1. Give a natural deduction proof of the following, based on the Group Theory axioms given in class:

\((\forall x) (i(i(x)) = x)\)

(Here \(i\) is the “inverse” function.)

2. Give a natural deduction proof of the following, based on the Number Theory axioms given in class, using the rule form of induction, rather than the axiom form:

\((\forall x) (\forall y) (\forall z) (x+(y+z)) = ((x+y) + z)\)


4. Hein page 415 Exercise 11.d, with the added restriction that the l.h.s. of the implication must be true in the model.

5. Hein page 415 Exercise 12.e, with the added restriction that the l.h.s. of the implication must be true in the model.


8. Hein page 416 Exercise 16.g.
