Problem Set 2

NEW PROBLEM DUE DATE: Tues, Feb 11

Reading

Please read Smullyan, Chapter II:

- p. 25–30 for Tues, Feb 04
- p. 30–40 for Tues, Feb 11

Problems

1. Solve the exercise on p. 24, items 1, 4, 5, and 8.

2. Recall that a tableau $\mathcal{T}$ is complete if all its branches are either closed or complete, where a branch θ of a tableau $\mathcal{T}$ is complete if for every α on θ both α_1 and α_2 occur on θ and if for every β on θ at least one of β_1, β_2 occur on θ.

   Prove that the tableaux method terminates, i.e. that it takes finitely many direct extension steps until a tableau for a formula X becomes complete.

3. Show that any downward closed set S (Smullyan page 23) satisfying the condition

   for all signed formulas X, $X \in S$ *iff* $\bar{X} \notin S$

   is a truth set.

4. Extra credit. Give a recursive definition for the data type of an analytic tableau.

   Data types for concepts defined in chapter I do not have to be defined but should be declared before you use them. Where possible, use the notation of notes for lecture 3.