ["\\dot{c}"
                               ])
                                   ("Cd"
                                               ["\\dot{C}"
                                                                  ])
                               ])
                                                                  ])
("dd"
           ["\\dot{d}"
                                   ("Dd"
                                               ["\\dot{D}"
("ed"
           ["\\dot{e}"
                               ])
                                   ("Ed"
                                               ["\\dot{E}"
                                                                  ])
                                                                  ])
("fd"
           ["\\dot{f}"
                               ])
                                   ("Fd"
                                               ["\\dot{F}"
("gd"
           ["\\dot{g}"
                               ])
                                   ("Gd"
                                               ["\\dot{G}"
                                                                  ])
                                   ("Hd"
                                                                  ])
("hd"
           ["\\dot{h}"
                               ])
                                               ["\\dot{H}"
("id"
           ["\\dot{i}"
                               ])
                                   ("Id"
                                               ["\\dot{I}"
                                                                  ])
("jd"
           ["\\dot{j}"
                               ])
                                   ("Jd"
                                               ["\\dot{J}"
                                                                  ])
           ["\\dot{k}"
                               1)
                                   ("Kd"
                                               ["\\dot{K}"
                                                                  ])
("kd"
                                                                  ])
("ld"
           ["\\dot{1}"
                               ])
                                   ("Ld"
                                               ["\\dot{L}"
("md"
           ["\\dot{m}"
                               ])
                                   ("Md"
                                               ["\\dot{M}"
                                                                  ])
                                                                  ])
("nd"
           ["\\dot{n}"
                               ])
                                   ("Nd"
                                               ["\\dot{N}"
("od"
           ["\\dot{o}"
                               ])
                                   ("0d"
                                               ["\\dot{0}"
                                                                  ])
("pd"
           ["\\dot{p}"
                               ])
                                   ("Pd"
                                               ["\\dot{P}"
                                                                  ])
                                                                  ])
                               ])
           ["\\dot{q}"
                                   ("Qd"
                                               ["\\dot{Q}"
("qd"
("rd"
           ["\\dot{r}"
                               ])
                                   ("Rd"
                                               ["\\dot{R}"
                                                                  ])
                                                                  ])
("sd"
           ["\\dot{s}"
                               ])
                                   ("Sd"
                                               ["\\dot{S}"
("td"
           ["\\dot{t}"
                               ])
                                   ("Td"
                                               ["\\dot{T}"
                                                                  ])
                                                                  ])
("ud"
           ["\\dot{u}"
                               ])
                                   ("Ud"
                                               ["\\dot{U}"
("vd"
           ["\\dot{v}"
                               ])
                                   ("Vd"
                                               ["\\dot{V}"
                                                                  ])
("wd"
           ["\\dot{w}"
                               ])
                                   ("Wd"
                                               ["\\dot{W}"
                                                                  ])
                               ])
                                               ["\\dot{X}"
                                                                  ])
("xd"
           ["\\\det{x}"
                                   ("Xd"
                               ])
                                                                  ])
("yd"
           ["\\dot{y}"
                                   ("Yd"
                                               ["\\dot{Y}"
("zd"
           ["\\\det{z}"
                               ])
                                   ("Zd"
                                               ["\\\dot{Z}"]
                                                                  ])
;; DDot
```

```
["\\ddot{a}"
                                              ["\\ddot{A}"
                                                                 ])
("ad."
                              ])
                                   ("Ad."
("bd."
           ["\\ddot{b}"
                              ])
                                   ("Bd."
                                              ["\\ddot{B}"
                                                                 ])
                                   ("Cd."
("cd."
           ["\\ddot{c}"
                              ])
                                              ["\\ddot{C}"
                                                                 ])
("dd."
           ["\\ddot{d}"
                              1)
                                   ("Dd."
                                              ["\\ddot{D}"
                                                                 ])
("ed."
           ["\\ddot{e}"
                              ])
                                   ("Ed."
                                              ["\\ddot{E}"
                                                                 ])
("fd."
                              1)
                                   ("Fd."
                                                                 ])
           ["\\ddot{f}"
                                              ["\\ddot{F}"
                                                                 ])
("gd."
           ["\\ddot{g}"
                              ])
                                   ("Gd."
                                              ["\\ddot{G}"
("hd."
           ["\\ddot{h}"
                              ])
                                   ("Hd."
                                              ["\\ddot{H}"
                                                                 ])
("id."
           ["\\ddot{i}"
                              ])
                                   ("Id."
                                              ["\\ddot{I}"
                                                                 ])
("jd."
           ["\\ddot{j}"
                              ])
                                   ("Jd."
                                              ["\\ddot{J}"
                                                                 ])
                                                                 ])
("kd."
           ["\\ddot{k}"
                              ])
                                   ("Kd."
                                              ["\\ddot{K}"
("ld."
           ["\\ddot{1}"
                              ])
                                   ("Ld."
                                              ["\\ddot{L}"
                                                                 ])
("md."
           ["\\ddot{m}"
                              ])
                                   ("Md."
                                              ["\\ddot{M}"
                                                                 ])
                                                                 ])
           ["\\ddot{n}"
                              ])
                                   ("Nd."
("nd."
                                              ["\\ddot{N}"
                                                                 ])
("od."
           ["\\ddot{o}"
                              ])
                                  ("Od."
                                              ["\\ddot{0}"
                                                                 ])
("pd."
           ["\\ddot{p}"
                              ])
                                   ("Pd."
                                              ["\\ddot{P}"
("qd."
           ["\\ddot{q}"
                              ])
                                   ("Qd."
                                              ["\\ddot{Q}"
                                                                 ])
("rd."
           ["\\ddot{r}"
                              ])
                                   ("Rd."
                                              ["\\ddot{R}"
                                                                 ])
("sd."
           ["\\ddot{s}"
                              ])
                                   ("Sd."
                                              ["\\ddot{S}"
                                                                 ])
("td."
           ["\\ddot{t}"
                              ])
                                  ("Td."
                                              ["\\ddot{T}"
                                                                 ])
("ud."
           ["\\ddot{u}"
                              ])
                                  ("Ud."
                                              ["\\ddot{U}"
                                                                 ])
                                                                 ])
("vd."
           ["\\ddot{v}"
                              ])
                                  ("Vd."
                                              ["\\ddot{V}"
                              ])
                                  ("Wd."
                                                                 ])
("wd."
           ["\\ddot{w}"
                                              ["\\ddot{W}"
                                                                 ])
("xd."
           ["\\\dot{x}"
                              1)
                                   ("Xd."
                                              ["\\ddot{X}"
("yd."
           ["\\ddot{y}"
                              ])
                                   ("Yd."
                                              ["\\ddot{Y}"
                                                                 ])
("zd."
           ["\dot{z}"
                              ])
                                   ("Zd."
                                              ["\\ddot{Z}"
                                                                 ])
;; Expanding Func
("/"
            quail-TeQ-frac
                                       ; fraction on previous
("eq"
            quail-TeQ-equation
                                         equation environment
("al"
            quail-TeQ-aligned
                                         aligned environment
("el"
            quail-TeQ-endofline
                                         end of line
;; Symbols-dots
("..."
            ["\\dots"
                                     ])
                                         ; 3 dots
(".v"
            ["\\vdots"
                                     ])
                                         ; vertical dots
(".d"
            ["\\ddots"
                                     ])
                                          ; diagonale dots
(".1"
            ["\\ldots"
                                     ])
                                         ; low dots
;; Symbols-geo
                                     ])
            ["\\perp"
("perp"
("perpn"
            ["\\perp"
                                     ])
                                                      \tilde{n} (neg)
                                         ; $\perp$
            ["\\parallel"
                                     ])
("para"
```

```
("paran"
           ["\\nparallel"
                                   ])
                                        ; $\parallel$ ~n~ (neg)
("ang"
           ["\\angle"
                                   ])
                                   1)
("ang."
           ["\\measuredangle"
                                       ; $\angle$ ~.~ (var)
("tri"
                                   1)
           ["\\vartriangle"
("trin"
           ["\\triangledown"
                                   ])
                                       ; $\vartriangle$ ~n~ (neg)
                                   ])
("squ"
           ["\\square"
                                   ])
("tri."
           ["\\blacktriangle"
                                        ; $\vartriangle$ ~.~ (var)
("trin."
           ["\\blacktriangledown"])
                                        ; $\vartriangle$ ~n.~ (neg,var)
("squ."
           ["\\blacksquare"
                                   ])
                                        ; $\square$ ~.~ (var)
;; Symbols
("inf"
           ["\\infty"
                                   ])
("ex"
           ["\\exists"
                                   ])
("exn"
           ["\\nexists"
                                   ])
                                       ; $\exists$ + _n_ (neg)
("fa"
                                   ])
           ["\\forall"
                                   ])
("hb"
           ["\\hbar"
                                   ])
("hb."
           ["\\hslash"
                                       ; $\hbar$ + _._
                                   1)
("dd"
           ["\\mathrm{d}"
("dd."
           ["\\partial"
                                   ])
                                       ; $\mathrm{d}$ + _._ (var)
("ii"
           ["\\imath"
                                   ])
("jj"
           ["\\jmath"
                                   ])
("nab"
           ["\\nabla"
                                   ])
("cm"
           ["\\checkmark"
                                   ])
;; Symbols spaces
("qu"
           ["\\quad"
                                   ])
("quu"
           ["\\qquad"
                                   ])
;; Symbols arrow1
("<-"
           ["\\leftarrow"
                                   ])
("->"
           ["\\rightarrow"
                                   ])
("-^"
                                   ])
                                          ~~~ looks like up arrow head
           ["\\uparrow"
("-v"
                                   ])
           ["\\downarrow"
                                       ; ~v~ looks like down arrow head
("<->"
           ["\\leftrightarrow"
                                   ])
("<-n"
           ["\\nleftarrow"
                                   ])
                                        ; negate (~n~) of prev. section
("->n"
           ["\\nrightarrow"
                                   ])
                                       ; arrows + _n_
("-^n"
           ["\\nuparrow"
                                   ])
("-vn"
                                   ])
           ["\\ndownarrow"
("<->"
                                   ])
           ["\\nleftrightarrow"
("-->"
                                   ])
           ["\\longrightarrow"
                                        ; longer arrows, with 2 dashes
("<--"
                                   ])
           ["\\longleftarrow"
("|->"
           ["\\mapsto"
                                   ])
                                        ; vertical-bar + ~->~ (this might rendered
;; Symbols arrow2
```

```
("<="
           ["\\Leftarrow"
                                   ])
                                        ; compared to single arrrow
("=>"
           ["\\Rightarrow"
                                   ])
                                       ; these uses ~=~ as the arrow shaft
("=^"
           ["\\Uparrow"
                                   1)
("=v"
           ["\\Downarrow"
                                   ])
("<=>"
           ["\\Leftrightarrow"
                                   ])
                                   1)
("iff"
           ["\\Leftrightarrow"
("<=n"
           ["\\nLeftarrow"
                                   ])
                                        ; negate (~n~) of prev. section
("=>n"
           ["\\nRightarrow"
                                   ])
                                        ; arrows + _n_
("<=>n"
           ["\\nLeftrightarrow"
                                   ])
("iffn"
           ["\\nLeftrightarrow"
                                   ])
("<==>"
           ["\\Longleftrightarrow"])
                                       ; longer arrows, with 2 dashes
("<=="
           ["\\Longleftarrow"
                                   ])
("==>"
           ["\\Longrightarrow"
                                   ])
;; Symbols arrow3
("<---"
           ["\\xleftarrow[]{}"])
                                       ; these uses triple - or =
("--->"
           ["\\xrightarrow[]{}"])
("===>"
           ["\\xRightarrow[]{}"])
                                       ; "mathtools" lib required
("<==="
           ["\\xLeftarrow[ ]{ }" ])
                                       ; "mathtools" lib required
;; Symbols arrow3
("vec"
           ["\\vec{"
                                   ])
("bar"
           ["\\bar{"
                                   ])
("hat"
           ["\\hat{"
                                   ])
("dot"
           ["\\dot{"
                                   ])
                                   1)
("dot."
           ["\\ddot{"
("dot.."
           ["\\dddot{"
                                   ])
("dot..."
           ["\\ddddot{"
                                   ])
("dag"
           ["^\\dagger"
                                   ])
                                   ])
("dag."
           ["^\\ddagger"
("*.."
           ["^*"
                                   ])
           ["^\\circ"
                                   ])
("deg"
("tr"
           ["^T"
                                   ])
("tr."
           ["^{-T}"
                                   ])
;; Operation: arith
("+-"
           ["\\pm"
                                   ])
("-+"
                                   ])
           ["\\mp"
("*x"
           ["\\times"
                                   ])
("::"
           ["\\div"
                                   ])
("**"
           ["\\cdot"
                                   ])
;; Operation: arith
("<."
           ["\\leq"
                                   ]) ; < = >
```

```
(">."
            ["\\geq"
                                    ])
                                        ; symbols
("<<"
            ["\\11"
                                    ])
(">>"
            ["\\gg"
                                    ])
("=n"
            ["\\neq"
                                    ])
                                        ; negation
("n"
            ["\\nsim"
                                    ])
("<n"
                                    1)
            ["\\nless"
(">n"
                                    ])
            ["\\ngtr"
                                    ])
("<.n"
            ["\\nleq"
                                    1)
(">.n"
            ["\\ngeq"
("=?"
            ["\\stackrel{?}{=}"
                                    1)
                                        ; with question mark
("<?"
            ["\\stackrel{?}{<}"
                                    ])
(">?"
            ["\\stackrel{?}{>}"
                                    ])
("<.?"
            ["\\stackrel{?}{\\leq}"])
(">.?"
            ["\\stackrel{?}{\\geq}"])
("<<?"
            ["\\stackrel{?}{\\ll}" ])
(">>?"
            ["\\stackrel{?}{\\gg}" ])
("=y"
            ["\\stackrel{\\checkmark}{=}"])
                                               ; with check mark
("<y"
            ["\\stackrel{\\checkmark}{<}"])
(">y"
            ["\\stackrel{\\checkmark}{>}"])
("<.y"
            ["\\stackrel{\\checkmark}{\\leq}"])
(">.y"
           ["\\stackrel{\\checkmark}{\\geq}"])
("<<y"
            ["\\stackrel{\\checkmark}{\\ll}"])
(">>y"
            ["\\stackrel{\\checkmark}{\\gg}"])
("=."
            ["\\equiv"
                                    ])
                                        ; Variation on
("-."
            ["\\sim"
                                    1)
                                        ; Another variations
("=.."
            ["\\approx"
                                    ])
                                        ; on =
("3="
            ["\\equiv"
                                    ])
("=:"
                                    ])
            ["\\coloneqq"
(":="
                                    ])
            ["\\coloneqq"
;; Operation: arith
("in"
            ["\\in"
                                    ])
                                    ])
("in."
            ["\\ni"
("ni"
           ["\\ni"
                                    ])
("inn"
            ["\\notin"
                                    ])
                                        ; (neg)
("0/"
                                    ])
            ["\\emptyset"
("nsr"
           ["\\mathbb{R}"
                                    ])
                                        ; (n)umber (s)et (r)eal
("nsc"
                                    ])
                                        ; (n)umber (s)et (c)omplex
            ["\\mathbb{C}"
("nsn"
                                    ])
            ["\\mathbb{N}"
("nsp"
            ["\\mathbb{P}"
                                    1)
                                        ; ...
("nsz"
            ["\\mathbb{Z}"
                                    ])
                                        ; ...
```

```
("nsi"
            ["\mbox{"}]
                                    ])
                                         ; ...
("sub"
            ["\\subset"
                                    ])
("subn"
            ["\\nssubseteq"
                                    ])
                                         ; (neg)
("sub."
            ["\\subseteq"
                                    ])
                                         ; (var)
("sub.n"
            ["\\nsubseteq"
                                    ])
                                         ; (var, neg)
("subn."
                                    ])
            ["\\nsubseteq"
                                         ; (neg, var)
("sup"
                                    ])
            ["\\supset"
                                    ])
("supn"
            ["\\nsupseteq"
                                         ; (neg)
                                         ; (var)
                                    ])
("sup."
            ["\\supeseteq"
("sup.n"
            ["\\nsupseteq"
                                    ])
                                         ; (var, neg)
("supn."
                                    ])
            ["\\nsupseteq"
                                         ; (neg, var)
;; Operation: arith
("or"
            ["\\lor"
                                    ])
            ["\\lnd"
                                    ])
("and"
                                         ;
("not"
            ["\\neg"
                                    ])
("or."
            ["\\text{ or }"
                                    ])
                                         ; (var)
            ["\text{ and }]"
                                    ])
                                         ; (var)
("and."
("not."
            ["\\text{ not }"
                                    ])
                                         ; (var)
;; Func: main
("rank"
            ["\\mathrm{rank}"
                                    ])
                                    ])
("arg"
            ["\\arg"
("det"
            ["\\det"
                                    ])
("dim"
            ["\\dim"
                                    ])
                                    1)
("exp"
            ["\\exp("
("Im"
            ["\\mathrm{Im}("
                                    ])
("Re"
            ["\\mathrm{Re}("
                                    ])
                                    ])
("ln"
            ["\\ln("
("log"
                                    ])
            ["\\log("
("max"
            ["\\max("
                                    ])
                                    ])
("min"
            ["\\min("
("dim"
            ["\\dim("
                                    ])
                                    ])
("sqrt"
            ["\\sqrt("
("mod"
            ["\\pmod("
                                    ])
                                    ])
("mod."
            ["\\mod"
("mod.."
            ["\\bmod"
                                    ])
;; Func: Triq
("cos"
           ["\\cos("
                              ])
                                  ("cosh"
                                             ["\\cosh("
                                                                 ])
           ["\\sin("
                              ])
                                  ("sinh"
                                                                 ])
("sin"
                                             ["\\sinh("
                                                                 ])
("tan"
           ["\\tan("
                              1)
                                  ("tanh"
                                             ["\\tanh("
("cot"
                              ])
                                  ("coth"
                                                                 ])
           ["\\cot("
                                             ["\\coth("
```

```
("acos"
          ["\\arccos("
                               ("cos."
                                          ["\\arccos("
                                                           ])
                           ])
("asin"
          ["\\arcsin("
                           ])
                               ("sin."
                                          ["\\arcsin("
                                                           ])
("atan"
          ["\\arctan("
                               ("tan."
                                          ["\\arctan("
                                                           ])
                           1)
;; Func: iter
("il"
           ["\\limits_{ }"
                                 ])
("il"
           ["\\limits_{ }^{ }"
                                 1)
           ["\\lim"
("lim"
                                 ])
("sum"
           ["\\sum"
                                 ])
("prod"
           ["\\prod"
                                 1)
("int"
           ["\\int"
                                 ])
("inti"
           ["\\iint"
                                 ])
("intii"
           ["\\iiint"
                                 ])
("intiii"
          ["\\iiiint"
                                 ])
("into"
           ["\\oint"
                                 ])
           ["\\sum\\limits_{ i=1 }^{ n }"])
("sum."
("prod."
           ["\\prod\\limits_{ i=1 }^{ n }"]) ;
("int."
           ["\\int\\limits_{ }^{ }"]) ;
("int.."
           ["\\int\\limits_{ 0 }^{ +\\infty }"]) ;
("int..."
           ["\\int\\limits_{ -\\infty }^{ +\\infty }"]) ;
("inti."
           ["\\iint\\limits_{ }" ]) ;
           ["\\iiint\\limits_{ }" ])
("intii."
("intiii." ["\\iiint\\limits_{ }"])
("into."
           ["\\oint\\limits_{ }" ])
;; Structural: Parenthesis
("()."
           ["\\left(\\right)"
                                 ])
("().."
           ["\\left( \\middle\\vert \\right)"]) ;
("[]."
           ["\\left[ \\right]"
                                 ]) ;
("[].."
           ["\\left[ \\middle\\vert \\right]"]) ; (var)
("[].c"
                                 ]) ; (var) (ceil)
           ["\\lceil \\rceil"
("[].f"
           ["\\lfloor \\rfloor"
                                 ])
                                     ; (var) (floor)
("{}."
           ["\\left\\{ \\right\\}"])
           ["\left( \right) ; (var)
("{}.."
("<>."
           ["\\left< \\right>"
                                 ]) ;
("<>.."
           ["\\left< \\middle\\vert \\right>"]) ; (var)
("||."
           ["\\left\\vert \\right\\vert"]) ;
("||.."
           ["\\left\\Vert \\right\\Vert"]) ; (var)
("(."
           ["\\left("
                                 ])
                                     ; half (
(")."
           ["\\right)"
                                     ; half )
                                 ])
("[."
           ["\\left["
                                 ])
                                     ; half [
("]."
           ["\\right]"
                                 ])
                                     ; half ]
```

```
("{."
           ["\\left\\{"
                                       ; half {
                                   ])
("}."
           ["\\right\\}"
                                   ])
                                       ; half }
("<."
           ["\\left<"
                                   ])
                                        ; half <
(">."
           ["\\right>"
                                   1)
                                       ; half >
("(.."
           ["\\left."
                                   ])
                                        ; half left .
(").."
           ["\\right."
                                   ])
                                        ; half right .
("|."
           ["\\Bigg\\vert_{ }^{ }"])
                                        ; definite integral range
;; Structural: Text
           ["\\text{"
("te"
                                   1)
                                        ; (te)xt
("tr"
           ["\\mathrm{"
                                   1)
                                       ; (t)ext (r)oman
("tb"
           ["\\mathbf{"
                                   ])
                                       ; (t)ext (b)old
("ti"
           ["\\mathit{"
                                   ])
                                        ; (t)ext (i)talics
;; Structural: Text
("te"
           ["\\text{"
                                        ; (te)xt
                                   ])
("tr"
           ["\\mathrm{"
                                   ])
                                       : (t) ext (r) oman
("tb"
           ["\\mathbf{"
                                   ])
                                       ; (t)ext (b)old
("ti"
           ["\\mathit{"
                                   1)
                                        ; (t)ext (i)talics
;; Structural: Sub-sup-scripts
("^"
          ["^{"
                                 ("_"
                                            ["_{"
                                                               ])
                             ])
          ["~{"
("pp"
                             ])
                                 ("11"
                                            ["_{"
                                                               ])
          ["^0"
                                            ["_0"
                                                               ])
("p0"
                             ])
                                 ("10"
          ["~1"
                                            ["_1"
                                                               ])
                             1)
                                 ("11"
("p1"
          ["^2"
("p2"
                             ])
                                 ("12"
                                            ["_2"
                                                               ])
          ["^3"
                             1)
                                 ("13"
                                            ["_3"
                                                               1)
("p3"
          ["~4"
("p4"
                             1)
                                 ("14"
                                            ["_4"
                                                               ])
("pn"
          ["^n"
                             ])
                                 ("lnn"
                                            ["_n"
                                                               ])
                                            ["_i"
("px"
          ["^X"
                             ])
                                  ("li"
                                                               ])
("__"
          ["\\underset{ }{ }"]) ("^~"
                                             ["\\overset{ }{ }"])
("__."
          ["\\underbrace{ }_{ }"]) ("^^."
                                                ["\\overbrace{ }^{ }"])
                                            ["\\overline{ }" ])
("__.."
          ["\\underline{ }" ]) ("^^.."
;; Structural: misc
           ["\\binom{}{"
("binom"
                                   ])
                                       ; Binom
("box"
           ["\\boxed{}{"
                                   ])
                                        ; Putting box around object
("fr"
           ["\\frac{}{"
                                   ])
                                        : Fractions
           ["\\cancel"
                                   ])
("can"
("&=")
           ["&=\\n\\\\\"
                                   ])
("=&"
           ["&=\\n\\\\\"
                                   ])
;; Structural: xy
("xy"
           ["\\xymatrix{\\n\\n}"
                                   ])
           ["\\bullet"
("bu"
                                   ])
```

```
("ar" ["\\ar" ]) ;
```