

Each line is connected by an “and”

Rules of Inference

$$\begin{array}{l} 1. \quad p \\ \quad p \rightarrow q \\ \hline \quad q \end{array}$$

Modus Ponens

a, a to b, which means c

$$\begin{array}{l} 2. \quad p \rightarrow q \\ \quad \neg q \\ \hline \quad \neg p \end{array}$$

Modus Tollens

$$\begin{array}{l} 3. \quad p \rightarrow q \\ \quad q \rightarrow r \\ \hline \quad p \rightarrow r \end{array}$$

Chain Rule

a to b, b to c, which means a to c

$$\begin{array}{l} 4. \quad p \vee q \\ \quad \neg p \\ \hline \quad q \end{array}$$

Disjunctive Syllogism

$$\begin{array}{l} 5. \quad p \vee r \\ \quad q \vee \neg r \\ \hline \quad p \vee q \end{array}$$

Resolution

$$\begin{array}{l} 6. \quad p \\ \hline \quad p \vee q \end{array}$$

Disjunctive Amplification

$$\begin{array}{l} 7. \quad p \wedge q \\ \hline \quad p \end{array}$$

Conjunctive Simplification