MATH 457: Introduction to Mathematical Logic

Homework #3

February 6, 2012

We refer to Chapter 2 of the Mathematical Logic lecture notes.

1. Translate the argument of Exercise 2.5.12 into the predicate calculus. Use the translation to test the argument for logical validity. If the argument is logically valid, demonstrate this by means of a signed tableau. If the argument is not logically valid, demonstrate this by means of an appropriate structure.
2. Similarly for the argument of Exercise 2.5.14.
3. Similarly for the arguments of Exercise 2.5.15, parts 1 and 2.
4. Translate the sentence of Exercise 2.5.13 into a sentence of the predicate calculus. Then test the sentence for satisfiability. If the sentence is satisfiable, exhibit a structure which satisfies it. If the sentence is not satisfiable, demonstrate this by means of an appropriate tableau.