

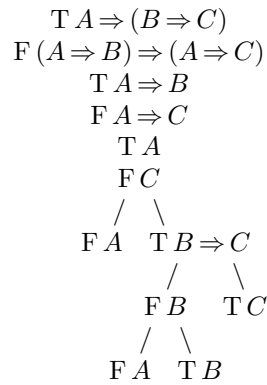
Math 557: Mathematical Logic

Homework # 3

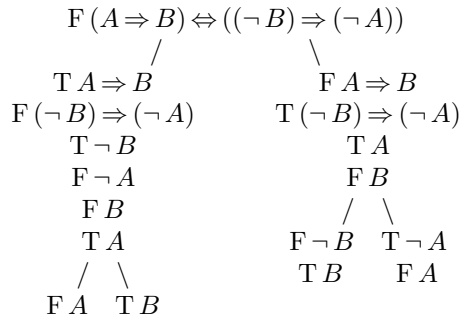
September 1, 2000

SOLUTIONS

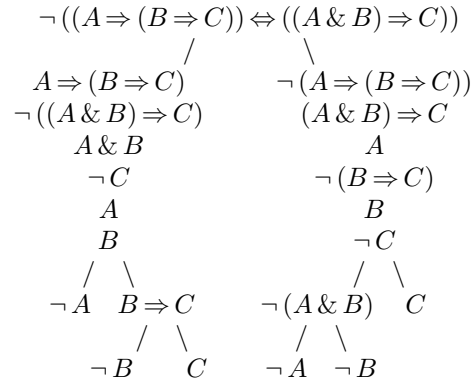
- Use a signed tableau to show that $(A \Rightarrow B) \Rightarrow (A \Rightarrow C)$ is a logical consequence of $A \Rightarrow (B \Rightarrow C)$.



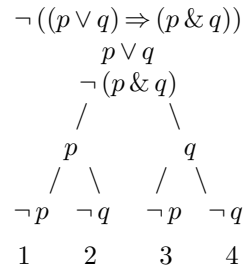
- Use a signed tableau to show that $A \Rightarrow B$ is logically equivalent to $(\neg B) \Rightarrow (\neg A)$.



3. Use an unsigned tableau to show that $A \Rightarrow (B \Rightarrow C)$ is logically equivalent to $(A \& B) \Rightarrow C$.

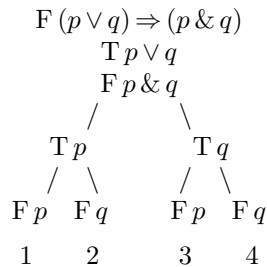


4. Use an unsigned tableau to test $(p \vee q) \Rightarrow (p \& q)$ for logical validity. If this formula is not logically valid, use the tableau to find all assignments which falsify it.



The open paths 2 and 3 provide the assignments M_2 and M_3 which falsify our formula. $M_2(p) = \text{T}$, $M_2(q) = \text{F}$, $M_3(p) = \text{F}$, $M_3(q) = \text{T}$.

5. Redo the previous problem using a signed tableau.



The open paths 2 and 3 provide the assignments M_2 and M_3 which falsify our formula. $M_2(p) = \text{T}$, $M_2(q) = \text{F}$, $M_3(p) = \text{F}$, $M_3(q) = \text{T}$.