

# Hw #4 propositional logic Jeremiah Webb

1A.

The milk is not warm then the fridge must be working.

1B.

The fridge is not working and the milk is not warm.

2A.

$$P \wedge q \rightarrow r$$

2B.

$$\neg P \leftrightarrow \neg q$$

3A

$$(P \wedge q) \rightarrow r$$

P	q	r	$(P \wedge q) \rightarrow r$
F	F	F	T
F	F	T	T
F	T	F	T
F	T	T	T
T	F	F	T
T	F	T	T
T	T	F	F
T	T	T	T

3B

P	q	$(\neg P \leftrightarrow (P \vee \neg q))$
F	F	T
F	T	F
T	F	F
T	T	F

4A. Initial:  $P \rightarrow \neg q$

If you are studying, then you are not sleeping.

4B.

You are sleeping and you are studying.

4C

You are sleeping or you are not studying.

5.

If you don't get the concept or made a small mistake then you got the problem incorrect.

6.

Some of my friends are not happy or all of my friends are not wealthy.



7A

P: I am sick

q: I am tired

7B.

I am sick or I am tired  
and I am not tired then  
I am sick.

$$(P \vee q) \wedge \neg q \rightarrow P$$

7C.

P	q	$P \vee q$	$\neg q$	$(P \vee q) \wedge \neg q$	P	$(P \vee q) \wedge \neg q \rightarrow P$
F	F	T	F	F	T	T
F	T	T	T	T	T	T
T	F	T	F	F	F	T
T	T	T	T	F	F	T

7D.

This argument does make sense,  
because the two tired statements  
cancel out, the individual is always  
sick.