

CSE311 Quiz Section: September 27, 2012

1 Introductions

Let's all introduce ourselves!

2 Knights and Knaves

You are on an island of knights and knaves. Knights always tell the truth and knaves always lie. You encounter two people, A and B . Determine, if possible, what the two people are:

1. A says "At least one of us is a knave" and B says nothing.
2. A says "The two of us are both knights" and B says " A is a knave"
3. A says "I am a knave or B is a knight" and B says nothing.
4. Both A and B say "I am a knight"

3 Implication operator: $p \rightarrow q$

Truth Table:

p	q	$p \rightarrow q$	$\neg p \vee q$
T	T		
T	F		
F	T		
F	F		

You can write $p \rightarrow q$ as $\neg p \vee q$. Can you see why? Compare the truth tables.

4 Implications

Express each of these statements in the form "if p , then q " in English.

1. It snows whenever the wind blows from the northeast.
2. The apple trees will bloom if it stays warm for a week.
3. That the Pistons win the championship implies that they beat the Lakers.
4. It is necessary to walk 8 miles to get to the top of Long's Peak.
5. To get tenure as a professor, it is sufficient to be world-famous.
6. Your guarantee is good only if you bought your CD player less than 90 days ago.

5 De Morgan's Law

We know that we can rewrite $p \rightarrow q$ as $\neg p \vee q$. What is $\neg(p \rightarrow q)$ equivalent to? Use De Morgan's law. Intuitively, explain what is going on.