

# Logiweb sequent calculus, Chores

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## 1 Test cases

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

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

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

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

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

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

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

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

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

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

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

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

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

$[(\forall a: a = 0 + a \Rightarrow b = 0 + b \equiv \forall a: a = 0 + a \Rightarrow b = 0 + b | a := c) \text{ 'check'}]$

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

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

$[\text{Ded}_8([\Pi A: \mathcal{A}], \top)]$

$[\text{Ded}_7([\Pi A: \mathcal{A}]) \stackrel{t}{=} [\mathcal{A}]]$

$[\text{Ded}(\Pi A: \mathcal{A}, \mathcal{A}) \text{ 'check'}]$

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

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

$[\text{Ded}(\Pi A, \mathcal{B}: \mathcal{A} \vdash \mathcal{B}, \mathcal{A} \Rightarrow \mathcal{B}) \text{ 'check'}]$

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

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

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

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

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

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

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

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

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

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

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

$[\text{Ded}(x, \forall y: z) \text{ 'check'}]$

$[\text{Ded}(\forall x: x, \forall x: x) \text{ 'check'}]$

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

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

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

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

$[\text{Ded}(0 \vdash 0, \forall x: 0 \Rightarrow 0) \text{ 'check'}]$

$[\text{Ded}(x \vdash 0, \forall x: x \Rightarrow 0) \text{ 'check'}]$

$[\text{Ded}(0 \vdash x, \forall x: 0 \Rightarrow x) \text{ 'check'}]$   
 $[\text{Ded}(x \vdash x, \forall x: x \Rightarrow x) \text{ 'check'}]$   
 $[\text{Ded}(0 \vdash 0, 0 \Rightarrow \forall x: 0) \text{ 'check'}]^-$   
 $[\text{Ded}(x \vdash 0, 0 \Rightarrow \forall x: 0) \text{ 'check'}]^-$   
 $[\text{Ded}(0 \vdash x, 0 \Rightarrow \forall y: z) \text{ 'check'}]$   
 $[\text{Ded}(x \vdash x, 0 \Rightarrow \forall x: x) \text{ 'check'}]^-$   
 $[\text{Ded}(0 \vdash 0, \forall x: 0 \Rightarrow \forall x: 0) \text{ 'check'}]^-$   
 $[\text{Ded}(x \vdash 0, \forall x: x \Rightarrow \forall x: 0) \text{ 'check'}]^-$   
 $[\text{Ded}(0 \vdash x, \forall x: 0 \Rightarrow 2) \text{ 'check'}]$   
 $[\text{Ded}(x \vdash x, \forall x: x \Rightarrow 3) \text{ 'check'}]$   
 $[\text{Ded}(x + y = y + x, 2 + 3 = 3 + 2) \text{ 'check'}]$   
 $[\text{Ded}(x + y = y + x, 2 + 3 = 2 + 3) \text{ 'check'}]^-$   
 $[\text{Ded}(x + y = y + x, 2 + 3 = 2 + 2) \text{ 'check'}]^-$   
 $[\text{Ded}(x + y = y + x, 2 + 3 = 3 + 3) \text{ 'check'}]^-$

## 2 Pyk definitions

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

$[g \xrightarrow{\text{pyk}} \text{"object g"}]$

$[h \xrightarrow{\text{pyk}} \text{"object h"}]$

$[i \xrightarrow{\text{pyk}} \text{"object i"}]$

$[j \xrightarrow{\text{pyk}} \text{"object j"}]$

$[k \xrightarrow{\text{pyk}} \text{"object k"}]$

$[l \xrightarrow{\text{pyk}} \text{"object l"}]$

$[m \xrightarrow{\text{pyk}} \text{"object m"}]$

$[n \xrightarrow{\text{pyk}} \text{"object n"}]$

$[o \xrightarrow{\text{pyk}} \text{"object o"}]$

$[p \xrightarrow{\text{pyk}} \text{"object p"}]$

$[q \xrightarrow{\text{pyk}} \text{"object q"}]$

$[r \xrightarrow{\text{pyk}} \text{"object r"}]$

$[s \xrightarrow{\text{pyk}} \text{"object s"}]$

$[t \xrightarrow{\text{pyk}} \text{"object t"}]$

$[u \xrightarrow{\text{pyk}} \text{"object u"}]$

$[v \xrightarrow{\text{pyk}} \text{"object v"}]$

$[w \xrightarrow{\text{pyk}} \text{"object w"}]$

$[x \xrightarrow{\text{pyk}} \text{"object x"}]$

$[y \xrightarrow{\text{pyk}} \text{"object y"}]$

$[z \xrightarrow{\text{pyk}} \text{"object z"}]$

$[\langle * \equiv * \mid * := * \rangle \xrightarrow{\text{pyk}} \text{"sub " is " where " is " end sub"}]$

$[\langle * \equiv^0 * \mid * := * \rangle \xrightarrow{\text{pyk}} \text{"sub zero " is " where " is " end sub"}]$

$[\langle * \equiv^1 * \mid * := * \rangle \xrightarrow{\text{pyk}} \text{"sub one " is " where " is " end sub"}]$

$[\langle * \equiv^* * \mid * := * \rangle \xrightarrow{\text{pyk}} \text{"sub star " is " where " is " end sub"}]$

$[\text{Ded}(*, *) \xrightarrow{\text{pyk}} \text{"deduction " conclude " end deduction"}]$

$[\text{Ded}_0(*, *) \xrightarrow{\text{pyk}} \text{"deduction zero " conclude " end deduction"}]$

$[\text{Ded}_1(*, *, *) \xrightarrow{\text{pyk}} \text{"deduction one " conclude " condition " end deduction"}]$

$[\text{Ded}_2(*, *, *) \xrightarrow{\text{pyk}} \text{"deduction two " conclude " condition " end deduction"}]$

$[\text{Ded}_3(*, *, *, *) \xrightarrow{\text{pyk}} \text{"deduction three " conclude " condition " bound " end deduction"}]$

$[\text{Ded}_4(*, *, *, *) \xrightarrow{\text{pyk}} \text{"deduction four " conclude " condition " bound " end deduction"}]$

$[\text{Ded}_4^*(*, *, *, *) \xrightarrow{\text{pyk}} \text{"deduction four star " conclude " condition " bound " end deduction"}]$

$[\text{Ded}_5(*, *, *, *) \xrightarrow{\text{pyk}} \text{"deduction five " condition " bound " end deduction"}]$

$[\text{Ded}_6(*, *, *, *) \xrightarrow{\text{pyk}} \text{"deduction six " conclude " exception " bound " end"}]$

deduction”]

[Ded<sub>6</sub><sup>\*</sup>(\*, \*, \*, \*)  $\xrightarrow{\text{pyk}}$  “deduction six star " conclude " exception " bound " end deduction”]

[Ded<sub>7</sub>(\*)  $\xrightarrow{\text{pyk}}$  “deduction seven " end deduction”]

[Ded<sub>8</sub>(\*, \*)  $\xrightarrow{\text{pyk}}$  “deduction eight " bound " end deduction”]

[Ded<sub>8</sub><sup>\*</sup>(\*, \*)  $\xrightarrow{\text{pyk}}$  “deduction eight star " bound " end deduction”]

[S  $\xrightarrow{\text{pyk}}$  “system s”]

[Neg  $\xrightarrow{\text{pyk}}$  “double negation”]

[MP  $\xrightarrow{\text{pyk}}$  “rule mp”]

[Gen  $\xrightarrow{\text{pyk}}$  “rule gen”]

[Ded  $\xrightarrow{\text{pyk}}$  “deduction”]

[S1  $\xrightarrow{\text{pyk}}$  “axiom s one”]

[S2  $\xrightarrow{\text{pyk}}$  “axiom s two”]

[S3  $\xrightarrow{\text{pyk}}$  “axiom s three”]

[S4  $\xrightarrow{\text{pyk}}$  “axiom s four”]

[S5  $\xrightarrow{\text{pyk}}$  “axiom s five”]

[S6  $\xrightarrow{\text{pyk}}$  “axiom s six”]

[S7  $\xrightarrow{\text{pyk}}$  “axiom s seven”]

[S8  $\xrightarrow{\text{pyk}}$  “axiom s eight”]

[S9  $\xrightarrow{\text{pyk}}$  “axiom s nine”]

[Repetition  $\xrightarrow{\text{pyk}}$  “repetition”]

[A1'  $\xrightarrow{\text{pyk}}$  “lemma a one”]

[A2'  $\xrightarrow{\text{pyk}}$  “lemma a two”]

[A4'  $\xrightarrow{\text{pyk}}$  “lemma a four”]

[A5'  $\xrightarrow{\text{pyk}}$  “lemma a five”]

[Prop 3.2a  $\xrightarrow{\text{pyk}}$  “prop three two a”]

[Prop 3.2b  $\xrightarrow{\text{pyk}}$  “prop three two b”]

[Prop 3.2c  $\xrightarrow{\text{pyk}}$  “prop three two c”]

[Prop 3.2d  $\xrightarrow{\text{pyk}}$  “prop three two d”]

[Prop 3.2e<sub>1</sub>  $\xrightarrow{\text{pyk}}$  “prop three two e one”]

[Prop 3.2e<sub>2</sub>  $\xrightarrow{\text{pyk}}$  “prop three two e two”]

[Prop 3.2e  $\xrightarrow{\text{pyk}}$  “prop three two e”]

[Prop 3.2f<sub>1</sub>  $\xrightarrow{\text{pyk}}$  “prop three two f one”]

[Prop 3.2f<sub>2</sub>  $\xrightarrow{\text{pyk}}$  “prop three two f two”]

[Prop 3.2f  $\xrightarrow{\text{pyk}}$  “prop three two f”]

[Prop 3.2g<sub>1</sub>  $\xrightarrow{\text{pyk}}$  “prop three two g one”]

[Prop 3.2g<sub>2</sub>  $\xrightarrow{\text{pyk}}$  “prop three two g two”]  
 [Prop 3.2g  $\xrightarrow{\text{pyk}}$  “prop three two g”]  
 [Prop 3.2h<sub>1</sub>  $\xrightarrow{\text{pyk}}$  “prop three two h one”]  
 [Prop 3.2h<sub>2</sub>  $\xrightarrow{\text{pyk}}$  “prop three two h two”]  
 [Prop 3.2h  $\xrightarrow{\text{pyk}}$  “prop three two h”]  
 [Block<sub>1</sub>(\*,\*,\*)  $\xrightarrow{\text{pyk}}$  “block one " state " cache " end block”]  
 [Block<sub>2</sub>(\*)  $\xrightarrow{\text{pyk}}$  “block two " end block”]  
 [\*hide  $\xrightarrow{\text{pyk}}$  “" hide”]  
 [MacroIndent(\*)  $\xrightarrow{\text{pyk}}$  “macro indent ”]  
 [\*'  $\xrightarrow{\text{pyk}}$  “" suc”]  
 [\* = \*  $\xrightarrow{\text{pyk}}$  “" equal ”]  
 [\* ≠ \*  $\xrightarrow{\text{pyk}}$  “" unequal ”]  
 [\*var  $\xrightarrow{\text{pyk}}$  “" is object var”]  
 [\*#<sup>0</sup>\*  $\xrightarrow{\text{pyk}}$  “" avoid zero ”]  
 [\*#<sup>1</sup>\*  $\xrightarrow{\text{pyk}}$  “" avoid one ”]  
 [\*#\*\*  $\xrightarrow{\text{pyk}}$  “" avoid star ””]  
 [∃\*: \*  $\xrightarrow{\text{pyk}}$  “exist " indeed ””]  
 [∀\*: \*  $\xrightarrow{\text{pyk}}$  “for all " indeed ””]  
 [∀obj\*: \*  $\xrightarrow{\text{pyk}}$  “for all objects " indeed ””]  
 [\* ⇒ \*  $\xrightarrow{\text{pyk}}$  “" imply ””]  
 [\* ⇔ \*  $\xrightarrow{\text{pyk}}$  “" if and only if ””]  
 [\*##  $\xrightarrow{\text{pyk}}$  “" avoid ””]  
 [\* ⊇ \*  $\xrightarrow{\text{pyk}}$  “" object modus ponens ””]  
 [Π\*: \*  $\xrightarrow{\text{pyk}}$  “for all terms " indeed ””]  
 [Begin\*; \* : End\*; \*  $\xrightarrow{\text{pyk}}$  “block " line " end block ””]  
 [Last block line \* ≫ \*; \*  $\xrightarrow{\text{pyk}}$  “because " indeed " end line”]  
 [Arbitrary ≫ \*; \*  $\xrightarrow{\text{pyk}}$  “any term " end line ””]  
 [\* | \*  $\xrightarrow{\text{pyk}}$  “" alternative ””]  
 [→  $\xrightarrow{\text{pyk}}$  “evaluates to”]  
 [\* \\ \*  $\xrightarrow{\text{pyk}}$  “" safe row ””]  
 [check  $\xrightarrow{\text{pyk}}$  “check”]  
 )<sup>P</sup>

### 3 T<sub>E</sub>X definitions

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

$[ \text{RootVisible}(x) \stackrel{\text{tex}}{=} "#1/\text{tex name}/\text{tex}." ]$

$[ \text{RootVisible}(x) \stackrel{\text{name}}{=} "$   
    RootVisible(\#1.  
    )"] ]

$[ x^{\text{hide}} \stackrel{\text{tex}}{=} "#1.  
    \{ \}^{\text{hide}} ] ]$

$[ x' \stackrel{\text{tex}}{=} "#1.  
    \{ \}' ] ]$

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

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

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

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

$[ x | y \stackrel{\text{tex}}{=} "#1.  
    \mathrel{\{ | \}} \#2." ] ]$

$[ \exists x: y \stackrel{\text{tex}}{=} "$   
    \exists \#1.  
    \colon \#2." ] ]

$[ \forall x: y \stackrel{\text{tex}}{=} "$   
    \forall \#1.  
    \colon \#2." ] ]

$[ \forall_{\text{obj}} x: y \stackrel{\text{tex}}{=} "$   
    \forall\_{\text{obj}} \#1.  
    \colon \#2." ] ]

$[ \prod x: y \stackrel{\text{tex}}{=} "$   
    \prod \#1.  
    \colon \#2." ] ]

```
[Arbitrary >> i; p tex “
  \newline \makebox [0.1\textwidth ][l]{\$
  \if \relax \csname lgwproofline\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 >> i; p name “
  Arbitrary \gg #1.
  ; #2.”]
```

```
[x\y tex “#1.
  \{\}\#2.”]
```

```
[x\y name “#1.
  \backslash \backslash #2.”]
```

```
[A tex “
  A”]
```

```
[R tex “
  R”]
```

```
[C tex “
  C”]
```

```
[T tex “
  T”]
```

```
[L tex “
  L”]
```

```
[{x} tex “
  \{#1.
  \}”]
```

```
[S tex “
  S”]
```

```
[Neg tex “
  Neg”]
```

```
[S1 tex “
  S1”]
```



[S2  $\stackrel{\text{tex}}{=} \text{“}$  S2”]

[S3  $\stackrel{\text{tex}}{=} \text{“}$  S3”]

[S4  $\stackrel{\text{tex}}{=} \text{“}$  S4”]

[S5  $\stackrel{\text{tex}}{=} \text{“}$  S5”]

[S6  $\stackrel{\text{tex}}{=} \text{“}$  S6”]

[S7  $\stackrel{\text{tex}}{=} \text{“}$  S7”]

[S8  $\stackrel{\text{tex}}{=} \text{“}$  S8”]

[S9  $\stackrel{\text{tex}}{=} \text{“}$  S9”]

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

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

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

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

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

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

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

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

[ $x^{\text{var}}$   $\stackrel{\text{tex}}{=} \text{"\#1.}$   
     $\{\}^{\{\text{var}\}}$ "]

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

[ $x\#^0y$   $\stackrel{\text{tex}}{=} \text{"\#1.}$   
     $\#\.^0\#2.$ "]

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

[ $x\#*y$   $\stackrel{\text{tex}}{=} \text{"\#1.}$   
     $\#\.^*\#2.$ "]

[ $\langle x\equiv y|z:=u \rangle$   $\stackrel{\text{tex}}{=} \text{"}$   
     $\langle \rangle$  #1.  
     $\{\equiv\}$  #2.  
    | #3.  
     $\{:=\}$  #4.  
     $\langle \rangle$  " ]

[ $\langle x\equiv^0y|z:=u \rangle$   $\stackrel{\text{tex}}{=} \text{"}$   
     $\langle \rangle$  #1.  
     $\{\equiv\}^0$  #2.  
    | #3.  
     $\{:=\}$  #4.  
     $\langle \rangle$  " ]

[ $\langle x\equiv^1y|z:=u \rangle$   $\stackrel{\text{tex}}{=} \text{"}$   
     $\langle \rangle$  #1.  
     $\{\equiv\}^1$  #2.  
    | #3.  
     $\{:=\}$  #4.  
     $\langle \rangle$  " ]

[ $\langle x\equiv*y|z:=u \rangle$   $\stackrel{\text{tex}}{=} \text{"}$   
     $\langle \rangle$  #1.  
     $\{\equiv\}^*$  #2.  
    | #3.  
     $\{:=\}$  #4.  
     $\langle \rangle$  " ]

[ $\text{Ded}(x, y)$   $\stackrel{\text{tex}}{=} \text{"}$   
     $\text{Ded}(\#1.$   
     $, \#2.$   
     $)$ "]

$[\text{Ded}_0(x, y) \stackrel{\text{tex}}{\equiv} \text{“} \\ \text{Ded.0}(\#1. \\ , \#2. \\ )\text{”}]$

$[\text{Ded}_1(x, y, z) \stackrel{\text{tex}}{\equiv} \text{“} \\ \text{Ded.1}(\#1. \\ , \#2. \\ , \#3. \\ )\text{”}]$

$[\text{Ded}_2(x, y, z) \stackrel{\text{tex}}{\equiv} \text{“} \\ \text{Ded.2}(\#1. \\ , \#2. \\ , \#3. \\ )\text{”}]$

$[\text{Ded}_3(x, y, z, u) \stackrel{\text{tex}}{\equiv} \text{“} \\ \text{Ded.3}(\#1. \\ , \#2. \\ , \#3. \\ , \#4. \\ )\text{”}]$

$[\text{Ded}_4(x, y, z, u) \stackrel{\text{tex}}{\equiv} \text{“} \\ \text{Ded.4}(\#1. \\ , \#2. \\ , \#3. \\ , \#4. \\ )\text{”}]$

$[\text{Ded}_4^*(x, y, z, u) \stackrel{\text{tex}}{\equiv} \text{“} \\ \text{Ded.4}^*(\#1. \\ , \#2. \\ , \#3. \\ , \#4. \\ )\text{”}]$

$[\text{Ded}_5(x, y, z) \stackrel{\text{tex}}{\equiv} \text{“} \\ \text{Ded.5}(\#1. \\ , \#2. \\ , \#3. \\ )\text{”}]$

$[\text{Ded}_6(p, c, e, b) \stackrel{\text{tex}}{\equiv} \text{“} \\ \text{Ded.6}(\#1. \\ , \#2. \\ )\text{”}]$

, #3.  
, #4.  
)”]

[Ded<sub>6</sub><sup>\*</sup>(p, c, e, b)  $\stackrel{\text{tex}}{=} “$   
Ded\_6^\*(#1.  
, #2.  
, #3.  
, #4.  
)”]

[Ded<sub>7</sub>(p)  $\stackrel{\text{tex}}{=} “$   
Ded\_7(#1.  
)”]

[Ded<sub>8</sub>(p, b)  $\stackrel{\text{tex}}{=} “$   
Ded\_8(#1.  
, #2.  
)”]

[Ded<sub>8</sub><sup>\*</sup>(p, b)  $\stackrel{\text{tex}}{=} “$   
Ded\_8^\*(#1.  
, #2.  
)”]

[Begin b;l : End; p  $\stackrel{\text{tex}}{=} “$   
\newline \makebox [0.1\textwidth]{}%  
\parbox [b]{0.4\textwidth }{\raggedright  
\setlength {\parindent }{-0.1\textwidth }%  
\makebox [0.1\textwidth ][l]{\$  
\if \relax \cname lgwproofline\endcname 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  $\stackrel{\text{name}}{=} “$   
Begin \, #1.

; #2.  
: End ; #3.”]

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

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

[Prop 3.2a  $\stackrel{\text{tex}}{=}$  “  
Prop\ 3.2a”]

[Prop 3.2b  $\stackrel{\text{tex}}{=}$  “  
Prop\ 3.2b”]

[Prop 3.2c  $\stackrel{\text{tex}}{=}$  “  
Prop\ 3.2c”]

[Prop 3.2d  $\stackrel{\text{tex}}{=}$  “  
Prop\ 3.2d”]

[Prop 3.2e<sub>1</sub>  $\stackrel{\text{tex}}{=}$  “  
Prop\ 3.2e\_1”]

[Prop 3.2e<sub>2</sub>  $\stackrel{\text{tex}}{=}$  “  
Prop\ 3.2e\_2”]

[Prop 3.2e  $\stackrel{\text{tex}}{=}$  “  
Prop\ 3.2e”]

[Prop 3.2f<sub>1</sub>  $\stackrel{\text{tex}}{=}$  “  
Prop\ 3.2f\_1”]

[Prop 3.2f<sub>2</sub>  $\stackrel{\text{tex}}{=} “$   
Prop\ 3.2f\_2”]

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

[Prop 3.2g<sub>1</sub>  $\stackrel{\text{tex}}{=} “$   
Prop\ 3.2g\_1”]

[Prop 3.2g<sub>2</sub>  $\stackrel{\text{tex}}{=} “$   
Prop\ 3.2g\_2”]

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

[Prop 3.2h<sub>1</sub>  $\stackrel{\text{tex}}{=} “$   
Prop\ 3.2h\_1”]

[Prop 3.2h<sub>2</sub>  $\stackrel{\text{tex}}{=} “$   
Prop\ 3.2h\_2”]

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

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

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

[Block<sub>1</sub>(t, s, c)  $\stackrel{\text{tex}}{=} “$   
Block\_1(#1.  
, #2.  
, #3.  
)”]

[Block<sub>2</sub>(b)  $\stackrel{\text{tex}}{=} “$   
Block\_2(#1.  
)”]

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

### 3.1 Variables

$\overline{x}$   $\stackrel{\text{tex}}{=} \text{"\overline{\#1.}"}$

$a \stackrel{\text{tex}}{=} \overline{a}$

$b \stackrel{\text{tex}}{=} \overline{b}$

$c \stackrel{\text{tex}}{=} \overline{c}$

$d \stackrel{\text{tex}}{=} \overline{d}$

$e \stackrel{\text{tex}}{=} \overline{e}$

$f \stackrel{\text{tex}}{=} \overline{f}$

$g \stackrel{\text{tex}}{=} \overline{g}$

$h \stackrel{\text{tex}}{=} \overline{h}$

$i \stackrel{\text{tex}}{=} \overline{i}$

$j \stackrel{\text{tex}}{=} \overline{j}$

$k \stackrel{\text{tex}}{=} \overline{k}$

$l \stackrel{\text{tex}}{=} \overline{l}$

$m \stackrel{\text{tex}}{=} \overline{m}$

$n \stackrel{\text{tex}}{=} \overline{n}$

$o \stackrel{\text{tex}}{=} \overline{o}$

$p \stackrel{\text{tex}}{=} \overline{p}$

$q \stackrel{\text{tex}}{=} \overline{q}$

$r \stackrel{\text{tex}}{=} \overline{r}$

$s \stackrel{\text{tex}}{=} \overline{s}$

$t \stackrel{\text{tex}}{=} \overline{t}$

$u \stackrel{\text{tex}}{=} \overline{u}$

$v \stackrel{\text{tex}}{=} \overline{v}$

$w \stackrel{\text{tex}}{=} \overline{w}$

$x \stackrel{\text{tex}}{=} \overline{x}$

$y \stackrel{\text{tex}}{=} \overline{y}$

$z \stackrel{\text{tex}}{=} \overline{z}$

$a \stackrel{\text{tex}}{=} \text{"\mathit{a}"}$

$b \stackrel{\text{tex}}{=} \text{"\mathit{b}"}$

$c \stackrel{\text{tex}}{=} \text{"\mathit{c}"}$

$d \stackrel{\text{tex}}{=} \text{"\mathit{d}"}$

$e \stackrel{\text{tex}}{=} \text{"\mathit{e}"}$

$f \stackrel{\text{tex}}{=} \text{"\mathit{f}"}$

$g \stackrel{\text{tex}}{=} \text{"\mathit{g}"}$

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



# 4 Priority table

## Priority table

### Preassociative

[check], [base], [bracket \* end bracket], [big bracket \* end bracket], [ \$ \* \$ ],  
[flush left \*], [x], [y], [z], [[\*  $\times$  \*]], [[\*  $\rightarrow$  \*]], [pyk], [tex], [name], [prio], [\*], [T],  
[if(\*, \*, \*)], [[\*  $\Rightarrow$  \*]], [val], [claim], [ $\perp$ ], [f(\*)], [(\*)<sup>1</sup>], [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], [(\*)<sup>M</sup>], [If(\*, \*, \*)],  
[array{\* \* end array], [l], [c], [r], [empty], [{"\* | \* := \*}], [ $\mathcal{M}(*, *)$ ], [ $\tilde{\mathcal{U}}(*, *)$ ], [ $\mathcal{U}(*, *)$ ],  
[ $\mathcal{U}^M(*, *)$ ], [apply(\*, \*)], [apply<sub>1</sub>(\*, \*)], [identifier(\*)], [identifier<sub>1</sub>(\*, \*)], [array-  
plus(\*, \*)], [array-remove(\*, \*, \*)], [array-put(\*, \*, \*, \*)], [array-add(\*, \*, \*, \*, \*)],  
[bit(\*, \*)], [bit<sub>1</sub>(\*, \*)], [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(\*, \*, \*, \*)], [[\*]], [ $\mathcal{M}(*, *, *)$ ], [ $\mathcal{M}_2(*, *, *, *)$ ], [ $\mathcal{M}^*(*, *, *)$ ], [macro],  
[s<sub>0</sub>], [zip(\*, \*)], [assoc<sub>1</sub>(\*, \*, \*)], [(\*)<sup>P</sup>], [self], [[\*  $\dot{=}$  \*]], [[\*  $\dot{=}$  \*]], [[\*  $\dot{=}$  \*]],  
[[\* <sup>pyk</sup> \*]], [[\* <sup>tex</sup> \*]], [[\* <sup>name</sup> \*]], [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(\*)], [(\*)], [(\*)<sup>-</sup>], [aspect(\*, \*)],  
[aspect(\*, \*, \*)], [(\*)], [tuple<sub>1</sub>(\*)], [tuple<sub>2</sub>(\*)], [let<sub>2</sub>(\*, \*)], [let<sub>1</sub>(\*, \*)],  
[[\* <sup>claim</sup> \*]], [checker], [check(\*, \*)], [check<sub>2</sub>(\*, \*, \*)], [check<sub>3</sub>(\*, \*, \*)],  
[check<sup>\*</sup>(\*, \*)], [check<sup>\*</sup><sub>2</sub>(\*, \*, \*)], [(\*)], [(\*)<sup>-</sup>], [(\*)<sup>o</sup>], [msg], [[\* <sup>msg</sup> \*]], [<stmt>],  
[stmt], [[\* <sup>stmt</sup> \*]], [HeadNil'], [HeadPair'], [Transitivity'], [ $\perp$ ], [Contra'], [T<sub>E</sub>'],  
[L<sub>1</sub>], [x], [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], [{"\* | \* := \*}], [{"\* | \* := \*}], [∅], [Remainder],  
[(\*)<sup>v</sup>], [intro(\*, \*, \*, \*)], [intro(\*, \*, \*)], [error(\*, \*)], [error<sub>2</sub>(\*, \*)], [proof(\*, \*, \*)],  
[proof<sub>2</sub>(\*, \*)], [S(\*, \*)], [S<sup>I</sup>(\*, \*)], [S<sup>P</sup>(\*, \*)], [S<sup>P</sup><sub>1</sub>(\*, \*, \*)], [S<sup>E</sup>(\*, \*)], [S<sup>E</sup><sub>1</sub>(\*, \*, \*)],  
[S<sup>+</sup>(\*, \*)], [S<sup>+</sup><sub>1</sub>(\*, \*, \*)], [S<sup>-</sup>(\*, \*)], [S<sup>-</sup><sub>1</sub>(\*, \*, \*)], [S<sup>\*</sup>(\*, \*)], [S<sup>\*</sup><sub>1</sub>(\*, \*, \*)],  
[S<sub>2</sub><sup>\*</sup>(\*, \*, \*, \*)], [S<sup>@</sup>(\*, \*)], [S<sup>@</sup><sub>1</sub>(\*, \*, \*)], [S<sup>+</sup>(\*, \*)], [S<sup>+</sup><sub>1</sub>(\*, \*, \*, \*)], [S<sup>+</sup><sub>1</sub>(\*, \*, \*, \*)],  
[S<sup>+</sup><sub>1</sub>(\*, \*, \*, \*)], [S<sup>i.e.</sup>(\*, \*)], [S<sup>i.e.</sup><sub>1</sub>(\*, \*, \*, \*)], [S<sub>2</sub><sup>i.e.</sup>(\*, \*, \*, \*, \*)], [S<sup>v</sup>(\*, \*)],  
[S<sup>v</sup><sub>1</sub>(\*, \*, \*, \*)], [S<sup>i</sup>(\*, \*)], [S<sup>i</sup><sub>1</sub>(\*, \*, \*, \*)], [S<sub>2</sub><sup>i</sup>(\*, \*, \*, \*)], [T(\*)], [claims(\*, \*, \*)],  
[claims<sub>2</sub>(\*, \*, \*)], [<proof>], [proof], [[Lemma \* : \*]], [[Proof of \* : \*]],  
[[\* lemma \* : \*]], [[\* antilemma \* : \*]], [[\* rule \* : \*]], [[\* antirule \* : \*]],  
[verifier], [V<sub>1</sub>(\*)], [V<sub>2</sub>(\*, \*)], [V<sub>3</sub>(\*, \*, \*, \*)], [V<sub>4</sub>(\*, \*)], [V<sub>5</sub>(\*, \*, \*, \*)], [V<sub>6</sub>(\*, \*, \*, \*)],  
[V<sub>7</sub>(\*, \*, \*, \*)], [Cut(\*, \*)], [Head<sub>⊕</sub>(\*)], [Tail<sub>⊕</sub>(\*)], [rule<sub>1</sub>(\*, \*)], [rule(\*, \*)],  
[Rule tactic], [Plus(\*, \*)], [[Theory \*]], [theory<sub>2</sub>(\*, \*)], [theory<sub>3</sub>(\*, \*)],  
[theory<sub>4</sub>(\*, \*, \*)], [HeadNil''], [HeadPair''], [Transitivity''], [Contra''], [HeadNil],  
[HeadPair], [Transitivity], [Contra], [T<sub>E</sub>], [ragged right],  
[ragged right expansion], [parm(\*, \*, \*)], [parm<sup>\*</sup>(\*, \*, \*)], [inst(\*, \*)],  
[inst<sup>\*</sup>(\*, \*)], [occur(\*, \*, \*)], [occur<sup>\*</sup>(\*, \*, \*)], [unify(\* = \*, \*)], [unify<sup>\*</sup>(\* = \*, \*)],  
[unify<sub>2</sub>(\* = \*, \*)], [L<sub>a</sub>], [L<sub>b</sub>], [L<sub>c</sub>], [L<sub>d</sub>], [L<sub>e</sub>], [L<sub>f</sub>], [L<sub>g</sub>], [L<sub>h</sub>], [L<sub>i</sub>], [L<sub>j</sub>], [L<sub>k</sub>], [L<sub>l</sub>], [L<sub>m</sub>],

[L<sub>n</sub>], [L<sub>o</sub>], [L<sub>p</sub>], [L<sub>q</sub>], [L<sub>r</sub>], [L<sub>s</sub>], [L<sub>t</sub>], [L<sub>u</sub>], [L<sub>v</sub>], [L<sub>w</sub>], [L<sub>x</sub>], [L<sub>y</sub>], [L<sub>z</sub>], [L<sub>A</sub>], [L<sub>B</sub>], [L<sub>C</sub>], [L<sub>D</sub>], [L<sub>E</sub>], [L<sub>F</sub>], [L<sub>G</sub>], [L<sub>H</sub>], [L<sub>I</sub>], [L<sub>J</sub>], [L<sub>K</sub>], [L<sub>L</sub>], [L<sub>M</sub>], [L<sub>N</sub>], [L<sub>O</sub>], [L<sub>P</sub>], [L<sub>Q</sub>], [L<sub>R</sub>], [L<sub>S</sub>], [L<sub>T</sub>], [L<sub>U</sub>], [L<sub>V</sub>], [L<sub>W</sub>], [L<sub>X</sub>], [L<sub>Y</sub>], [L<sub>Z</sub>], [L<sub>?</sub>], [Reflexivity], [Reflexivity<sub>1</sub>], [Commutativity], [Commutativity<sub>1</sub>], [<tactic>], [tactic], [[\*  $\stackrel{\text{tactic}}{=} *$ ]], [ $\mathcal{P}(*, *, *)$ ], [ $\mathcal{P}^*(*, *, *)$ ], [p<sub>0</sub>], [conclude<sub>1</sub>(\*, \*)], [conclude<sub>2</sub>(\*, \*, \*)], [conclude<sub>3</sub>(\*, \*, \*, \*)], [conclude<sub>4</sub>(\*, \*)], [[\*  $\stackrel{\circ}{=} *$ ]], [RootVisible(\*)], [A], [R], [C], [T], [L], [{\*}], [\*], [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], [{\* $\equiv$ \* | \*:=\*}], [{\* $\equiv^0$ \* | \*:=\*}], [{\* $\equiv^1$ \* | \*:=\*}], [{\* $\equiv^*$ \* | \*:=\*}], [Ded(\*, \*)], [Ded<sub>0</sub>(\*, \*)], [Ded<sub>1</sub>(\*, \*, \*)], [Ded<sub>2</sub>(\*, \*, \*)], [Ded<sub>3</sub>(\*, \*, \*, \*)], [Ded<sub>4</sub>(\*, \*, \*, \*)], [Ded<sub>4</sub><sup>\*</sup>(\*, \*, \*, \*)], [Ded<sub>5</sub>(\*, \*, \*)], [Ded<sub>6</sub>(\*, \*, \*, \*)], [Ded<sub>6</sub><sup>\*</sup>(\*, \*, \*, \*)], [Ded<sub>7</sub>(\*)], [Ded<sub>8</sub>(\*, \*)], [Ded<sub>8</sub><sup>\*</sup>(\*, \*)], [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], [Prop 3.2e<sub>1</sub>], [Prop 3.2e<sub>2</sub>], [Prop 3.2e], [Prop 3.2f<sub>1</sub>], [Prop 3.2f<sub>2</sub>], [Prop 3.2f], [Prop 3.2g<sub>1</sub>], [Prop 3.2g<sub>2</sub>], [Prop 3.2g], [Prop 3.2h<sub>1</sub>], [Prop 3.2h<sub>2</sub>], [Prop 3.2h], [Block<sub>1</sub>(\*, \*, \*)], [Block<sub>2</sub>(\*)];

### Preassociative

[\*-{\*}], [\*/indexintro(\*, \*, \*, \*)], [\*/intro(\*, \*, \*)], [\*/bothintro(\*, \*, \*, \*, \*)], [\*/nameintro(\*, \*, \*, \*)], [\*'], [\*{\*}], [\*{\* $\rightarrow$ \*}], [\*{\* $\Rightarrow$ \*}], [\*0], [\*1], [0b], [\*-color(\*)], [\*-color<sup>\*</sup>(\*)], [\*<sup>H</sup>], [\*<sup>T</sup>], [\*<sup>U</sup>], [\*<sup>h</sup>], [\*<sup>t</sup>], [\*<sup>s</sup>], [\*<sup>c</sup>], [\*<sup>d</sup>], [\*<sup>a</sup>], [\*<sup>C</sup>], [\*<sup>M</sup>], [\*<sup>B</sup>], [\*<sup>F</sup>], [\*<sup>i</sup>], [\*<sup>d</sup>], [\*<sup>R</sup>], [\*<sup>0</sup>], [\*<sup>1</sup>], [\*<sup>2</sup>], [\*<sup>3</sup>], [\*<sup>4</sup>], [\*<sup>5</sup>], [\*<sup>6</sup>], [\*<sup>7</sup>], [\*<sup>8</sup>], [\*<sup>9</sup>], [\*<sup>E</sup>], [\*<sup>V</sup>], [\*<sup>C</sup>], [\*<sup>C\*</sup>], [\*hide];

### Preassociative

[“\*”], [], [(\*)<sup>t</sup>], [string(\*) + \*], [string(\*) ++ \*], [\*], [\*], [!\*], ["\*"], [##\*], [\$\*], [%\*], [&\*], [’\*], [(\*)], [l\*], [\*\*], [+\*], [, \*], [-\*], [.\*], [/ \*], [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\*], [[\*], [\ \*], [ ] \*], [^ \*], [\_ \*], [’ \*], [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

[\* · \*], [\* · 0 \*];

### Preassociative

[\* + \*], [\* +<sub>0</sub> \*], [\* +<sub>1</sub> \*], [\* - \*], [\* -<sub>0</sub> \*], [\* -<sub>1</sub> \*];

### Preassociative

[\* ∪ {\*}], [\* ∪ \*], [\* \ {\*}];

### Postassociative

[\* ∴ \*], [\* ∴ \*], [\* ∴ \*], [\* +<sub>2</sub> \*], [\* ∴ \*], [\* +<sub>2</sub> \*];

### Postassociative

[\* , \*];

**Preassociative**

$[* \stackrel{B}{\approx} *], [* \stackrel{D}{\approx} *], [* \stackrel{C}{\approx} *], [* \stackrel{P}{\approx} *], [* \approx *], [* = *], [* \rightarrow *], [* \stackrel{t}{=} *], [* \stackrel{t^*}{=} *], [* \stackrel{r}{=} *],$   
 $[* \in_t *], [* \subseteq_T *], [* \stackrel{T}{=} *], [* \stackrel{s}{=} *], [* \text{free in } *], [* \text{free in}^* *], [* \text{free for } * \text{ in } *],$   
 $[* \text{free for}^* * \text{ in } *], [* \in_c *], [* < *], [* <' *], [* \leq' *], [* = *], [* \neq *], [*^{\text{var}}],$   
 $[* \#^0 *], [* \#^1 *], [* \#! *];$

**Preassociative**

$[\neg *];$

**Preassociative**

$[* \wedge *], [* \tilde{\wedge} *], [* \tilde{\wedge} *], [* \wedge_c *];$

**Preassociative**

$[* \vee *], [* \parallel *], [* \tilde{\vee} *];$

**Preassociative**

$[\exists *: *], [\forall *: *], [\forall_{\text{obj}} *: *];$

**Postassociative**

$[* \dot{\Rightarrow} *], [* \Rightarrow *], [* \Leftrightarrow *];$

**Postassociative**

$[* : *], [* \text{spy } *], [*! *];$

**Preassociative**

$[* \left\{ \begin{array}{c} * \\ * \end{array} \right.];$

**Preassociative**

$[\lambda * . *], [\Lambda * . *], [\Lambda *], [\text{if } * \text{ then } * \text{ else } *], [\text{let } * = * \text{ in } *], [\text{let } * \dot{=} * \text{ in } *];$

**Preassociative**

$[* \# *];$

**Preassociative**

$[*^I], [*^\triangleright], [*^V], [*^+], [*^-], [*^*];$

**Preassociative**

$[* @ *], [* \triangleright *], [* \blacktriangleright *], [* \gg *], [* \triangleright *];$

**Postassociative**

$[* \vdash *], [* \Vdash *], [* \text{i.e. } *];$

**Preassociative**

$[\forall *: *], [\Pi *: *];$

**Postassociative**

$[* \oplus *];$

**Postassociative**

$[* ; *];$

**Preassociative**

$[* \text{ proves } *];$

**Preassociative**

$[* \text{ proof of } * : *], [\text{Line } * : * \gg * ; *], [\text{Last line } * \gg * \square],$   
 $[\text{Line } * : \text{Premise } \gg * ; *], [\text{Line } * : \text{Side-condition } \gg * ; *], [\text{Arbitrary } \gg * ; *],$   
 $[\text{Local } \gg * = * ; *], [\text{Begin } * ; * : \text{End} ; *], [\text{Last block line } * \gg * ; *],$   
 $[\text{Arbitrary } \gg * ; *];$

**Postassociative**

$[* | *];$

**Postassociative**

$[*, *], [*[ * ]*];$

**Preassociative**

$[*\&*], [\rightarrow];$

**Preassociative**

$[*\backslash*], [* \text{linebreak}[4] *], [*\backslash*];$  **End table**