

CS 381 Solutions to Homework 2

pp. 12 - 15

2 (c) and (e) are the only propositions, and (c) and (e) are false.

- 14 (a) $r \wedge \neg q$
 (b) $p \wedge q \wedge r$
 (c) $r \rightarrow p$
 (d) $p \wedge \neg q \wedge r$
 (e) $(p \wedge q) \rightarrow r$
 (f) $r \leftrightarrow (p \vee q)$

16 (a) True (b) False

18 (b) True (c) False

- 22 (b) If winds come from the south, then it is a spring thaw.
 (c) If you bought the computer less than a year ago, then the warranty is good.
 (e) If you access the website, then you pay a subscription fee.

28. Below, Converse, Contrapositive and Inverse are given in that order.

(a) If I stay at home, it will snow tonight.
 If I don't stay at home, it won't snow tonight.
 If it doesn't snow tonight, I won't stay at home.

(b) If I go to the beach, it is a sunny summer day.
 If I don't go to the beach, it is not a sunny summer day.
 If it isn't a sunny summer day, I don't go to the beach.

32 (d)

p	q	$p \wedge q$	$p \vee q$	$(p \wedge q) \rightarrow (p \vee q)$
F	F	F	F	T
F	T	F	T	T
T	F	F	T	T
T	T	T	T	T

32 (e)

p	q	$\neg p$	$q \rightarrow \neg p$	$p \leftrightarrow q$	$(q \rightarrow \neg p) \leftrightarrow (p \leftrightarrow q)$
F	F	T	T	T	T
F	T	T	T	F	F
T	F	F	T	F	F
T	T	F	F	T	F