

TRUTH TABLES

P	Q	$P \& Q$
T	T	T
T	F	F
F	T	F
F	F	F

P	Q	$P \rightarrow Q$
T	T	T
T	F	F
F	T	T
F	F	T

P	Q	$P \vee Q$
T	T	T
T	F	T
F	T	T
F	F	F

P	$\neg P$
T	F
F	T

RULES OF INFERENCE: STAGE 1

1. &-Introduction (&I)

$$\frac{\begin{array}{c} P \\ Q \end{array}}{P \& Q}$$

2. &-Elimination (&E)

$$\frac{P \& Q}{P}$$

$$\frac{P \& Q}{Q}$$

3. $\vee$ -Introduction ($\vee$ I)

$$\frac{P}{P \vee Q}$$

$$\frac{Q}{P \vee Q}$$

4. Modus Ponendo Ponens (MPP)

$$\frac{\begin{array}{c} P \rightarrow Q \\ P \end{array}}{Q}$$

5. Modus Tollendo Tollens (MTT)

$$\frac{\begin{array}{c} P \rightarrow Q \\ \neg Q \end{array}}{\neg P}$$

6. Double Negation (DN)

$$\frac{P}{\neg \neg P}$$

$$\frac{\neg \neg P}{P}$$