# Logiweb sequent calculus, Chores

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## Contents



## 1 Test cases

$[(x\#y = z \Rightarrow \forall x\colon x = y)\text{ ' check}]^{\cdot}$

$[(x\#x = z \Rightarrow \forall x\colon x = y)\text{ ' check}]^{-}$

$[(x\#y = x \Rightarrow \forall x\colon x = y)\text{ ' check}]^{-}$

$[(x\#y = z \Rightarrow \forall y\colon x = y)\text{ ' check}]^{-}$

$[\langle a{\equiv}a|b{:=}c\rangle\text{ ' check}]^{\cdot}$

$[\langle b{\equiv}a|b{:=}c\rangle\text{ ' check}]^{-}$

$[\langle c{\equiv}a|b{:=}c\rangle\text{ ' check}]^{-}$

$[\langle a{\equiv}b|b{:=}c\rangle\text{ ' check}]^{-}$

$[\langle b{\equiv}b|b{:=}c\rangle\text{ ' check}]^{-}$

$[\langle c{\equiv}b|b{:=}c\rangle\text{ ' check}]^{\cdot}$

$[\langle \forall a\colon a = b{\equiv}\forall a\colon a = b|a{:=}c\rangle\text{ ' check}]^{\cdot}$

$[\langle \forall a\colon a = c{\equiv}\forall a\colon a = b|b{:=}c\rangle\text{ ' check}]^{\cdot}$

$[\langle \forall a\colon a = 0 + a \Rightarrow c \cdot d = 0 + c \cdot d{\equiv}\forall a\colon a = 0 + a \Rightarrow b = 0 + b|b{:=}c \cdot d\rangle\text{ ' check}]^{\cdot}$

$[\langle \forall a\colon a = 0 + a \Rightarrow b = 0 + b \equiv \forall a\colon a = 0 + a \Rightarrow b = 0 + b \,|\, a{:=}c\rangle \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(0, 0) \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(0, 1) \text{ ' check}]^{-}$

$[\mathrm{Ded}_8(\lceil \Pi \mathcal{A}\colon \mathcal{A} \rceil, \mathsf{T})]^{\cdot}$

$[\mathrm{Ded}_7(\lceil \Pi \mathcal{A}\colon \mathcal{A} \rceil) \stackrel{\mathrm{t}}{=} \lceil \mathcal{A} \rceil]^{\cdot}$

$[\mathrm{Ded}(\Pi \mathcal{A}\colon \mathcal{A}, \mathcal{A}) \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(\mathcal{A}, \mathcal{B}) \text{ ' check}]^{-}$

$[\mathrm{Ded}(\Pi \mathcal{A}\colon \mathcal{A}, \mathcal{B}) \text{ ' check}]^{-}$

$[\mathrm{Ded}(\Pi \mathcal{A}, \mathcal{B}\colon \mathcal{A} \vdash \mathcal{B}, \mathcal{A} \Rightarrow \mathcal{B}) \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(\Pi \mathcal{A}, \mathcal{B}\colon \mathcal{A} \vdash \mathcal{B}, \mathcal{A} \Rightarrow \mathcal{A}) \text{ ' check}]^{-}$

$[\mathrm{Ded}(\Pi \mathcal{A}, \mathcal{B}\colon \mathcal{A} \vdash \mathcal{B}, \mathcal{B} \Rightarrow \mathcal{B}) \text{ ' check}]^{-}$

$[\mathrm{Ded}(\Pi \mathcal{A}, \mathcal{B}\colon \mathcal{A} \vdash \mathcal{B}, 0) \text{ ' check}]^{-}$

$[\mathrm{Ded}(0, \mathcal{A} \Rightarrow \mathcal{A}) \text{ ' check}]^{-}$

$[\mathrm{Ded}(\Pi \mathcal{A}, \mathcal{B}, \mathcal{C}\colon \mathcal{A} \vdash \mathcal{B} \vdash \mathcal{C}, \mathcal{A} \Rightarrow \mathcal{B} \Rightarrow \mathcal{C}) \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(\Pi \mathcal{A}, \mathcal{B}\colon \mathcal{A} \vdash \mathcal{B} \vdash \mathcal{A}, \mathcal{A} \Rightarrow \mathcal{B} \Rightarrow \mathcal{C}) \text{ ' check}]^{-}$

$[\mathrm{Ded}(\Pi \mathcal{A}, \mathcal{B}, \mathcal{C}\colon (\mathcal{A} \vdash \mathcal{B}) \vdash \mathcal{C}, (\mathcal{A} \Rightarrow \mathcal{B}) \Rightarrow \mathcal{C}) \text{ ' check}]^{-}$

$[\mathrm{Ded}(0, x) \text{ ' check}]^{-}$

$[\mathrm{Ded}(x, 0) \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(x, x) \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(\forall x\colon x, x) \text{ ' check}]^{-}$

$[\mathrm{Ded}(x, \forall y\colon z) \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(\forall x\colon x, \forall x\colon x) \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(0 \vdash 0, 0 \Rightarrow 0) \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(x \vdash 0, 0 \Rightarrow 0) \text{ ' check}]^{-}$

$[\mathrm{Ded}(0 \vdash x, 0 \Rightarrow 0) \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(x \vdash x, 0 \Rightarrow 0) \text{ ' check}]^{-}$

$[\mathrm{Ded}(0 \vdash 0, \forall x\colon 0 \Rightarrow 0) \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(x \vdash 0, \forall x\colon x \Rightarrow 0) \text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(0 \vdash x, \forall x\colon 0 \Rightarrow x)\text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(x \vdash x, \forall x\colon x \Rightarrow x)\text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(0 \vdash 0, 0 \Rightarrow \forall x\colon 0)\text{ ' check}]^{-}$

$[\mathrm{Ded}(x \vdash 0, 0 \Rightarrow \forall x\colon 0)\text{ ' check}]^{-}$

$[\mathrm{Ded}(0 \vdash x, 0 \Rightarrow \forall y\colon z)\text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(x \vdash x, 0 \Rightarrow \forall x\colon x)\text{ ' check}]^{-}$

$[\mathrm{Ded}(0 \vdash 0, \forall x\colon 0 \Rightarrow \forall x\colon 0)\text{ ' check}]^{-}$

$[\mathrm{Ded}(x \vdash 0, \forall x\colon x \Rightarrow \forall x\colon 0)\text{ ' check}]^{-}$

$[\mathrm{Ded}(0 \vdash x, \forall x\colon 0 \Rightarrow 2)\text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(x \vdash x, \forall x\colon x \Rightarrow 3)\text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(x + y = y + x, 2 + 3 = 3 + 2)\text{ ' check}]^{\cdot}$

$[\mathrm{Ded}(x + y = y + x, 2 + 3 = 2 + 3)\text{ ' check}]^{-}$

$[\mathrm{Ded}(x + y = y + x, 2 + 3 = 2 + 2)\text{ ' check}]^{-}$

$[\mathrm{Ded}(x + y = y + x, 2 + 3 = 3 + 3)\text{ ' check}]^{-}$

# 2 Pyk definitions

$([[* \overset{\circ}{=} *] \overset{\mathrm{pyk}}{\to}$ “general macro define " as " end define”]
$[\mathrm{RootVisible}(*) \overset{\mathrm{pyk}}{\to}$ “make root visible " end visible”]
$[\mathrm{A} \overset{\mathrm{pyk}}{\to}$ “sequent example axiom”]
$[\mathrm{R} \overset{\mathrm{pyk}}{\to}$ “sequent example rule”]
$[\mathrm{C} \overset{\mathrm{pyk}}{\to}$ “sequent example contradiction”]
$[\mathrm{T} \overset{\mathrm{pyk}}{\to}$ “sequent example theory”]
$[\mathrm{L} \overset{\mathrm{pyk}}{\to}$ “sequent example lemma”]
$[\{*\} \overset{\mathrm{pyk}}{\to}$ “set " end set”]
$[\overline{*} \overset{\mathrm{pyk}}{\to}$ “object var " end var”]
$[a \overset{\mathrm{pyk}}{\to}$ “object a”]
$[b \overset{\mathrm{pyk}}{\to}$ “object b”]
$[c \overset{\mathrm{pyk}}{\to}$ “object c”]
$[d \overset{\mathrm{pyk}}{\to}$ “object d”]
$[e \overset{\mathrm{pyk}}{\to}$ “object e”]
$[f \overset{\mathrm{pyk}}{\to}$ “object f”]

$[g \overset{\text{pyk}}{\to} \text{“object g”}]$
$[h \overset{\text{pyk}}{\to} \text{“object h”}]$
$[i \overset{\text{pyk}}{\to} \text{“object i”}]$
$[j \overset{\text{pyk}}{\to} \text{“object j”}]$
$[k \overset{\text{pyk}}{\to} \text{“object k”}]$
$[l \overset{\text{pyk}}{\to} \text{“object l”}]$
$[m \overset{\text{pyk}}{\to} \text{“object m”}]$
$[n \overset{\text{pyk}}{\to} \text{“object n”}]$
$[o \overset{\text{pyk}}{\to} \text{“object o”}]$
$[p \overset{\text{pyk}}{\to} \text{“object p”}]$
$[q \overset{\text{pyk}}{\to} \text{“object q”}]$
$[r \overset{\text{pyk}}{\to} \text{“object r”}]$
$[s \overset{\text{pyk}}{\to} \text{“object s”}]$
$[t \overset{\text{pyk}}{\to} \text{“object t”}]$
$[u \overset{\text{pyk}}{\to} \text{“object u”}]$
$[v \overset{\text{pyk}}{\to} \text{“object v”}]$
$[w \overset{\text{pyk}}{\to} \text{“object w”}]$
$[x \overset{\text{pyk}}{\to} \text{“object x”}]$
$[y \overset{\text{pyk}}{\to} \text{“object y”}]$
$[z \overset{\text{pyk}}{\to} \text{“object z”}]$
$[\langle * \equiv * \mid * :=* \rangle \overset{\text{pyk}}{\to} \text{“sub " is " where " is " end sub”}]$
$[\langle * \equiv^0 * \mid * :=* \rangle \overset{\text{pyk}}{\to} \text{“sub zero " is " where " is " end sub”}]$
$[\langle * \equiv^1 * \mid * :=* \rangle \overset{\text{pyk}}{\to} \text{“sub one " is " where " is " end sub”}]$
$[\langle * \equiv^* * \mid * :=* \rangle \overset{\text{pyk}}{\to} \text{“sub star " is " where " is " end sub”}]$
$[\text{Ded}(*,*) \overset{\text{pyk}}{\to} \text{“deduction " conclude " end deduction”}]$
$[\text{Ded}_0(*,*) \overset{\text{pyk}}{\to} \text{“deduction zero " conclude " end deduction”}]$
$[\text{Ded}_1(*,*,*) \overset{\text{pyk}}{\to} \text{“deduction one " conclude " condition " end deduction”}]$
$[\text{Ded}_2(*,*,*) \overset{\text{pyk}}{\to} \text{“deduction two " conclude " condition " end deduction”}]$
$[\text{Ded}_3(*,*,*,*) \overset{\text{pyk}}{\to} \text{“deduction three " conclude " condition " bound " end deduction”}]$
$[\text{Ded}_4(*,*,*,*) \overset{\text{pyk}}{\to} \text{“deduction four " conclude " condition " bound " end deduction”}]$
$[\text{Ded}_4^*(*,*,*,*) \overset{\text{pyk}}{\to} \text{“deduction four star " conclude " condition " bound " end deduction”}]$
$[\text{Ded}_5(*,*,*) \overset{\text{pyk}}{\to} \text{“deduction five " condition " bound " end deduction”}]$
$[\text{Ded}_6(*,*,*,*) \overset{\text{pyk}}{\to} \text{“deduction six " conclude " exception " bound " end}$

deduction”]

[$\mathrm{Ded}_6^*(*,*,*,*) \overset{\mathrm{pyk}}{\to}$ “deduction six star " conclude " exception " bound " end deduction”]

[$\mathrm{Ded}_7(*) \overset{\mathrm{pyk}}{\to}$ “deduction seven " end deduction”]

[$\mathrm{Ded}_8(*,*) \overset{\mathrm{pyk}}{\to}$ “deduction eight " bound " end deduction”]

[$\mathrm{Ded}_8^*(*,*) \overset{\mathrm{pyk}}{\to}$ “deduction eight star " bound " end deduction”]

[S $\overset{\mathrm{pyk}}{\to}$ “system s”]

[Neg $\overset{\mathrm{pyk}}{\to}$ “double negation”]

[MP $\overset{\mathrm{pyk}}{\to}$ “rule mp”]

[Gen $\overset{\mathrm{pyk}}{\to}$ “rule gen”]

[Ded $\overset{\mathrm{pyk}}{\to}$ “deduction”]

[S1 $\overset{\mathrm{pyk}}{\to}$ “axiom s one”]

[S2 $\overset{\mathrm{pyk}}{\to}$ “axiom s two”]

[S3 $\overset{\mathrm{pyk}}{\to}$ “axiom s three”]

[S4 $\overset{\mathrm{pyk}}{\to}$ “axiom s four”]

[S5 $\overset{\mathrm{pyk}}{\to}$ “axiom s five”]

[S6 $\overset{\mathrm{pyk}}{\to}$ “axiom s six”]

[S7 $\overset{\mathrm{pyk}}{\to}$ “axiom s seven”]

[S8 $\overset{\mathrm{pyk}}{\to}$ “axiom s eight”]

[S9 $\overset{\mathrm{pyk}}{\to}$ “axiom s nine”]

[Repetition $\overset{\mathrm{pyk}}{\to}$ “repetition”]

[A1′ $\overset{\mathrm{pyk}}{\to}$ “lemma a one”]

[A2′ $\overset{\mathrm{pyk}}{\to}$ “lemma a two”]

[A4′ $\overset{\mathrm{pyk}}{\to}$ “lemma a four”]

[A5′ $\overset{\mathrm{pyk}}{\to}$ “lemma a five”]

[Prop 3.2a $\overset{\mathrm{pyk}}{\to}$ “prop three two a”]

[Prop 3.2b $\overset{\mathrm{pyk}}{\to}$ “prop three two b”]

[Prop 3.2c $\overset{\mathrm{pyk}}{\to}$ “prop three two c”]

[Prop 3.2d $\overset{\mathrm{pyk}}{\to}$ “prop three two d”]

[Prop 3.2$\mathrm{e}_1$ $\overset{\mathrm{pyk}}{\to}$ “prop three two e one”]

[Prop 3.2$\mathrm{e}_2$ $\overset{\mathrm{pyk}}{\to}$ “prop three two e two”]

[Prop 3.2e $\overset{\mathrm{pyk}}{\to}$ “prop three two e”]

[Prop 3.2$\mathrm{f}_1$ $\overset{\mathrm{pyk}}{\to}$ “prop three two f one”]

[Prop 3.2$\mathrm{f}_2$ $\overset{\mathrm{pyk}}{\to}$ “prop three two f two”]

[Prop 3.2f $\overset{\mathrm{pyk}}{\to}$ “prop three two f”]

[Prop 3.2$\mathrm{g}_1$ $\overset{\mathrm{pyk}}{\to}$ “prop three two g one”]

$[\text{Prop } 3.2\text{g}_2 \overset{\text{pyk}}{\to} \text{“prop three two g two”}]$
$[\text{Prop } 3.2\text{g} \overset{\text{pyk}}{\to} \text{“prop three two g”}]$
$[\text{Prop } 3.2\text{h}_1 \overset{\text{pyk}}{\to} \text{“prop three two h one”}]$
$[\text{Prop } 3.2\text{h}_2 \overset{\text{pyk}}{\to} \text{“prop three two h two”}]$
$[\text{Prop } 3.2\text{h} \overset{\text{pyk}}{\to} \text{“prop three two h”}]$
$[\text{Block}_1(*,*,*) \overset{\text{pyk}}{\to} \text{“block one " state " cache " end block”}]$
$[\text{Block}_2(*) \overset{\text{pyk}}{\to} \text{“block two " end block”}]$
$[*^{\text{hide}} \overset{\text{pyk}}{\to} \text{“" hide”}]$
$[\text{MacroIndent}(*) \overset{\text{pyk}}{\to} \text{“macro indent "”}]$
$[*' \overset{\text{pyk}}{\to} \text{“" suc”}]$
$[* = * \overset{\text{pyk}}{\to} \text{“" equal "”}]$
$[* \neq * \overset{\text{pyk}}{\to} \text{“" unequal "”}]$
$[*^{\text{var}} \overset{\text{pyk}}{\to} \text{“" is object var”}]$
$[*\#^0* \overset{\text{pyk}}{\to} \text{“" avoid zero "”}]$
$[*\#^1* \overset{\text{pyk}}{\to} \text{“" avoid one "”}]$
$[*\#^**  \overset{\text{pyk}}{\to} \text{“" avoid star "”}]$
$[\exists *: * \overset{\text{pyk}}{\to} \text{“exist " indeed "”}]$
$[\forall *: * \overset{\text{pyk}}{\to} \text{“for all " indeed "”}]$
$[\forall_{\text{obj}} *: * \overset{\text{pyk}}{\to} \text{“for all objects " indeed "”}]$
$[* \Rightarrow * \overset{\text{pyk}}{\to} \text{“" imply "”}]$
$[* \Leftrightarrow * \overset{\text{pyk}}{\to} \text{“" if and only if "”}]$
$[*\#* \overset{\text{pyk}}{\to} \text{“" avoid "”}]$
$[* \trianglerighteq * \overset{\text{pyk}}{\to} \text{“" object modus ponens "”}]$
$[\Pi *: * \overset{\text{pyk}}{\to} \text{“for all terms " indeed "”}]$
$[\text{Begin} *; * : \text{End}; * \overset{\text{pyk}}{\to} \text{“block " line " end block "”}]$
$[\text{Last block line} * \gg *; \overset{\text{pyk}}{\to} \text{“because " indeed " end line”}]$
$[\text{Arbitrary} \gg *; * \overset{\text{pyk}}{\to} \text{“any term " end line "”}]$
$[* \mid * \overset{\text{pyk}}{\to} \text{“" alternative "”}]$
$[\to \overset{\text{pyk}}{\to} \text{“evaluates to”}]$
$[*\backslash\backslash * \overset{\text{pyk}}{\to} \text{“" safe row "”}]$
$[\text{check} \overset{\text{pyk}}{\to} \text{“check”}]$
$)^{\text{P}}$

# 3 TEX definitions

[[x $\overset{\circ}{=}$ y] $\overset{\text{tex}}{=}$ “
[#1/tex name/tex.
\stackrel {\circ}{=}#2.
]”]

[RootVisible(x) $\overset{\text{tex}}{=}$ “#1/tex name/tex.”]

[RootVisible(x) $\overset{\text{name}}{=}$ “
RootVisible(#1.
)”]

[$x^{\text{hide}}$ $\overset{\text{tex}}{=}$ “#1.
{}^{hide}”]

[$x'$ $\overset{\text{tex}}{=}$ “#1.
{}”]

[x = y $\overset{\text{tex}}{=}$ “#1.
= #2.”]

[x ≠ y $\overset{\text{tex}}{=}$ “#1.
\neq #2.”]

[x ⇒ y $\overset{\text{tex}}{=}$ “#1.
\Rightarrow #2.”]

[x ⇔ y $\overset{\text{tex}}{=}$ “#1.
\Leftrightarrow #2.”]

[x | y $\overset{\text{tex}}{=}$ “#1.
\mathrel{|} #2.”]

[∃x: y $\overset{\text{tex}}{=}$ “
\exists #1.
\colon #2.”]

[∀x: y $\overset{\text{tex}}{=}$ “
\forall #1.
\colon #2.”]

[$\forall_{\text{obj}}$x: y $\overset{\text{tex}}{=}$ “
\forall_{obj} #1.
\colon #2.”]

[Πx: y $\overset{\text{tex}}{=}$ “
\Pi #1.
\colon #2.”]

[Arbitrary $\gg$ i; p $\stackrel{\text{tex}}{=}$ “
\newline \makebox [0.1\textwidth ][l]{$
\if \relax \csname lgwprooflinep\endcsname L_? \else
\global \advance \lgwproofline by 1
L\ifnum \lgwproofline <10 0\fi \number \lgwproofline
\fi
$:}\makebox [0.4\textwidth ][l]{$Arbitrary{}\gg{}$}\quad
\parbox [t]{0.4\textwidth }{$#1.
$\hfill \makebox [0mm][l]{\quad ;}}#2.”]

[Arbitrary $\gg$ i; p $\stackrel{\text{name}}{=}$ “
Arbitrary \gg #1.
; #2.”]

[x\\y $\stackrel{\text{tex}}{=}$ “#1.
\\{}#2.”]

[x\\y $\stackrel{\text{name}}{=}$ “#1.
\backslash \backslash #2.”]

[A $\stackrel{\text{tex}}{=}$ “
A”]

[R $\stackrel{\text{tex}}{=}$ “
R”]

[C $\stackrel{\text{tex}}{=}$ “
C”]

[T $\stackrel{\text{tex}}{=}$ “
T”]

[L $\stackrel{\text{tex}}{=}$ “
L”]

[{x} $\stackrel{\text{tex}}{=}$ “
\{#1.
\}”]

[S $\stackrel{\text{tex}}{=}$ “
S”]

[Neg $\stackrel{\text{tex}}{=}$ “
Neg”]

[S1 $\stackrel{\text{tex}}{=}$ “
S1”]

[S2 $\overset{\text{tex}}{=}$ “
S2”]

[S3 $\overset{\text{tex}}{=}$ “
S3”]

[S4 $\overset{\text{tex}}{=}$ “
S4”]

[S5 $\overset{\text{tex}}{=}$ “
S5”]

[S6 $\overset{\text{tex}}{=}$ “
S6”]

[S7 $\overset{\text{tex}}{=}$ “
S7”]

[S8 $\overset{\text{tex}}{=}$ “
S8”]

[S9 $\overset{\text{tex}}{=}$ “
S9”]

[MP $\overset{\text{tex}}{=}$ “
MP”]

[Gen $\overset{\text{tex}}{=}$ “
Gen”]

[Ded $\overset{\text{tex}}{=}$ “
Ded”]

[Repetition $\overset{\text{tex}}{=}$ “
Repetition”]

[A1$'$ $\overset{\text{tex}}{=}$ “
A1’”]

[A2$'$ $\overset{\text{tex}}{=}$ “
A2’”]

[A4$'$ $\overset{\text{tex}}{=}$ “
A4’”]

[A5$'$ $\overset{\text{tex}}{=}$ “
A5’”]

$[\mathsf{x}^{\mathrm{var}} \overset{\mathrm{tex}}{=} \text{“}\#1.$
$\{\}\hat{}\{\mathrm{var}\}\text{”}]$

$[\mathsf{x}\#\mathsf{y} \overset{\mathrm{tex}}{=} \text{“}\#1.$
$\backslash\#.\#2.\text{”}]$

$[\mathsf{x}\#^0\mathsf{y} \overset{\mathrm{tex}}{=} \text{“}\#1.$
$\backslash\#.\hat{}0\#2.\text{”}]$

$[\mathsf{x}\#^1\mathsf{y} \overset{\mathrm{tex}}{=} \text{“}\#1.$
$\backslash\#.\hat{}1\#2.\text{”}]$

$[\mathsf{x}\#^*\mathsf{y} \overset{\mathrm{tex}}{=} \text{“}\#1.$
$\backslash\#.\hat{}*\#2.\text{”}]$

$[\langle \mathsf{x} \equiv \mathsf{y} | \mathsf{z} := \mathsf{u} \rangle \overset{\mathrm{tex}}{=} \text{“}$
$\backslash\mathrm{langle}\ \#1.$
$\{\backslash\mathrm{equiv}\}\ \#2.$
$|\ \#3.$
$\{:=\}\ \#4.$
$\backslash\mathrm{rangle}\ \text{”}]$

$[\langle \mathsf{x} \equiv^0 \mathsf{y} | \mathsf{z} := \mathsf{u} \rangle \overset{\mathrm{tex}}{=} \text{“}$
$\backslash\mathrm{langle}\ \#1.$
$\{\backslash\mathrm{equiv}\}\hat{}0\ \#2.$
$|\ \#3.$
$\{:=\}\ \#4.$
$\backslash\mathrm{rangle}\ \text{”}]$

$[\langle \mathsf{x} \equiv^1 \mathsf{y} | \mathsf{z} := \mathsf{u} \rangle \overset{\mathrm{tex}}{=} \text{“}$
$\backslash\mathrm{langle}\ \#1.$
$\{\backslash\mathrm{equiv}\}\hat{}1\ \#2.$
$|\ \#3.$
$\{:=\}\ \#4.$
$\backslash\mathrm{rangle}\ \text{”}]$

$[\langle \mathsf{x} \equiv^* \mathsf{y} | \mathsf{z} := \mathsf{u} \rangle \overset{\mathrm{tex}}{=} \text{“}$
$\backslash\mathrm{langle}\ \#1.$
$\{\backslash\mathrm{equiv}\}\hat{}*\ \#2.$
$|\ \#3.$
$\{:=\}\ \#4.$
$\backslash\mathrm{rangle}\ \text{”}]$

$[\mathrm{Ded}(\mathsf{x}, \mathsf{y}) \overset{\mathrm{tex}}{=} \text{“}$
$\mathrm{Ded}(\#1.$
$,\#2.$
$)\text{”}]$

$[\mathrm{Ded}_0(\mathsf{x},\mathsf{y}) \overset{\text{tex}}{=} \text{“}$
Ded_0(#1.
, #2.
)”]

$[\mathrm{Ded}_1(\mathsf{x},\mathsf{y},\mathsf{z}) \overset{\text{tex}}{=} \text{“}$
Ded_1(#1.
, #2.
, #3.
)”]

$[\mathrm{Ded}_2(\mathsf{x},\mathsf{y},\mathsf{z}) \overset{\text{tex}}{=} \text{“}$
Ded_2(#1.
, #2.
, #3.
)”]

$[\mathrm{Ded}_3(\mathsf{x},\mathsf{y},\mathsf{z},\mathsf{u}) \overset{\text{tex}}{=} \text{“}$
Ded_3(#1.
, #2.
, #3.
, #4.
)”]

$[\mathrm{Ded}_4(\mathsf{x},\mathsf{y},\mathsf{z},\mathsf{u}) \overset{\text{tex}}{=} \text{“}$
Ded_4(#1.
, #2.
, #3.
, #4.
)”]

$[\mathrm{Ded}_4^*(\mathsf{x},\mathsf{y},\mathsf{z},\mathsf{u}) \overset{\text{tex}}{=} \text{“}$
Ded_4^*(#1.
, #2.
, #3.
, #4.
)”]

$[\mathrm{Ded}_5(\mathsf{x},\mathsf{y},\mathsf{z}) \overset{\text{tex}}{=} \text{“}$
Ded_5(#1.
, #2.
, #3.
)”]

$[\mathrm{Ded}_6(\mathsf{p},\mathsf{c},\mathsf{e},\mathsf{b}) \overset{\text{tex}}{=} \text{“}$
Ded_6(#1.
, #2.

```
, #3.
, #4.
)"]

[Ded*_6(p, c, e, b) =tex "
Ded_6^*(#1.
, #2.
, #3.
, #4.
)"]

[Ded_7(p) =tex "
Ded_7(#1.
)"]

[Ded_8(p, b) =tex "
Ded_8(#1.
, #2.
)"]

[Ded*_8(p, b) =tex "
Ded_8^*(#1.
, #2.
)"]

[Begin b; l : End; p =tex "
\newline \makebox [0.1\textwidth]{}%
\parbox [b]{0.4\textwidth }{\raggedright
\setlength {\parindent }{-0.1\textwidth }%
\makebox [0.1\textwidth ][l]{$
\if \relax \csname lgwprooflinep\endcsname L_? \else
\global \advance \lgwproofline by 1
L\ifnum \lgwproofline <10 0\fi \number \lgwproofline
\fi
$:}$Block {}\gg {}$}\quad
\parbox [t]{0.4\textwidth }{$Begin
$\hfill \makebox [0mm][l]{\quad ; }}#1.
\newline \makebox [0.1\textwidth]{}%
\parbox [b]{0.4\textwidth }{\raggedright
\setlength {\parindent }{-0.1\textwidth }%
\makebox [0.1\textwidth ][l]{$#2.
$:}$Block {}\gg {}$}\quad
\parbox [t]{0.4\textwidth }{$End
$\hfill \makebox [0mm][l]{\quad ; }}#3."]

[Begin b; l : End; p =name "
Begin \, #1.
```

; #2.
: End ; #3."]

[Last block line $\mathsf{a} \gg \mathsf{i}$ ; $\overset{\text{tex}}{=}$ "
\newline \makebox [0.1\textwidth]{}%
\parbox [b]{0.4\textwidth }{\raggedright
\setlength {\parindent }{-0.1\textwidth }%
\makebox [0.1\textwidth ][l]{$
\if \relax \csname lgwprooflinep\endcsname L_? \else
\global \advance \lgwproofline by 1
L\ifnum \lgwproofline <10 0\fi \number \lgwproofline
\fi
$:}$#1.
{}\gg {}$}\quad
\parbox [t]{0.4\textwidth }{$#2.
$\hfill \makebox [0mm][l]{\quad ;}}"]

[Last block line $\mathsf{a} \gg \mathsf{i}$ ; $\overset{\text{name}}{=}$ "
Last\ block\ line \, #1.
\gg #2.
\, ;"]

[$\mathsf{x} \trianglerighteq \mathsf{y}$ $\overset{\text{tex}}{=}$ "#1.
\unrhd #2."]

[Prop 3.2a $\overset{\text{tex}}{=}$ "
Prop\ 3.2a"]

[Prop 3.2b $\overset{\text{tex}}{=}$ "
Prop\ 3.2b"]

[Prop 3.2c $\overset{\text{tex}}{=}$ "
Prop\ 3.2c"]

[Prop 3.2d $\overset{\text{tex}}{=}$ "
Prop\ 3.2d"]

[Prop $3.2\mathrm{e}_1$ $\overset{\text{tex}}{=}$ "
Prop\ 3.2e_1"]

[Prop $3.2\mathrm{e}_2$ $\overset{\text{tex}}{=}$ "
Prop\ 3.2e_2"]

[Prop 3.2e $\overset{\text{tex}}{=}$ "
Prop\ 3.2e"]

[Prop $3.2\mathrm{f}_1$ $\overset{\text{tex}}{=}$ "
Prop\ 3.2f_1"]

[Prop $3.2f_2$ $\overset{\text{tex}}{=}$ “
Prop\ 3.2f_2”]

[Prop 3.2f $\overset{\text{tex}}{=}$ “
Prop\ 3.2f”]

[Prop $3.2g_1$ $\overset{\text{tex}}{=}$ “
Prop\ 3.2g_1”]

[Prop $3.2g_2$ $\overset{\text{tex}}{=}$ “
Prop\ 3.2g_2”]

[Prop 3.2g $\overset{\text{tex}}{=}$ “
Prop\ 3.2g”]

[Prop $3.2h_1$ $\overset{\text{tex}}{=}$ “
Prop\ 3.2h_1”]

[Prop $3.2h_2$ $\overset{\text{tex}}{=}$ “
Prop\ 3.2h_2”]

[Prop 3.2h $\overset{\text{tex}}{=}$ “
Prop\ 3.2h”]

[MacroIndent(x) $\overset{\text{tex}}{=}$ “
$%
\leftskip=1em%
$#1.”]

[MacroIndent(x) $\overset{\text{name}}{=}$ “
MacroIndent(#1.
)”]

[$\text{Block}_1$(t, s, c) $\overset{\text{tex}}{=}$ “
Block_1(#1.
, #2.
, #3.
)”]

[$\text{Block}_2$(b) $\overset{\text{tex}}{=}$ “
Block_2(#1.
)”]

[$\rightarrow \overset{\text{tex}}{=}$ “
\rightarrow ”]

## 3.1 Variables

$[\overline{\mathsf{x}} \overset{\text{tex}}{=} \text{“\textbackslash overline\{\#1.\}”}]$

$[a \doteq \overline{\mathsf{a}}]$

$[b \doteq \overline{\mathsf{b}}]$

$[c \doteq \overline{\mathsf{c}}]$

$[d \doteq \overline{\mathsf{d}}]$

$[e \doteq \overline{\mathsf{e}}]$

$[f \doteq \overline{\mathsf{f}}]$

$[g \doteq \overline{\mathsf{g}}]$

$[h \doteq \overline{\mathsf{h}}]$

$[i \doteq \overline{\mathsf{i}}]$

$[j \doteq \overline{\mathsf{j}}]$

$[k \doteq \overline{\mathsf{k}}]$

$[l \doteq \overline{\mathsf{l}}]$

$[m \doteq \overline{\mathsf{m}}]$

$[n \doteq \overline{\mathsf{n}}]$

$[o \doteq \overline{\mathsf{o}}]$

$[p \doteq \overline{\mathsf{p}}]$

$[q \doteq \overline{\mathsf{q}}]$

$[r \doteq \overline{\mathsf{r}}]$

$[s \doteq \overline{\mathsf{s}}]$

$[t \doteq \overline{\mathsf{t}}]$

$[u \doteq \overline{\mathsf{u}}]$

$[v \doteq \overline{\mathsf{v}}]$

$[w \doteq \overline{\mathsf{w}}]$

$[x \doteq \overline{\mathsf{x}}]$

$[y \doteq \overline{\mathsf{y}}]$

$[z \doteq \overline{\mathsf{z}}]$

$[a \overset{\text{tex}}{=} \text{“}$
\mathit{a}”]

$[b \overset{\text{tex}}{=} \text{“}$
\mathit{b}”]

$[c \overset{\text{tex}}{=} \text{“}$
\mathit{c}”]

$[d \overset{\text{tex}}{=} \text{“}$
\mathit{d}”]

$[e \overset{\text{tex}}{=} \text{“}$
\mathit{e}”]

$[f \overset{\text{tex}}{=} \text{“}$
\mathit{f}”]

$[g \overset{\text{tex}}{=} \text{“}$
\mathit{g}”]

[$h \overset{\text{tex}}{=}$ “
\mathit{h}”]
[$i \overset{\text{tex}}{=}$ “
\mathit{i}”]
[$j \overset{\text{tex}}{=}$ “
\mathit{j}”]
[$k \overset{\text{tex}}{=}$ “
\mathit{k}”]
[$l \overset{\text{tex}}{=}$ “
\mathit{l}”]
[$m \overset{\text{tex}}{=}$ “
\mathit{m}”]
[$n \overset{\text{tex}}{=}$ “
\mathit{n}”]
[$o \overset{\text{tex}}{=}$ “
\mathit{o}”]
[$p \overset{\text{tex}}{=}$ “
\mathit{p}”]
[$q \overset{\text{tex}}{=}$ “
\mathit{q}”]
[$r \overset{\text{tex}}{=}$ “
\mathit{r}”]
[$s \overset{\text{tex}}{=}$ “
\mathit{s}”]
[$t \overset{\text{tex}}{=}$ “
\mathit{t}”]
[$u \overset{\text{tex}}{=}$ “
\mathit{u}”]
[$v \overset{\text{tex}}{=}$ “
\mathit{v}”]
[$w \overset{\text{tex}}{=}$ “
\mathit{w}”]
[$x \overset{\text{tex}}{=}$ “
\mathit{x}”]
[$y \overset{\text{tex}}{=}$ “
\mathit{y}”]
[$z \overset{\text{tex}}{=}$ “
\mathit{z}”]

# 4 Priority table

**Priority table**
**Preassociative**
[check], [base], [bracket $*$ end bracket], [big bracket $*$ end bracket], [ \$ $*$ \$ ], [**flush left** $[*]$], [x], [y], [z], [$[* \bowtie *]$], [$[* \xrightarrow{*} *]$], [pyk], [tex], [name], [prio], [$*$], [T], [if$(*,*,*)$], [$[* \overset{*}{\Rightarrow} *]$], [val], [claim], [$\bot$], [f$(*)$], [$(*)^{\mathrm{I}}$], [F], [0], [1], [2], [3], [4], [5], [6], [7], [8], [9], [0], [1], [2], [3], [4], [5], [6], [7], [8], [9], [a], [b], [c], [d], [e], [f], [g], [h], [i], [j], [k], [l], [m], [n], [o], [p], [q], [r], [s], [t], [u], [v], [w], [$(*)^{\mathrm{M}}$], [If$(*,*,*)$], [array\{$*$\} $*$ end array], [l], [c], [r], [empty], [$\langle * \mid * := * \rangle$], [$\mathcal{M}(*)$], [$\tilde{\mathcal{U}}(*)$], [$\mathcal{U}(*)$], [$\mathcal{U}^{\mathrm{M}}(*)$], [**apply**$(*,*)$], [**apply**$_1(*,*)$], [identifier$(*)$], [identifier$_1(*,*)$], [array-plus$(*,*)$], [array-remove$(*,*,*)$], [array-put$(*,*,*,*)$], [array-add$(*,*,*,*,*)$], [bit$(*,*)$], [bit$_1(*,*)$], [rack], ["vector"], ["bibliography"], ["dictionary"], ["body"], ["codex"], ["expansion"], ["code"], ["cache"], ["diagnose"], ["pyk"], ["tex"], ["texname"], ["value"], ["message"], ["macro"], ["definition"], ["unpack"], ["claim"], ["priority"], ["lambda"], ["apply"], ["true"], ["if"], ["quote"], ["proclaim"], ["define"], ["introduce"], ["hide"], ["pre"], ["post"], [$\mathcal{E}(*,*,*)$], [$\mathcal{E}_2(*,*,*,*,*)$], [$\mathcal{E}_3(*,*,*,*)$], [$\mathcal{E}_4(*,*,*,*)$], [**lookup**$(*,*,*)$], [**abstract**$(*,*,*,*)$], [$\lceil * \rceil$], [$\mathcal{M}(*,*,*)$], [$\mathcal{M}_2(*,*,*,*)$], [$\mathcal{M}^*(*,*,*)$], [macro], [$\mathrm{s}_0$], [**zip**$(*,*)$], [**assoc**$_1(*,*,*)$], [$(*)^{\mathrm{P}}$], [self], [$[* \doteq *]$], [$[* \doteq *]$], [$[* \doteq *]$], [$[* \overset{\text{pyk}}{=} *]$], [$[* \overset{\text{tex}}{=} *]$], [$[* \overset{\text{name}}{=} *]$], [**Priority table**$[*]$], [$\tilde{\mathcal{M}}_1$], [$\tilde{\mathcal{M}}_2(*)$], [$\tilde{\mathcal{M}}_3(*)$], [$\tilde{\mathcal{M}}_4(*,*,*,*)$], [$\mathcal{M}(*,*,*)$], [$\tilde{\mathcal{Q}}(*,*,*)$], [$\tilde{\mathcal{Q}}_2(*,*,*)$], [$\tilde{\mathcal{Q}}_3(*,*,*,*)$], [$\tilde{\mathcal{Q}}^*(*,*,*)$], [$(*)$], [$(*)$], [display$(*)$], [statement$(*)$], [$[*]^{\cdot}$], [$[*]^{-}$], [**aspect**$(*,*)$], [**aspect**$(*,*,*)$], [$\langle * \rangle$], [**tuple**$_1(*)$], [**tuple**$_2(*)$], [let$_2(*,*)$], [let$_1(*,*)$], [$[* \overset{\text{claim}}{=} *]$], [checker], [**check**$(*,*)$], [**check**$_2(*,*,*)$], [**check**$_3(*,*,*)$], [**check**$^*(*,*)$], [**check**$^*_2(*,*,*)$], $[[*]^{\cdot}]$, $[[*]^{-}]$, $[[*]^{\circ}]$, [msg], [$[* \overset{\text{msg}}{=} *]$], [<stmt>], [stmt], [$[* \overset{\text{stmt}}{=} *]$], [HeadNil$'$], [HeadPair$'$], [Transitivity$'$], [$\perp\!\!\!\perp$], [Contra$'$], [$\mathrm{T}'_{\mathrm{E}}$], [$\mathrm{L}_1$], [$*$], [$\mathcal{A}$], [$\mathcal{B}$], [$\mathcal{C}$], [$\mathcal{D}$], [$\mathcal{E}$], [$\mathcal{F}$], [$\mathcal{G}$], [$\mathcal{H}$], [$\mathcal{I}$], [$\mathcal{J}$], [$\mathcal{K}$], [$\mathcal{L}$], [$\mathcal{M}$], [$\mathcal{N}$], [$\mathcal{O}$], [$\mathcal{P}$], [$\mathcal{Q}$], [$\mathcal{R}$], [$\mathcal{S}$], [$\mathcal{T}$], [$\mathcal{U}$], [$\mathcal{V}$], [$\mathcal{W}$], [$\mathcal{X}$], [$\mathcal{Y}$], [$\mathcal{Z}$], [$\langle * \mid * := * \rangle$], [$\langle {}^{*} * \mid * := * \rangle$], [$\emptyset$], [Remainder], [$(*)^{\mathbf{v}}$], [intro$(*,*,*,*)$], [intro$(*,*,*)$], [error$(*,*)$], [error$_2(*,*)$], [proof$(*,*,*)$], [proof$_2(*,*)$], [$\mathcal{S}(*,*)$], [$\mathcal{S}^{\mathrm{I}}(*,*)$], [$\mathcal{S}^{\triangleright}(*,*)$], [$\mathcal{S}^{\triangleright}_1(*,*,*)$], [$\mathcal{S}^{\mathrm{E}}(*,*)$], [$\mathcal{S}^{\mathrm{E}}_1(*,*,*)$], [$\mathcal{S}^{+}(*,*)$], [$\mathcal{S}^{+}_1(*,*,*)$], [$\mathcal{S}^{-}(*,*)$], [$\mathcal{S}^{-}_1(*,*,*)$], [$\mathcal{S}^{*}(*,*)$], [$\mathcal{S}^{*}_1(*,*,*)$], [$\mathcal{S}^{*}_2(*,*,*,*)$], [$\mathcal{S}^{@}(*,*)$], [$\mathcal{S}^{@}_1(*,*,*)$], [$\mathcal{S}^{\vdash}(*,*)$], [$\mathcal{S}^{\vdash}_1(*,*,*,*)$], [$\mathcal{S}^{\Vdash}(*,*)$], [$\mathcal{S}^{\Vdash}_1(*,*,*,*)$], [$\mathcal{S}^{\mathrm{i.e.}\cdot}(*,*)$], [$\mathcal{S}^{\mathrm{i.e.}\cdot}_1(*,*,*,*)$], [$\mathcal{S}^{\mathrm{i.e.}\cdot}_2(*,*,*,*,*)$], [$\mathcal{S}^{\forall}(*,*)$], [$\mathcal{S}^{\forall}_1(*,*,*,*)$], [$\mathcal{S}^{:}(*,*)$], [$\mathcal{S}^{:}_1(*,*,*)$], [$\mathcal{S}^{:}_2(*,*,*,*)$], [$\mathcal{T}(*)$], [claims$(*,*,*)$], [claims$_2(*,*,*)$], [<proof>], [proof], [[**Lemma** $*$: $*$]], [[**Proof of** $*$: $*$]], [[$*$ **lemma** $*$: $*$]], [[$*$ **antilemma** $*$: $*$]], [[$*$ **rule** $*$: $*$]], [[$*$ **antirule** $*$: $*$]], [verifier], [$\mathcal{V}_1(*)$], [$\mathcal{V}_2(*,*)$], [$\mathcal{V}_3(*,*,*,*)$], [$\mathcal{V}_4(*,*)$], [$\mathcal{V}_5(*,*,*,*)$], [$\mathcal{V}_6(*,*,*,*)$], [$\mathcal{V}_7(*,*,*,*)$], [Cut$(*,*)$], [Head$_{\oplus}(*)$], [Tail$_{\oplus}(*)$], [rule$_1(*,*)$], [rule$(*,*)$], [Rule tactic], [Plus$(*,*)$], [[**Theory** $*$]], [theory$_2(*,*)$], [theory$_3(*,*)$], [theory$_4(*,*,*)$], [HeadNil$''$], [HeadPair$''$], [Transitivity$''$], [Contra$''$], [HeadNil], [HeadPair], [Transitivity], [Contra], [$\mathrm{T}_{\mathrm{E}}$], [ragged right], [ragged right expansion ], [parm$(*,*,*)$], [parm$^*(*,*,*)$], [inst$(*,*)$], [inst$^*(*,*)$], [occur$(*,*,*)$], [occur$^*(*,*,*)$], [unify$(* = *,*)$], [unify$^*(* = *,*)$], [unify$_2(* = *,*)$], [$\mathrm{L}_{\mathrm{a}}$], [$\mathrm{L}_{\mathrm{b}}$], [$\mathrm{L}_{\mathrm{c}}$], [$\mathrm{L}_{\mathrm{d}}$], [$\mathrm{L}_{\mathrm{e}}$], [$\mathrm{L}_{\mathrm{f}}$], [$\mathrm{L}_{\mathrm{g}}$], [$\mathrm{L}_{\mathrm{h}}$], [$\mathrm{L}_{\mathrm{i}}$], [$\mathrm{L}_{\mathrm{j}}$], [$\mathrm{L}_{\mathrm{k}}$], [$\mathrm{L}_{\mathrm{l}}$], [$\mathrm{L}_{\mathrm{m}}$],

$[\mathrm{L_n}]$, $[\mathrm{L_o}]$, $[\mathrm{L_p}]$, $[\mathrm{L_q}]$, $[\mathrm{L_r}]$, $[\mathrm{L_s}]$, $[\mathrm{L_t}]$, $[\mathrm{L_u}]$, $[\mathrm{L_v}]$, $[\mathrm{L_w}]$, $[\mathrm{L_x}]$, $[\mathrm{L_y}]$, $[\mathrm{L_z}]$, $[\mathrm{L_A}]$, $[\mathrm{L_B}]$, $[\mathrm{L_C}]$, $[\mathrm{L_D}]$, $[\mathrm{L_E}]$, $[\mathrm{L_F}]$, $[\mathrm{L_G}]$, $[\mathrm{L_H}]$, $[\mathrm{L_I}]$, $[\mathrm{L_J}]$, $[\mathrm{L_K}]$, $[\mathrm{L_L}]$, $[\mathrm{L_M}]$, $[\mathrm{L_N}]$, $[\mathrm{L_O}]$, $[\mathrm{L_P}]$, $[\mathrm{L_Q}]$, $[\mathrm{L_R}]$, $[\mathrm{L_S}]$, $[\mathrm{L_T}]$, $[\mathrm{L_U}]$, $[\mathrm{L_V}]$, $[\mathrm{L_W}]$, $[\mathrm{L_X}]$, $[\mathrm{L_Y}]$, $[\mathrm{L_Z}]$, $[\mathrm{L_?}]$, [Reflexivity], $[\text{Reflexivity}_1]$, [Commutativity], $[\text{Commutativity}_1]$, [<tactic>], [tactic], $[[* \overset{\text{tactic}}{=} *]]$, $[\mathcal{P}(*,*,*)]$, $[\mathcal{P}^*(*,*,*)]$, $[\mathrm{p_0}]$, $[\text{conclude}_1(*,*)]$, $[\text{conclude}_2(*,*,*)]$, $[\text{conclude}_3(*,*,*,*)]$, $[\text{conclude}_4(*,*)]$, $[[* \overset{\circ}{=} *]]$, [RootVisible(∗)], [A], [R], [C], [T], [L], $[\{*\}]$, $[\overline{*}]$, $[a]$, $[b]$, $[c]$, $[d]$, $[e]$, $[f]$, $[g]$, $[h]$, $[i]$, $[j]$, $[k]$, $[l]$, $[m]$, $[n]$, $[o]$, $[p]$, $[q]$, $[r]$, $[s]$, $[t]$, $[u]$, $[v]$, $[w]$, $[x]$, $[y]$, $[z]$, $[\langle * \equiv * \mid * := * \rangle]$, $[\langle * \equiv^0 * \mid * := * \rangle]$, $[\langle * \equiv^1 * \mid * := * \rangle]$, $[\langle * \equiv^* * \mid * := * \rangle]$, $[\mathrm{Ded}(*,*)]$, $[\mathrm{Ded_0}(*,*)]$, $[\mathrm{Ded_1}(*,*,*)]$, $[\mathrm{Ded_2}(*,*,*)]$, $[\mathrm{Ded_3}(*,*,*,*)]$, $[\mathrm{Ded_4}(*,*,*,*)]$, $[\mathrm{Ded_4^*}(*,*,*,*)]$, $[\mathrm{Ded_5}(*,*,*)]$, $[\mathrm{Ded_6}(*,*,*,*)]$, $[\mathrm{Ded_6^*}(*,*,*,*)]$, $[\mathrm{Ded_7}(*)]$, $[\mathrm{Ded_8}(*,*)]$, $[\mathrm{Ded_8^*}(*,*)]$, [S], [Neg], [MP], [Gen], [Ded], [S1], [S2], [S3], [S4], [S5], [S6], [S7], [S8], [S9], [Repetition], [A1′], [A2′], [A4′], [A5′], [Prop 3.2a], [Prop 3.2b], [Prop 3.2c], [Prop 3.2d], $[\text{Prop 3.2e}_1]$, $[\text{Prop 3.2e}_2]$, [Prop 3.2e], $[\text{Prop 3.2f}_1]$, $[\text{Prop 3.2f}_2]$, [Prop 3.2f], $[\text{Prop 3.2g}_1]$, $[\text{Prop 3.2g}_2]$, [Prop 3.2g], $[\text{Prop 3.2h}_1]$, $[\text{Prop 3.2h}_2]$, [Prop 3.2h], $[\text{Block}_1(*,*,*)]$, $[\text{Block}_2(*)]$;

**Preassociative**

$[*\_\{*\}]$, [∗/indexintro(∗, ∗, ∗, ∗)], [∗/intro(∗, ∗, ∗)], [∗/bothintro(∗, ∗, ∗, ∗, ∗)], [∗/nameintro(∗, ∗, ∗, ∗)], $[*']$, $[*[\ *\ ]]$, $[*[* \longrightarrow *]]$, $[*[* \Rightarrow *]]$, [∗0], [∗1], [0b], [∗-color(∗)], [∗-color*(∗)], $[*^{\mathrm{H}}]$, $[*^{\mathrm{T}}]$, $[*^{\mathrm{U}}]$, $[*^{\mathrm{h}}]$, $[*^{\mathrm{t}}]$, $[*^{\mathrm{s}}]$, $[*^{\mathrm{c}}]$, $[*^{\mathrm{d}}]$, $[*^{\mathrm{a}}]$, $[*^{\mathrm{C}}]$, $[*^{\mathrm{M}}]$, $[*^{\mathrm{B}}]$, $[*^{\mathrm{r}}]$, $[*^{\mathrm{i}}]$, $[*^{\mathrm{d}}]$, $[*^{\mathrm{R}}]$, $[*^0]$, $[*^1]$, $[*^2]$, $[*^3]$, $[*^4]$, $[*^5]$, $[*^6]$, $[*^7]$, $[*^8]$, $[*^9]$, $[*^{\mathrm{E}}]$, $[*^{\mathcal{V}}]$, $[*^{\mathcal{C}}]$, $[*^{\mathcal{C}^*}]$, $[*^{\text{hide}}]$;

**Preassociative**

[“ ∗ ”], [], $[(*)^{\mathbf{t}}]$, [string(∗) + ∗], [string(∗) ++ ∗], [ ∗], [ ∗], [!∗], ["∗], [#∗], [$∗], [%∗], [&∗], ['∗], [(∗], [)∗], [∗∗], [+∗], [, ∗], [-∗], [.∗], [/∗], [0∗], [1∗], [2∗], [3∗], [4∗], [5∗], [6∗], [7∗], [8∗], [9∗], [:∗], [; ∗], [<∗], [=∗], [>∗], [?∗], [@∗], [A∗], [B∗], [C∗], [D∗], [E∗], [F∗], [G∗], [H∗], [I∗], [J∗], [K∗], [L∗], [M∗], [N∗], [O∗], [P∗], [Q∗], [R∗], [S∗], [T∗], [U∗], [V∗], [W∗], [X∗], [Y∗], [Z∗], [[∗], [\∗], []∗], [ˆ∗], [_∗], [‘∗], [a∗], [b∗], [c∗], [d∗], [e∗], [f∗], [g∗], [h∗], [i∗], [j∗], [k∗], [l∗], [m∗], [n∗], [o∗], [p∗], [q∗], [r∗], [s∗], [t∗], [u∗], [v∗], [w∗], [x∗], [y∗], [z∗], [{∗], [|∗], [}∗], [˜∗], [**Preassociative** ∗; ∗], [**Postassociative** ∗; ∗], [[∗], ∗], [priority ∗ end], [newline ∗], [macro newline ∗], [MacroIndent(∗)];

**Preassociative**

[∗ ’ ∗], [∗ ‘ ∗];

**Preassociative**

$[*']$;

**Preassociative**

[∗ · ∗], $[* \cdot_0 *]$;

**Preassociative**

[∗ + ∗], $[* +_0 *]$, $[* +_1 *]$, [∗ − ∗], $[* -_0 *]$, $[* -_1 *]$;

**Preassociative**

[∗ ∪ {∗}], [∗ ∪ ∗], [∗\{∗}];

**Postassociative**

[∗ ∴ ∗], [∗ $\underline{\therefore}$ ∗], [∗ $\underline{::}$ ∗], [∗ $\underline{+2*}$ ∗], [∗ : : ∗], [∗ +2∗ ∗];

**Postassociative**

[∗, ∗];

**Preassociative**
$[* \overset{\mathrm{B}}{\approx} *], [* \overset{\mathrm{D}}{\approx} *], [* \overset{\mathrm{C}}{\approx} *], [* \overset{\mathrm{P}}{\approx} *], [* \approx *], [* = *], [* \overset{+}{\to} *], [* \overset{\mathrm{t}}{=} *], [* \overset{\mathrm{t}^*}{=} *], [* \overset{\mathrm{r}}{=} *],$
$[* \in_{\mathrm{t}} *], [* \subseteq_{\mathrm{T}} *], [* \overset{\mathrm{T}}{=} *], [* \overset{\mathrm{s}}{=} *], [* \text{ free in } *], [* \text{ free in}^* *], [* \text{ free for } * \text{ in } *],$
$[* \text{ free for}^* * \text{ in } *], [* \in_{\mathrm{c}} *], [* < *], [* <' *], [* \leq' *], [* = *], [* \neq *], [*^{\mathrm{var}}],$
$[*\#^0*], [*\#^1*], [*\#^**];$
**Preassociative**
$[\neg *];$
**Preassociative**
$[* \wedge *], [* \ddot{\wedge} *], [* \tilde{\wedge} *], [* \wedge_{\mathrm{c}} *];$
**Preassociative**
$[* \vee *], [* \parallel *], [* \ddot{\vee} *];$
**Preassociative**
$[\exists *: *], [\forall *: *], [\forall_{\mathrm{obj}} *: *];$
**Postassociative**
$[* \ddot{\Rightarrow} *], [* \Rightarrow *], [* \Leftrightarrow *];$
**Postassociative**
$[* : *], [* \text{ spy } *], [*!*];$
**Preassociative**
$[* \begin{cases} * \\ * \end{cases} ];$
**Preassociative**
$[\lambda * .*], [\Lambda * .*], [\Lambda *], [\textbf{if } * \textbf{ then } * \textbf{ else } *], [\textbf{let } * = * \textbf{ in } *], [\textbf{let } * \ddot{=} * \text{ in } *];$
**Preassociative**
$[*\#*];$
**Preassociative**
$[*^{\mathrm{I}}], [*^{\triangleright}], [*^{\mathrm{V}}], [*^{+}], [*^{-}], [*^*];$
**Preassociative**
$[* @ *], [* \triangleright *], [* \blacktriangleright *], [* \gg *], [* \trianglerighteq *];$
**Postassociative**
$[* \vdash *], [* \Vdash *], [* \text{ i.e. } *];$
**Preassociative**
$[\forall *: *], [\Pi *: *];$
**Postassociative**
$[* \oplus *];$
**Postassociative**
$[*; *];$
**Preassociative**
$[* \text{ proves } *];$
**Preassociative**
$[* \textbf{ proof of } * : *], [\text{Line } * : * \gg *; *], [\text{Last line } * \gg * \Box],$
$[\text{Line } * : \text{Premise} \gg *; *], [\text{Line } * : \text{Side-condition} \gg *; *], [\text{Arbitrary} \gg *; *],$
$[\text{Local} \gg * = *; *], [\text{Begin} *; * : \text{End}; *], [\text{Last block line } * \gg * ; ],$
$[\text{Arbitrary} \gg *; *];$
**Postassociative**
$[* \mid *];$

**Postassociative**
$[* , *], [*[ * ]*]$;
**Preassociative**
$[*\&*], [\rightarrow]$;
**Preassociative**
$[*\backslash\backslash*], [*$ linebreak[4] $*], [*\backslash\backslash*]$; **End table**