Lecture 3: Tautologies   Math 345

Monday, September 27, 2010   Jim Fowler

Textbook

This lecture discusses section 2 of the textbook.

Homework

The homework is due Wednesday, September 29, 2010.
   From Section 2 of the textbook, do exercises 14, 15, and 17.

Modus Ponens

If P holds and $P \Rightarrow Q$ holds, then Q holds.

Examples

$P \Rightarrow (P \vee Q)$
   $(P \wedge Q) \Rightarrow P$
   $(P \wedge Q) \Rightarrow Q$
   $(P \wedge Q) \Rightarrow (P \vee Q)$
   $((P \vee Q) \wedge ((P \Rightarrow R) \wedge (Q \rightarrow R))) \Rightarrow Q.$
   $((P \Rightarrow Q) \wedge (Q \Rightarrow R)) \Rightarrow (P \Rightarrow R)$

Reinforcement

Converse
   Contrapositive

Examples

Distributive law homework

Have someone come up and write out the proof of the distributive law

$$P \wedge (Q \vee R) \equiv (P \wedge Q) \vee (P \wedge R)$$