

# Logiweb sequent calculus, Chores

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## 1 Test cases

## 2 Pyk definitions

- [rule div  $\xrightarrow{\text{pyk}}$  “rule div”]
- [S10  $\xrightarrow{\text{pyk}}$  “axiom s ten”]
- [Prop 3.2i  $\xrightarrow{\text{pyk}}$  “prop three two i”]
- [Prop 3.2j<sub>1</sub>  $\xrightarrow{\text{pyk}}$  “prop three two j one”]
- [Prop 3.2j<sub>2</sub>  $\xrightarrow{\text{pyk}}$  “prop three two j two”]
- [Prop 3.2j  $\xrightarrow{\text{pyk}}$  “prop three two j”]
- [Prop 3.2k<sub>1</sub>  $\xrightarrow{\text{pyk}}$  “prop three two k one”]
- [Prop 3.2k<sub>2</sub>  $\xrightarrow{\text{pyk}}$  “prop three two k two”]
- [Prop 3.2k  $\xrightarrow{\text{pyk}}$  “prop three two k”]
- [Prop 3.2l<sub>1</sub>  $\xrightarrow{\text{pyk}}$  “prop three two l one”]
- [Prop 3.2l<sub>2</sub>  $\xrightarrow{\text{pyk}}$  “prop three two l two”]
- [Prop 3.2l  $\xrightarrow{\text{pyk}}$  “prop three two l”]
- [Prop 3.2m<sub>1</sub>  $\xrightarrow{\text{pyk}}$  “prop three two m one”]
- [Prop 3.2m<sub>2</sub>  $\xrightarrow{\text{pyk}}$  “prop three two m two”]
- [Prop 3.2m  $\xrightarrow{\text{pyk}}$  “prop three two m”]

[Prop 3.2n<sub>1</sub>  $\xrightarrow{\text{pyk}}$  “prop three two n one”]  
 [Prop 3.2n<sub>2</sub>  $\xrightarrow{\text{pyk}}$  “prop three two n two”]  
 [Prop 3.2n  $\xrightarrow{\text{pyk}}$  “prop three two n”]  
 [Prop 3.2o  $\xrightarrow{\text{pyk}}$  “prop three two o”]  
 [Prop 3.4a<sub>1</sub>  $\xrightarrow{\text{pyk}}$  “prop three four a one”]  
 [Prop 3.4a<sub>2</sub>  $\xrightarrow{\text{pyk}}$  “prop three four a two”]  
 [Prop 3.4a  $\xrightarrow{\text{pyk}}$  “prop three four a”]  
 [Prop 3.4b  $\xrightarrow{\text{pyk}}$  “prop three four b”]  
 [Prop 3.4c<sub>1</sub>  $\xrightarrow{\text{pyk}}$  “prop three four c one”]  
 [Prop 3.4c<sub>2</sub>  $\xrightarrow{\text{pyk}}$  “prop three four c two”]  
 [Prop 3.4c  $\xrightarrow{\text{pyk}}$  “prop three four c”]  
 [Prop 3.4d<sub>1</sub>  $\xrightarrow{\text{pyk}}$  “prop three four d one”]  
 [Prop 3.4d<sub>2</sub>  $\xrightarrow{\text{pyk}}$  “prop three four d two”]  
 [Prop 3.4d  $\xrightarrow{\text{pyk}}$  “prop three four d”]  
 [\*||\*  $\xrightarrow{\text{pyk}}$  “n divides ”]  
 [pogave  $\xrightarrow{\text{pyk}}$  “pogave”]

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

[S10  $\xrightarrow{\text{tex}}$  “  
                   S10”]  
 [Prop 3.2i  $\xrightarrow{\text{tex}}$  “  
                   Prop\ 3.2i”]  
 [Prop 3.2j  $\xrightarrow{\text{tex}}$  “  
                   Prop\ 3.2j”]  
 [Prop 3.2j<sub>1</sub>  $\xrightarrow{\text{tex}}$  “  
                   Prop\ 3.2j\_1”]  
 [Prop 3.2j<sub>2</sub>  $\xrightarrow{\text{tex}}$  “  
                   Prop\ 3.2j\_2”]  
 [Prop 3.2k  $\xrightarrow{\text{tex}}$  “  
                   Prop\ 3.2k”]  
 [Prop 3.2k<sub>1</sub>  $\xrightarrow{\text{tex}}$  “  
                   Prop\ 3.2k\_1”]

[Prop 3.2k<sub>2</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.2k\_2”]

[Prop 3.2l  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.2l”]

[Prop 3.2l<sub>1</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.2l\_1”]

[Prop 3.2l<sub>2</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.2l\_2”]

[Prop 3.2m  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.2m”]

[Prop 3.2m<sub>1</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.2m\_1”]

[Prop 3.2m<sub>2</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.2m\_2”]

[Prop 3.2n  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.2n”]

[Prop 3.2n<sub>1</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.2n\_1”]

[Prop 3.2n<sub>2</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.2n\_2”]

[Prop 3.2o  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.2o”]

[Prop 3.4a<sub>1</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.4a\_1”]

[Prop 3.4a<sub>2</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.4a\_2”]

[Prop 3.4a  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.4a”]

[Prop 3.4b  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.4b”]

[Prop 3.4c<sub>1</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.4c\_1”]

[Prop 3.4c<sub>2</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.4c\_2”]

[Prop 3.4c  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.4c”]

[Prop 3.4d<sub>1</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.4d\_1”]

[Prop 3.4d<sub>2</sub>  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.4d\_2”]

[Prop 3.4d  $\xrightarrow{\text{tex}}$  “  
Prop\ 3.4d”]

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

### 3.1 Variables

## 4 Priority table

[pogave  $\xrightarrow{\text{prio}}$

### Preassociative

[pogave], [base], [bracket \* end bracket], [big bracket \* end bracket], [ \$ \* \$ ],  
[flush left [\*]], [x], [y], [z], [[\*  $\bowtie$  \*]], [[\*  $\xrightarrow{*}$  \*]], [pyk], [tex], [name], [prio], [\*], [T],  
[if(\*, \*, \*)], [[\*  $\xrightarrow{*}$  \*]], [val], [claim], [ $\perp$ ], [f(\*)], [(\*)<sup>I</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"],  
[ $\mathcal{E}$ (\*, \*, \*)], [ $\mathcal{E}_2$ (\*, \*, \*, \*)], [ $\mathcal{E}_3$ (\*, \*, \*, \*)], [ $\mathcal{E}_4$ (\*, \*, \*, \*)], [look<sub>up</sub>(\*, \*, \*)],  
[abstract(\*, \*, \*, \*)], [[\*]], [ $\mathcal{M}$ (\*, \*, \*)], [ $\mathcal{M}_2$ (\*, \*, \*, \*)], [ $\mathcal{M}^*$ (\*, \*, \*)], [macro],  
[s<sub>0</sub>], [zip(\*, \*)], [assoc<sub>1</sub>(\*, \*, \*)], [(\*)<sup>P</sup>], [self], [[\*  $\doteq$  \*]], [[\*  $\doteq$  \*]], [[\*  $\doteq$  \*]],  
[[\*  $\stackrel{\text{pyk}}{=}$  \*]], [[\*  $\stackrel{\text{tex}}{=}$  \*]], [[\*  $\stackrel{\text{name}}{=}$  \*]], [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(\*)], [[\*]'], [[\*]<sup>-</sup>], [aspect(\*, \*)],  
[aspect(\*, \*, \*)], [(\*)], [tuple<sub>1</sub>(\*)], [tuple<sub>2</sub>(\*)], [let<sub>2</sub>(\*, \*)], [let<sub>1</sub>(\*, \*)],  
[[\*  $\stackrel{\text{claim}}{=}$  \*]], [checker], [check(\*, \*)], [check<sub>2</sub>(\*, \*, \*)], [check<sub>3</sub>(\*, \*, \*)],

**check**<sup>\*</sup>(\* , \*), **check**<sub>2</sub><sup>\*</sup>(\* , \* , \*), [[\*]<sup>·</sup>], [[\*]<sup>-</sup>], [[\*]<sup>°</sup>], [msg], [[\*<sup>msg</sup> = \*]], [<stmt>],  
[stmt], [[\*<sup>stmt</sup> = \*]], [HeadNil'], [HeadPair'], [Transitivity'], [⊥], [Contra'], [T<sub>E</sub>'],  
[L<sub>1</sub>], [\*], [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], [(<sup>\*</sup>\* := \*)], [(<sup>\*</sup>\* := \*)], [∅], [Remainder],  
[(<sup>\*</sup>∨)], [intro(\* , \* , \* , \*)], [intro(\* , \* , \*)], [error(\* , \*)], [error<sub>2</sub>(\* , \*)], [proof(\* , \* , \*)],  
[proof<sub>2</sub>(\* , \*)], [S(\* , \*)], [S<sup>I</sup>(\* , \*)], [S<sup>▷</sup>(\* , \*)], [S<sub>1</sub><sup>▷</sup>(\* , \* , \*)], [S<sup>E</sup>(\* , \*)], [S<sub>1</sub><sup>E</sup>(\* , \* , \*)],  
[S<sup>+</sup>(\* , \*)], [S<sub>1</sub><sup>+</sup>(\* , \* , \*)], [S<sup>-</sup>(\* , \*)], [S<sub>1</sub><sup>-</sup>(\* , \* , \*)], [S<sup>\*</sup>(\* , \*)], [S<sub>1</sub><sup>\*</sup>(\* , \* , \*)],  
[S<sub>2</sub><sup>\*</sup>(\* , \* , \* , \*)], [S<sup>⊗</sup>(\* , \*)], [S<sub>1</sub><sup>⊗</sup>(\* , \* , \*)], [S<sup>+</sup>(\* , \*)], [S<sub>1</sub><sup>+</sup>(\* , \* , \* , \*)], [S<sup>+</sup>(\* , \*)],  
[S<sub>1</sub><sup>+</sup>(\* , \* , \* , \*)], [S<sup>i.e.</sup>(\* , \*)], [S<sub>1</sub><sup>i.e.</sup>(\* , \* , \* , \*)], [S<sub>2</sub><sup>i.e.</sup>(\* , \* , \* , \*)], [S<sup>∨</sup>(\* , \*)],  
[S<sub>1</sub><sup>∨</sup>(\* , \* , \* , \*)], [S<sup>i</sup>(\* , \*)], [S<sub>1</sub><sup>i</sup>(\* , \* , \*)], [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], [[\*<sup>tactic</sup> = \*]], [P(\* , \* , \*)],  
[P<sup>\*</sup>(\* , \* , \*)], [p<sub>0</sub>], [conclude<sub>1</sub>(\* , \*)], [conclude<sub>2</sub>(\* , \* , \*)], [conclude<sub>3</sub>(\* , \* , \* , \*)],  
[conclude<sub>4</sub>(\* , \*)], [check], [[\* = \*]], [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], [(<sup>\*</sup>\* ≡ \* | \* := \*)], [(<sup>\*</sup>\* ≡<sup>0</sup> \* | \* := \*)], [(<sup>\*</sup>\* ≡<sup>1</sup> \* | \* := \*)], [(<sup>\*</sup>\* ≡<sup>\*</sup> \* | \* := \*)],  
[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>(\* , \*)],  
[rule div], [S10], [Prop 3.2i], [Prop 3.2j<sub>1</sub>], [Prop 3.2j<sub>2</sub>], [Prop 3.2j], [Prop 3.2k<sub>1</sub>],  
[Prop 3.2k<sub>2</sub>], [Prop 3.2k], [Prop 3.2l<sub>1</sub>], [Prop 3.2l<sub>2</sub>], [Prop 3.2l], [Prop 3.2m<sub>1</sub>],  
[Prop 3.2m<sub>2</sub>], [Prop 3.2m], [Prop 3.2n<sub>1</sub>], [Prop 3.2n<sub>2</sub>], [Prop 3.2n], [Prop 3.2o],  
[Prop 3.4a<sub>1</sub>], [Prop 3.4a<sub>2</sub>], [Prop 3.4a], [Prop 3.4b], [Prop 3.4c<sub>1</sub>], [Prop 3.4c<sub>2</sub>],  
[Prop 3.4c], [Prop 3.4d<sub>1</sub>], [Prop 3.4d<sub>2</sub>], [Prop 3.4d];

## Preassociative

[\*-{\*}], [\* / indexintro(\* , \* , \* , \*)], [\* / intro(\* , \* , \*)], [\* / bothintro(\* , \* , \* , \*)],  
[\* / nameintro(\* , \* , \* , \*)], [\*'], [\* [\* ]], [\* [\* → \*]], [\* [\* ⇒ \*]], [\*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>r</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(\*) ++ \*], [  
\*, [ \* ], [! \*], [\" \*], [# \*], [\$ \*], [% \*], [& \*], [’ \*], [( \* ), ( ) \*], [ \* \* ], [ + \* ], [ - \* ], [ . \* ], [ / \* ],  
[ 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

[ \* + \* ], [ \* + 0 \* ], [ \* + 1 \* ], [ \* - \* ], [ \* - 0 \* ], [ \* - 1 \* ];

### Preassociative

[ \* ∪ { \* } ], [ \* ∪ \* ], [ \* \ { \* } ];

### Postassociative

[ \* ∴ \* ], [ \* ∴ ∴ \* ], [ \* ∴ ∴ ∴ \* ], [ \* + 2 \* \* ], [ \* ∴ ∴ \* ], [ \* + 2 \* \* ];

### Postassociative

[ \* , \* ];

### Preassociative

[ \* <sup>B</sup> ≈ \* ], [ \* <sup>D</sup> ≈ \* ], [ \* <sup>C</sup> ≈ \* ], [ \* <sup>P</sup> ≈ \* ], [ \* ≈ \* ], [ \* = \* ], [ \* ↗ \* ], [ \* <sup>t</sup> = \* ], [ \* <sup>t\*</sup> = \* ], [ \* <sup>r</sup> = \* ],  
[ \* ∈<sub>t</sub> \* ], [ \* ⊆<sub>T</sub> \* ], [ \* <sup>T</sup> = \* ], [ \* <sup>s</sup> = \* ], [ \* free in \* ], [ \* free in \* \* ], [ \* free for \* in \* ],  
[ \* free for \* \* in \* ], [ \* ∈<sub>c</sub> \* ], [ \* < \* ], [ \* < ’ \* ], [ \* ≤ ’ \* ], [ \* = \* ], [ \* ≠ \* ], [ \* <sup>var</sup> ],  
[ \* #<sup>0</sup> \* ], [ \* #<sup>1</sup> \* ], [ \* # \* \* ];

### Preassociative

[ ¬ \* ];

### Preassociative

[ \* ∧ \* ], [ \* <sup>¨</sup> \* ], [ \* <sup>˜</sup> \* ], [ \* ∧<sub>c</sub> \* ];

### Preassociative

[ \* ∨ \* ], [ \* || \* ], [ \* <sup>˘</sup> \* ];

### Preassociative

[ ∃ \* : \* ], [ ∀ \* : \* ], [ ∀<sub>obj</sub> \* : \* ];

### Postassociative

[ \* <sup>⇒</sup> \* ], [ \* ⇒ \* ], [ \* ⇔ \* ];

### Postassociative

[ \* : \* ], [ \* spy \* ], [ \* ! \* ];

### Preassociative

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

**Preassociative**

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

**Preassociative**

$[* \# *];$

**Preassociative**

$[*^1], [*^\triangleright], [*^\vee], [*^+], [*^-], [*^*];$

**Preassociative**

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

**Postassociative**

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

**Preassociative**

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

**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**

$[* \\ *], [* \text{ linebreak}[4] *], [* \\ *], [* || *];$