MA1971 Name: Solutions

Quiz 1 D Term, 2015

Show all work needed to reach your answers.

1. (8 points) Please identify each of the following as either a predicate (**P**), an implication (**I**), or a statement which is not an implication (**S**). For each implication, please circle the hypothesis and underline the conclusion.

   (a) I If $x+y$ is odd and $y+z$ is odd, then $x+z$ is odd. 1/

   (b) S Some functions are not continuous.

   (c) I $A \Longrightarrow B$ 1/

   (d) S The instructor picked all 16 games correctly on Thursday.

   (e) I When $x=2$, one finds $y=5$. 1/

   ↑ 4 || 1 each

High 20
Median 17
Low 12

2. (10 points) Please complete the following truth table.

A	B	C	$A \vee C$	$\neg A$	$\neg(A \Rightarrow B)$	$(B \wedge (\neg C)) \vee A$	$(B \Rightarrow (A \vee C)) \Leftrightarrow ((C \vee (\neg B)) \Rightarrow A)$
F	T	T	T	T	F	F	F
T	T	F	T	F	F	T	T

1 each ||

$A \wedge \neg B$

3. (2 points) Please write $C \vee \neg B$ as an implication using an $\Rightarrow$ symbol.

Notice that $\neg(C \vee \neg B) \equiv \neg C \wedge B \equiv B \wedge \neg C \equiv \neg(B \Rightarrow C)$

So $(C \vee \neg B) \Leftrightarrow (B \Rightarrow C) \Leftrightarrow (\neg C \Rightarrow \neg B)$

Either is acceptable.

OR

Truth Table

C	B	$C \vee \neg B$	$B \Rightarrow C$
T	T	T	T
T	F	T	T
F	T	F	F
F	F	T	T

|| Truth Table Proof is also Valid.