

Some Inference Rules

(n.b. this is an incomplete set)

Modus Ponens

1. $P \rightarrow Q$ $\{1\}$
2. P $\{2\}$
3. Q $\{1,2\}$

Modus Tollens

1. $P \rightarrow Q$ $\{1\}$
2. $\sim Q$ $\{2\}$
3. $\sim P$ $\{1,2\}$

Bi-conditional Substitution

1. $P \leftrightarrow Q$ $\{1\}$
2. $(P \rightarrow Q) \wedge (Q \rightarrow P)$ $\{1\}$

Double Negative Elimination

1. $\sim\sim P$ $\{1\}$
2. P $\{1\}$

\wedge -Introduction

1. P $\{1\}$
2. Q $\{2\}$
3. $P \wedge Q$ $\{1,2\}$

\wedge -Elimination

1. $P \wedge Q$ $\{1\}$
2. P $\{1\}$

Some Logic Problems

1. Phillip and Quinton watch football. If Quinton watches football then Roger watches hockey.
Therefore Roger watches hockey.

2. $P, Q, R, : (P \wedge (Q \wedge R))$

3. $P \wedge \sim Q, R \rightarrow Q, \sim R \rightarrow Z : Z$

4. $R, P \leftrightarrow Q, Q \rightarrow Z, R \rightarrow P : Z$