

Week 4.

Problem 1

Acme Comp	
ann rev	net prof
138	8
LP	True $\wedge \neg F \rightarrow \neg S$

Ned's	
ann rev	net prof
84	5
LP	
False	$\neg F \rightarrow \neg S$

Qui pole		
ann rev	net prof	P
111	13	
LP	L neg	
False	True	

a) False

b) true

c) $A \vee Q \Rightarrow \text{True}$

d) False $\rightarrow \text{True} \Rightarrow \text{True}$

e) True $\rightarrow \text{True} \dashv \text{True}$

Problem 2

a) $p \wedge \underline{\neg q} \checkmark$

b) $p \wedge q$ ✓

c) $\bar{p} \wedge \bar{q}$ ✓

d) $\bar{p} \wedge \bar{q} \times p \vee q$,

e) $p \rightarrow q$ ✓

f) $(p \vee q) \wedge (p \rightarrow \bar{q})$

g) $p \Leftrightarrow q$

Problem 3

Problem 4

p	\bar{p}	q	\bar{q}	$p \wedge \bar{p}$	$(p \vee \bar{q}) \rightarrow q$
True	False	True	False	False	True

$(P \rightarrow q) \leftrightarrow (\bar{q} \rightarrow \bar{P})$	$(P \rightarrow q) \rightarrow (q \rightarrow P)$
True	True

$P \vee \bar{P}$	$(P \vee q) \rightarrow (P \wedge q)$
True	True

Problem 5

$$1 = \text{True} \vee F$$

$$2 = \text{True} \vee F$$

Problem 6

if you is rich
you is happy
True

not rich
Goal
you isn't rich or
will not run tomorrow

question 7-a

- c) May cloesh walk & doesn't take bus
- d) Mr is not smart or isn't working hard

Problem 7

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

P	q
T	T
T	F
F	T
F	F

$\frac{P \wedge q}{T}$

$$\frac{(P \wedge q) \rightarrow P}{T}$$

T
F
T
T

b)

$$\frac{\frac{P \vee q \quad P \rightarrow (P \vee q)}{\overline{T}}}{T}$$

c) $\frac{\overline{P} \rightarrow (P \rightarrow q)}{T}$

T
F
T
T

$$\frac{P \rightarrow q}{T}$$

d) $\frac{(P \wedge q) \rightarrow (P \rightarrow q)}{T}$

$$\begin{array}{c}
 & \top \\
 & \top \\
 & \top \\
 f) \quad \underline{\overline{p \rightarrow q} \rightarrow \overline{q}} \\
 & \top \\
 & \top \\
 & \top \\
 & \top \\
 & \top
 \end{array}$$

Problem 8

Show that each conditional statement
in \mathcal{M} is a tautology with respect to