CISC 404/604 Homework 2.

Each exercise is worth 10 points.

1. Write a deduction proving $(((P\Rightarrow Q)\wedge(Q\Rightarrow R))\Rightarrow((\neg R)\Rightarrow((\neg P)\wedge(\neg Q))))$ using only the three rules Premiss, Conditionalization and Truth-Functional as explained in ln3.pdf. Use instances of the TF rule based on the tautologies shown on slide 31 of ln3.pdf.

2. Write a deduction proving $((\neg C)\Rightarrow(B\Rightarrow(\neg(B\Rightarrow C))))$ using only the three rules Premiss, Conditionalization and Truth-Functional as explained in ln3.pdf. Use instances of the TF rule based on the tautologies shown on slide 31 of ln3.pdf.

In the following exercises, you do not have to write the superscripts of the predicate symbols. Of course, if the same predicate symbol appears in two places with a different number of arguments, the two occurrences are considered to be two different predicate symbols. You can also change the subscripts of the two occurrences so that they are clearly two different predicate symbols.

3. Do exercise 2.4 on page 50 of the Mendelson book.

4. Do exercise 2.8, parts (a) through (j), on pages 51-52 of the Mendelson book.

5. Do exercise 2.9 on page 52 of the Mendelson book.

6. Do exercise 2.10 on page 55 of the Mendelson book.