

# Math 557: Mathematical Logic

## Homework # 3

September 1, 2000

1. Use a signed tableau to show that  $(A \Rightarrow B) \Rightarrow (A \Rightarrow C)$  is a logical consequence of  $A \Rightarrow (B \Rightarrow C)$ .
2. Use a signed tableau to show that  $A \Rightarrow B$  is logically equivalent to  $(\neg B) \Rightarrow (\neg A)$ .
3. Use an unsigned tableau to show that  $A \Rightarrow (B \Rightarrow C)$  is logically equivalent to  $(A \& B) \Rightarrow C$ .
4. Use an unsigned tableau to test  $(p \vee q) \Rightarrow (p \& q)$  for logical validity. If this formula is not logically valid, use the tableau to find all assignments which falsify it.
5. Redo the previous problem using a signed tableau.