

L8.X.PL.Exercises Addenda

Adolfo Villafiorita

<2020-10-18 Sun>

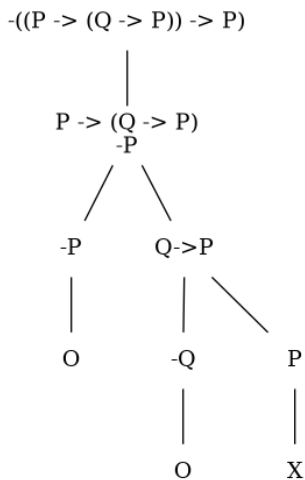
Open Tableaux and Models

Find the models of:

$$\neg((P \supset (Q \supset P)) \subset P)$$

Solving with a Tableaux

Graphical Representation



Textual Representation

1. $\neg((P \rightarrow (Q \rightarrow P)) \rightarrow P)$
- 1.1 $P \rightarrow (Q \rightarrow P)$
 - P
 - 1.1.1 -P
 - 1.1.1.1 O
 - 1.1.2 $Q \rightarrow P$
 - 1.1.2.1 $\neg Q$
 - 1.1.2.1.1 O
 - 1.1.2.2 P
 - 1.1.2.2.1 X

Open Branches: Model

Two open branches.

We traverse them from leaves to root, selecting propositional letters:

1. Leftmost branch: $\neg P$
2. Middle branch: $\neg Q, \neg P$ (more specific than 1, though, so not really needed)

Model: $I(P) = \text{false}$.

Check with Truth Tables

<http://datascientia.education/logictools/prop.html>

P Q | $\neg((P \rightarrow (Q \rightarrow P)) \rightarrow P)$

0	0		1	1	1	0
0	1		1	1	0	0
1	0		0	1	1	1
1	1		0	1	1	1

Success!!