

SL Rules

Modus Ponens ($\rightarrow E$)

$$\begin{array}{|l} P \rightarrow Q \\ P \\ \hline Q \end{array}$$

Conjunction Introduction ($\wedge I$)

$$\begin{array}{|l} P \\ Q \\ \hline (P \wedge Q) \end{array}$$

Conjunction Elimination ($\wedge E$)

$$\begin{array}{|l} (P \wedge Q) \\ \hline P \\ Q \end{array}$$

Disjunction Introduction ($\vee I$)

$$\begin{array}{|l} (P) \\ \hline P \vee Q \end{array}$$

Disjunction Elimination ($\vee E$)

$$\begin{array}{|l} P \vee Q \\ \neg P \\ \hline Q \end{array}$$

Biconditional Elimination ($\leftrightarrow E$)

$$\begin{array}{|l} (P \leftrightarrow Q) \\ \hline P \rightarrow Q \\ Q \rightarrow P \end{array}$$

Negation Elimination ($\neg E$)

$$\begin{array}{|l} \neg \neg P \\ \hline P \end{array}$$

Hypothetical Rules

Reiteration (R)

*1

$$\begin{array}{|l} P \\ \hline P \end{array}$$

Conditional Introduction ($\rightarrow I$)

$$\begin{array}{|l} \begin{array}{|l} n. P \\ \hline \vdots \\ m. Q \end{array} \\ P \rightarrow Q \end{array}$$

Reductio ad Absurdum(RAA)

$$\begin{array}{|l} \begin{array}{|l} n. P \\ \hline \vdots \\ m. Q \\ m' \neg Q \end{array} \\ \neg P \end{array}$$

¹Not a hypothetical rule but often used together.