

Hw
1.1-1.3

- 9) Acme Computer R: 138
P: 8
Nadir Software P: 5
R: 87
Quixote Media R: 111
P: 13

a) (F)

b)

P	q	$p \wedge q$
T	T	T

 (T)

c)

P	q	$p \vee q$
F	T	T

 (T)

d)

P	q	$p \rightarrow q$
F	T	T

 (T)

e)

P	q	$p \leftrightarrow q$
T	T	T

 (T)

- 12) b) Either the election is decided or the votes have been counted.
d) If the votes have been counted, then the election is decided.
f) If the election is not decided, then the votes have not been counted.

16) b) $p \wedge q \wedge r$ d) $p \wedge \neg q \wedge r$ f) $p \leftrightarrow r \leftrightarrow (q \vee p)$

18) a) $p: 2+2=4: T$
 $q: 1+1=2: T$

$p \leftrightarrow q: (T)$

b) $p: 1+1=2: T$
 $q: 2+3=4: F$

$p \leftrightarrow q: (F)$

20) d)

P	q	$p \rightarrow q$
F	F	T

 → (T)

b)

P	q	$p \rightarrow q$
F	F	T

 → (T)

- 30) a) If I will stay at home, then it snows tonight. (converse)
If I don't stay at home, then it does not snow tonight. (contrapositive)
b) If it is a sunny summer day, then I go to the beach. (converse)
If it is not a sunny summer day, then I will not go to the beach.
(contrapositive)

② c) If I sleep until noon, then I stay up late. (Converse)
 If I do not sleep until noon, then I will not stay up late.
 (Contrapositive)

33 a)

P	$\neg P$	$P \wedge \neg P$
T	F	F
F	T	F
T	T	F
F	F	F

b)

P	$\neg P$	$P \vee \neg P$
T	F	T
F	T	T
T	T	T
F	F	T

c)

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

d)

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

e)

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

f)

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

52 p: This statement is false

Case 1: p is true \rightarrow p is also false \rightarrow Not a proposition

Case 2: p is false \rightarrow p is also true