

Summary of Rules of Inference

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Table 2.3.1 Valid Argument Forms

<p>Modus Ponens</p> $\begin{array}{l} p \rightarrow q \\ p \\ \therefore q \end{array}$	<p>Elimination</p> $\begin{array}{ll} \textcircled{a} \begin{array}{l} p \vee q \\ \sim q \\ \therefore p \end{array} & \textcircled{b} \begin{array}{l} p \vee q \\ \sim p \\ \therefore q \end{array} \end{array}$
<p>Modus Tollens</p> $\begin{array}{l} p \rightarrow q \\ \sim q \\ \therefore \sim p \end{array}$	<p>Transitivity</p> $\begin{array}{l} p \rightarrow q \\ q \rightarrow r \\ \therefore p \rightarrow r \end{array}$
<p>Generalization</p> $\begin{array}{ll} \textcircled{a} \begin{array}{l} p \\ \therefore p \vee q \end{array} & \textcircled{b} \begin{array}{l} q \\ \therefore p \vee q \end{array} \end{array}$	<p>Proof by Cases</p> $\begin{array}{l} p \vee q \\ p \rightarrow r \\ q \rightarrow r \\ \therefore r \end{array}$
<p>Specialization</p> $\begin{array}{ll} \textcircled{a} \begin{array}{l} p \wedge q \\ \therefore p \end{array} & \textcircled{b} \begin{array}{l} p \wedge q \\ \therefore q \end{array} \end{array}$	<p>Proof by Contradiction</p> $\begin{array}{l} \sim p \rightarrow \perp \\ \therefore p \end{array}$
<p>Conjunction</p> $\begin{array}{l} p \\ q \\ \therefore p \wedge q \end{array}$	