Conjunction Rules

$$\begin{array}{lll} n_1 & P_1 & \\ & \Downarrow & \\ n_l & P_n & \\ \triangleright & P_1 \wedge P_2 \wedge \ldots \wedge P_n & \wedge \textbf{I: } n_1, \ldots, n_l \end{array}$$

$$\begin{array}{lll} n & P_1 \wedge P_2 \wedge \ldots \wedge P_n & \\ & \vdots & \\ \triangleright & P_i & \wedge \textbf{E: } n \end{array}$$

Negation Rules

$$\begin{array}{lll} m & \boxed{\begin{array}{l} P \\ \hline \vdots \\ \bot \end{array}} & \\ \triangleright & \neg P & \neg \textbf{I: } m\text{–}n \end{array}$$

$$\begin{array}{lll} n & \neg\neg P & \\ & \vdots & \\ \triangleright & P & \neg \textbf{E: } n \end{array}$$

Bottom Rules

$$\begin{array}{lll} m & P & \\ & \vdots & \\ n & \neg P & \\ & \vdots & \\ \triangleright & \bot & \bot \textbf{I: } m, n \end{array}$$

$$\begin{array}{lll} m & \bot & \\ & \vdots & \\ \triangleright & S & \bot \textbf{E: } m \end{array}$$

Biconditional rules

$$\begin{array}{lll} m & \boxed{\begin{array}{l} P \\ \hline \vdots \\ Q \end{array}} & \\ r & \boxed{\begin{array}{l} Q \\ \hline \vdots \\ P \end{array}} & \\ \triangleright & P \leftrightarrow Q & \leftrightarrow \textbf{I: } m\text{–}n, r\text{–}s \end{array}$$

$$\begin{array}{lll} m & P \leftrightarrow Q & \\ & \vdots & \\ n & P & \\ & \vdots & \\ \triangleright & Q & \leftrightarrow \textbf{E: } m, n \end{array}$$

$$\begin{array}{lll} m & P \leftrightarrow Q & \\ & \vdots & \\ n & Q & \\ & \vdots & \\ \triangleright & P & \leftrightarrow \textbf{E: } m, n \end{array}$$

Disjunction Rules

$$\begin{array}{lll} n & P_i & \\ & \vdots & \\ \triangleright & P_1 \vee P_2 \vee \ldots \vee P_n & \vee \textbf{I: } n \end{array}$$

$$\begin{array}{lll} n & P_1 \vee P_2 \vee \ldots \vee P_n & \\ & \vdots & \\ m_1 & \boxed{\begin{array}{l} P_1 \\ \hline \vdots \\ S \end{array}} & \\ & \Downarrow & \\ m_n & \boxed{\begin{array}{l} P_n \\ \hline \vdots \\ S \end{array}} & \\ & \vdots & \\ \triangleright & S & \vee \textbf{E: } n, m_1\text{–}l_1, m_n\text{–}l_n \end{array}$$

Conditional rules

$$\begin{array}{lll} m & \boxed{\begin{array}{l} P \\ \hline \vdots \\ Q \end{array}} & \\ \triangleright & P \rightarrow Q & \rightarrow \textbf{I: } m\text{–}n \end{array}$$

$$\begin{array}{lll} m & P \rightarrow Q & \\ & \vdots & \\ n & P & \\ & \vdots & \\ \triangleright & Q & \rightarrow \textbf{E: } m\text{–}n \end{array}$$