

# CSCI 1323 (Discrete Structures), Spring 2006

## Quiz 1 Solution

1. (5 points) Construct a truth table for the wff

$$B \rightarrow (A \rightarrow B)$$

Is this formula a tautology, a contradiction, or neither one?

**Solution:**

$A$	$B$	$A \rightarrow B$	$B \rightarrow (A \rightarrow B)$
T	T	T	T
T	F	F	T
F	T	T	T
F	F	T	T

So it's a tautology.

2. (5 points) Below is a proof sequence for

$$[A \rightarrow (B \vee C)] \wedge B' \wedge A \rightarrow C$$

Write justifications for all steps.

**Solution:**

1.  $A \rightarrow (B \vee C)$  hyp
2.  $B'$  hyp
3.  $A$  hyp
4.  $B \vee C$  1, 3, mp
5.  $(B')' \vee C$  4, dn
6.  $B' \rightarrow C$  5, imp
7.  $C$  2, 6, mp