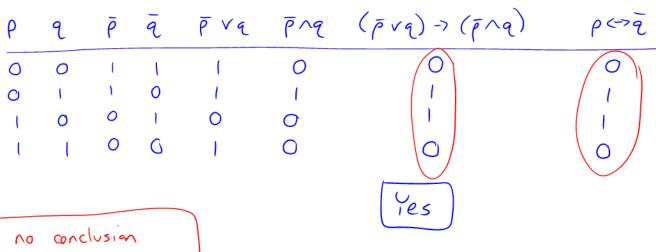
MATH 155 – Test 2: Version A

October 8, 2019	Name: _	Solution	Set
Instructor: Patricia Wrean		Total	: 30 points
1. (2 points) The following statement is true not be able to log on." Given that, answer choice.			
(a) You forgot your password. Will you b	be able to log on	? Yes /	No/ Maybe
(b) You were able to log on. Did you forg	get your passwor	ed? Yes /	No Maybe
(c) You were not able to log on. Did you	forget your pass	sword? Yes /	No /Maybe
(d) You did not forget your password. W	ill you be able t	o log on? Yes /	No /Maybe
2. (2 points) The following statement is true you will have to pay for a replacement." Gi statements to be true? Circle the correct of	ven that, is it pos	*	
(a) You lose a library book and pay for a	replacement.		Yes/ No
(b) You do not lose a library book but yo	ou pay for a repl	acement.	Yes /No
(c) You lose a library book but do not pa	ay for a replacen	nent.	Yes /No
(d) You do not lose a library book and yo	ou do not pay fo	r a replacement.	Yes No
3. (2 points) Consider the statement: "If ev dream." Which of the following statement correct answers.	v	,	0
(a) If everything is not awesome, then yo	u are not living	the dream.	
(b) If you are living the dream, then ever	ything is aweson	me.	
(c) If you are not living the dream, then	everything is no	t awesome.	
(d) Either you are living the dream and	everything is av	wesome or you a	are not living
the dream and everything is not awes	ome.		a if correct
			(Q) if correct

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- 4. (4 points) Consider the following statement: "This cup of tea contains milk or sugar." Circle all statements below that are logically equivalent. There may be more than one correct answer.
 - (a) It is not true that this cup of tea does not contain milk or does not contain sugar.
 - (b) It is not true that this cup of tea does not contain milk and does not contain sugar.
 - (c) This cup of tea contains milk or it contains sugar but not milk.
 - (d) This cup of tea contains milk or it contains both milk and sugar.
- $\overline{p} \vee \overline{q} = p \wedge q$ by DeMorgan's, so no $\overline{p} \wedge \overline{q} = p \vee q$ " so yes $p \vee (q \wedge \overline{p}) = p \vee q$ by absorption, so yes $p \vee (p \wedge q) = p$ " so no
 - 5. (4 points) Is $(\overline{p} \lor q) \to (\overline{p} \land q)$ logically equivalent to $p \leftrightarrow \overline{q}$? Use a truth table to justify your answer.



6. (2 points) Calculate all terms for the following formula and write your answer on the line.

 $a_n = 4^n - 1$ for $0 \le n \le 2$ $a_n = 4^n - 1 = 1 - 1 = 0$ $a_1 = 4^n - 1 = 4 - 1 = 3$ $a_2 = 4^n - 1 = 15$

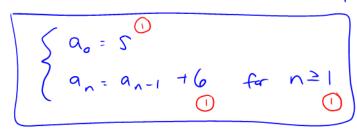




7. (3 points) Write a recursive formula for the following. Draw a box around your answer.

 $5, 11, 17, 23, \dots$

pattern: add G





8. (5 points) Consider the following.

 $\frac{7}{8} + \frac{7}{9} + \frac{7}{10} + \dots + \frac{7}{25}$

(a) Is this a sequence or a series? Circle one:

sequence series



(b) Is it finite or infinite? Circle one:

finite / infinite



(c) How many terms does it have?

k=N-m+1= 25-8+1=18





(d) Rewrite it using sigma notation. Don't bother calculating the total.



$$\stackrel{\text{as}}{\underset{j=8}{\swarrow}} \frac{7}{j}$$

For the questions on this page: if you are using the Laws of Logic, remember to use one law of logic per line, and be sure to state the name of the law you are using!

9. (4 points) Simplify the following using the laws of logic. If you're stuck, try using a truth table for part marks.

$(\overline{p} \wedge (q \vee 0)) \vee (\overline{p} \wedge (\overline{q} \vee \overline{q}))$	
(p/ 2) v (p/(q/q)	identity
(戸へ々) ∨ (戸へ克)	idenpotent
p ~ (q v =)	distributue
ē 1	complement
P	identity

-1) each mistake
-3 missing/incorrect
name of
law

10. (2 points) Simplify the following. This is the nasty question I promised you and credit will only be awarded if the laws of logic are used to simplify the expression.

$\overline{\overline{A}\ \overline{C} + \overline{C}}\ \left(\overline{A}\overline{\overline{B}} + \overline{\overline{C}} + \overline{A}\ \overline{\overline{C}}\right)$	
ĀC+C	absorption
Ē	absorption
C	complement