Jennifer Cafiero

CS 135 Homework Assignment #1

Section 1.1

1.
   a. True
   b. False
   c. True
   d. False
   e. NA
   f. NA

3.
   a. It is not the case that Mei has an MP3 player.
   b. There is pollution in New Jersey
   c. $2 + 1 \neq 3$
   d. It is not the case that the summer in Maine is hot and sunny.

8.
   a. I did not buy a lottery ticket this week.
   b. I bought a lottery ticket this week or I won the million dollar jackpot.
   c. If I bought a lottery ticket this week, then I won the million dollar jackpot.
   d. I bought a lottery ticket this week and won the million dollar jackpot.
   e. I bought a lottery ticket this week if and only if I won the million dollar jackpot.

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

20.
   a. Inclusive or. You either need an employee with experience in C++ or Java, but you wouldn't turn away an employee with experience in both.
   b. Exclusive or. Restaurants provide customers with a choice between soup or salad, but not both because they could lose money that way.
   c. Inclusive or. People are allowed in the country by presenting either a passport or a voter registration card, but it is also acceptable to present both documents.
   d. Inclusive or. This phrase means that faculty at a university should "publish" new theories and papers or they will lose their jobs. However, such a faculty member could also publish a paper and "perish" if he or she is a poor teacher.

28. a. Converse: If I stay at home, then it will snow tonight.
    Contrapositive: If I don't stay at home, then it will not snow tonight.

Inverse: If it doesn't snow tonight, then I won't stay at home.

31.

a.

p	$\neg p$	$p \wedge \neg p$
T	F	F
F	T	F

c.

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

e.

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

Section 1.3

10. b.

p	q	r	$p \rightarrow q$	$q \rightarrow r$	$(p \rightarrow q) \wedge (q \rightarrow r)$	$p \rightarrow r$	$[(p \rightarrow q) \wedge (q \rightarrow r)] \rightarrow (p \rightarrow r)$
T	T	T	T	T	T	T	T
T	T	F	T	F	F	F	T
T	F	T	F	T	F	T	T
T	F	F	F	T	F	F	T
F	T	T	T	T	T	T	T
F	T	F	T	F	F	T	T
F	F	T	T	T	T	T	T
F	F	F	T	T	T	T	T