

Rules of Inference: Stage 1

1. \wedge -Introduction (\wedge I)

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

2. \wedge -Elimination (\wedge E)

$$\frac{P \wedge Q}{P} \qquad \frac{P \wedge Q}{Q}$$

3. \vee -Introduction (\vee I)

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

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)

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