

| | If you <i>assume</i> this is true... | To <i>prove</i> that this is true... |
|-----------------------|---|---|
| $\forall x. A$ | Initially, <i>do nothing</i> . Once you find a z through other means, you can state it has property A . | Have the reader pick an arbitrary x . We then prove A is true for that choice of x . |
| $\exists x. A$ | Introduce a variable x into your proof that has property A . | Find an x where A is true. Then prove that A is true for that specific choice of x . |
| $A \rightarrow B$ | Initially, <i>do nothing</i> . Once you know A is true, you can conclude B is also true. | Assume A is true, then prove B is true. |
| $A \wedge B$ | Assume A . Also assume B . | Prove A . Also prove B . |
| $A \vee B$ | Consider two cases. Case 1: A is true. Case 2: B is true. | Either prove $\neg A \rightarrow B$ or prove $\neg B \rightarrow A$. <i>(Why does this work?)</i> |
| $A \leftrightarrow B$ | Assume $A \rightarrow B$ and $B \rightarrow A$. | Prove $A \rightarrow B$ and $B \rightarrow A$. |
| $\neg A$ | Simplify the negation, then consult this table on the result. | Simplify the negation, then consult this table on the result. |