S- and I-Rules Explained

S-RULES

1) $\underline{(P \cdot Q)}$
P, Q

From a ***conjunction*** *you can infer either conjunct.* Examples:

$\underline{(S \cdot R)}$
R

$\underline{({\sim}(P \supset Q) \cdot (P \vee T))}$
${\sim}(P \supset Q)$

2) $\underline{{\sim}(P \vee Q)}$
${\sim}P, {\sim}Q$

From the ***negation of a disjunction*** *you can the* ***negation*** *of either disjunct.* Examples:

$\underline{{\sim}(S \vee R)}$
${\sim}S$

$\underline{{\sim}((P \cdot Q) \vee {\sim}(P \vee Q))}$
$(P \vee Q)$

3) $\underline{{\sim}(P \supset Q)}$
$P, {\sim}Q$

From the ***negation of a conditional*** *you can infer either the antecedent or the* ***negation*** *of the consequent.* Examples:

$\underline{{\sim}({\sim}P \supset {\sim}Q)}$
Q

$\underline{{\sim}(P \supset (Q \supset {\sim}P))}$
P

4) $\underline{(P \equiv Q)}$
$(P \supset Q), (Q \supset P)$

From a biconditional you can infer the conditionals going in both "directions."

5) $\underline{{\sim}(P \equiv Q)}$
$(P \vee Q), {\sim}(P \cdot Q)$

From the negation of a biconditional, you can infer the disjunction of the two components of the negated biconditional, and also the negation of the conjunction of the two components of the biconditional.

I-RULES

1)

$$\begin{array}{l} \sim(P \cdot Q) \\ \underline{P\qquad\quad} \\ \sim Q \end{array} \qquad\qquad\qquad \begin{array}{l} \sim(P \cdot Q) \\ \underline{Q\qquad\quad} \\ \sim P \end{array}$$

From the ***negation of a conjunction and the truth of one of its conjuncts*** *you can infer the* ***negation*** *of the other conjunct.* Examples:

$$\begin{array}{l} \sim(\sim P \cdot \sim Q) \\ \underline{\sim P\qquad\quad} \\ Q \end{array} \qquad\qquad\qquad \begin{array}{l} \sim((P \vee Q) \cdot (R \supset S)) \\ \underline{(P \vee Q)\qquad\qquad\quad} \\ \sim(R \supset S) \end{array}$$

2)

$$\begin{array}{l} (P \vee Q) \\ \underline{\sim P\qquad} \\ Q \end{array} \qquad\qquad\qquad \begin{array}{l} (P \vee Q) \\ \underline{\sim Q\qquad} \\ P \end{array}$$

From ***a disjunction and the negation of one of the disjuncts*** *you can infer the truth of the other disjunct.* Examples:

$$\begin{array}{l} (S \vee \sim Q) \\ \underline{Q\qquad\quad} \\ S \end{array} \qquad\qquad\qquad \begin{array}{l} ((P \equiv Q) \vee (R \supset S)) \\ \underline{\sim(P \equiv Q)\qquad\qquad} \\ (R \supset S) \end{array}$$

3)

$$\begin{array}{l} (P \supset Q) \\ \underline{P\qquad\quad} \\ Q \end{array} \qquad\qquad\qquad \begin{array}{l} (P \supset Q) \\ \underline{\sim Q\qquad} \\ \sim P \end{array}$$

From a ***conditional and the truth of its antecedent*** *you can infer the truth of its consequent. From a* ***conditional and the negation of its consequent*** *you can infer the* ***negation*** *of its antecedent.* Examples:

$$\begin{array}{l} (\sim R \supset \sim S) \\ \underline{\sim R\qquad\quad} \\ \sim S \end{array} \qquad\qquad\qquad \begin{array}{l} ((P \vee Q) \supset \sim S) \\ \underline{S\qquad\qquad\qquad} \\ \sim(P \vee Q) \end{array}$$