

2.2. Proofs: analyzing entailment

2.2.0. Overview

Some insight into deductive logic can be gained by looking at basic principles of entailment, but more will come by looking at how these principles may be combined in proofs.

2.2.1. Proofs as trees

The simplest way of combining deductive principles takes the shape of a tree in which premises, premises for premises, and so on, grow and branch from the final conclusion.

2.2.2. Derivations

Although tree-form notation can make the structure of a proof very explicit, we will mainly use a compact notation that more closely matches the patterns that are used when deductive reasoning is put into words.

2.2.3. Rules for derivations

In the context of derivations, principles of entailment take the form of rules that direct the search for a proof.

2.2.4. An example

All derivations involving conjunction alone share many features; we will look closely at one typical example.

2.2.5. More rules

Tautology and absurdity provide the first example of derivation rules for logical forms other than conjunction.

2.2.6. Resources

In order to plot a course in constructing a proof for a given conclusion, we need to keep track of not only the premises but also the conclusions that have already been reached.