

## Important Rules of Inference

1.  $p \rightarrow (p \vee q)$  Addition
2.  $(p \wedge q) \rightarrow p$  Simplification
3.  $\left. \begin{array}{l} p \\ q \end{array} \right\} \rightarrow p \wedge q$  Conjunction
4.  $[p \wedge (p \rightarrow q)] \rightarrow q$  Modus Ponens
5.  $[\neg q \wedge (p \rightarrow q)] \rightarrow \neg p$  Modus Tollens
6.  $[(p \rightarrow q) \wedge (q \rightarrow r)] \rightarrow (p \rightarrow r)$  Transitivity
7.  $[(p \vee q) \wedge \neg p] \rightarrow q$  Syllogism
8.  $[(p \vee q) \wedge (\neg p \vee r)] \rightarrow (q \vee r)$  Resolution