$$\text{ASSUMPTION}\ \frac{}{\Sigma \vdash F}\ F \in \Sigma$$

$$\text{MONOTONIC}\ \frac{\Sigma \vdash F}{\Sigma' \vdash F}\ \Sigma \subseteq \Sigma'$$

$$\text{DOUBLENEG}\ \frac{\Sigma \vdash F}{\Sigma \vdash \neg\neg F}$$

$$\wedge\text{-INTRO}\ \frac{\Sigma \vdash F \quad \Sigma \vdash G}{\Sigma \vdash F \wedge G}$$

$$\wedge\text{-ELIM}\ \frac{\Sigma \vdash F \wedge G}{\Sigma \vdash F}$$

$$\wedge\text{-SYMM}\ \frac{\Sigma \vdash F \wedge G}{\Sigma \vdash G \wedge F}$$

$$\vee\text{-INTRO}\ \frac{\Sigma \vdash F}{\Sigma \vdash F \vee G}$$

$$\vee\text{-SYMM}\ \frac{\Sigma \vdash F \vee G}{\Sigma \vdash G \vee F}$$

$$\vee\text{-DEF}\ \frac{\Sigma \vdash F \vee G}{\Sigma \vdash \neg(\neg F \wedge \neg G)}$$

$$\vee\text{-DEF}\ \frac{\Sigma \vdash \neg(\neg F \wedge \neg G)}{\Sigma \vdash F \vee G}$$

$$\vee\text{-ELIM}\ \frac{\Sigma \vdash F \vee G \quad \Sigma \cup \{F\} \vdash H \quad \Sigma \cup \{G\} \vdash H}{\Sigma \vdash H}$$

$$\Rightarrow\text{-INTRO}\ \frac{\Sigma \cup \{F\} \vdash G}{\Sigma \vdash F \Rightarrow G}$$

$$\Rightarrow\text{-ELIM}\ \frac{\Sigma \vdash F \Rightarrow G \quad \Sigma \vdash F}{\Sigma \vdash G}$$

$$\Rightarrow\text{-DEF}\ \frac{\Sigma \vdash \neg F \vee G}{\Sigma \vdash F \Rightarrow G}$$

$$\Rightarrow\text{-DEF}\ \frac{\Sigma \vdash F \Rightarrow G}{\Sigma \vdash \neg F \vee G}$$

$$\Leftrightarrow\text{-DEF}\ \frac{\Sigma \vdash F \Leftrightarrow G}{\Sigma \vdash G \Rightarrow F}$$

$$\Leftrightarrow\text{-DEF}\ \frac{\Sigma \vdash F \Leftrightarrow G}{\Sigma \vdash F \Rightarrow G}$$

$$\Leftrightarrow\text{-DEF}\ \frac{\Sigma \vdash G \Rightarrow F \quad \Sigma \vdash F \Rightarrow G}{\Sigma \vdash F \Leftrightarrow G}$$

$$\text{MODUSPONENS}\ \frac{\Sigma \vdash \neg F \vee G \quad \Sigma \vdash F}{\Sigma \vdash G}$$

$$\text{TAUTOLOGY}\ \frac{}{\Sigma \vdash \neg F \vee F}$$

$$\text{CONTRADICTION}\ \frac{\Sigma \vdash F \wedge \neg F}{\Sigma \vdash G}$$

$$\text{CONTRAPOSITIVE}\ \frac{\Sigma \cup \{F\} \vdash G}{\Sigma \cup \{\neg G\} \vdash \neg F}$$

$$\text{BYCASES}\ \frac{\Sigma \cup \{F\} \vdash G \quad \Sigma \cup \{\neg F\} \vdash G}{\Sigma \vdash G}$$

$$\text{BYCONTRA}\ \frac{\Sigma \cup \{F\} \vdash G \quad \Sigma \cup \{F\} \vdash \neg G}{\Sigma \vdash \neg F}$$

$$\text{REVDOUBLENEG}\ \frac{\Sigma \vdash \neg\neg F}{\Sigma \vdash F}$$

$$\text{RESOLUTION}\ \frac{\Sigma \vdash \neg F \vee G \quad \Sigma \vdash F \vee H}{\Sigma \vdash G \vee H}$$

$$\exists\text{-INTRO}\ \frac{\Sigma \vdash F(t)}{\Sigma \vdash \exists y.F(y)}\ y \notin FV(F(z)); F(z)\{z \mapsto t\}; F(z)\{z \mapsto y\}$$

$$\exists\text{-ELIM}\ \frac{\Sigma \vdash F(x) \Rightarrow G}{\Sigma \vdash \exists y.F(y) \Rightarrow G}\ x \notin FV(\Sigma \cup \{G, F(z)\}); y \notin FV(F(z))$$

$$\forall\text{-INTRO}\ \frac{\Sigma \vdash F(x)}{\Sigma \vdash \forall y.F(y)}\ y \notin FV(F(z)); x, z \in \text{Vars}; x \notin FV(\Sigma \cup \{F(z)\})$$

$$\forall\text{-INTRO}\ \frac{\Sigma \vdash F(c)}{\Sigma \vdash \forall y.F(y)}\ y \notin FV(F(z)); c \text{ not in } \Sigma \cup \{F(z)\}$$

$$\forall\text{-ELIM}\ \frac{\Sigma \vdash \forall x.F(x)}{\Sigma \vdash F(t)}$$

$$\text{REFLEX}\ \frac{}{\Sigma \vdash t = t}$$

$$\text{EQSUB}\ \frac{\Sigma \vdash F(t) \quad \Sigma \vdash t = t'}{\Sigma \vdash F(t')}\ F(z)\{z \mapsto t\}; F(z)\{z \mapsto t'\}$$

$$\text{EQSYMM}\ \frac{\Sigma \vdash s = t}{\Sigma \vdash t = s}$$

$$\text{ASSUMPTION}\ \frac{}{C}\ C \in F$$

$$\text{PARAMODULATION}\ \frac{s = t \vee C \quad D(u)}{(C \vee D(t))\sigma}\ \sigma = \text{MGU}(s, u)$$

$$\text{REFLEXIVITY}\ \frac{t \neq u \vee C}{C\sigma}\ \sigma = \text{MGU}(t, u)$$

$$\text{RESOLUTION}\ \frac{\neg A \vee C \quad B \vee D}{(C \vee D)\sigma}\ \sigma = \text{MGU}(A, B)$$

$$\text{FACTOR}\ \frac{P_1 \vee \ldots \vee L_k \vee C}{(L_1 \vee C)\sigma}\ \sigma = \text{MGU}(L_1, \ldots, L_k)$$
