

DO NOT TURN THIS PAGE UNTIL YOU ARE INSTRUCTED TO DO SO

- ❖ Write your name below on the space provided.
- ❖ This test has a total of 4 pages.
- ❖ Work the problem in the space provided. If you need more space, write on the back of the test.
- ❖ To insure maximum credit, show your work. In general, full credit will not be given for unsupported answers.
- ❖ Look only at your test. Don't give me the impression that you are cheating.
- ❖ Be sure to write neatly. If I cannot read what was written, do not expect the problem to be graded. A pencil must be used on all tests. Otherwise, the test will not be graded.
- ❖ If you finish early, go over the test again.

Good luck!

Number	Maximum	Score
1	8	
2	8	
3	10	
4	5	
5	20	
6	15	
7	10	
8	16	
9	2	
10	6	
Total	100	

Name \_\_\_\_\_

CIRCLE FINAL  
ANSWERS



a) I am going to make him an offer he can't refuse.      b) You either die a hero or live long enough to see yourself become the villain

c) If you let my daughter go now, that'll be the end of it.      d) All the world's a stage

6) (5 points each) For the statement "If you walk without rhythm, you won't attract the worm." find the converse, inverse, and contrapositive:

*Converse:*

*Inverse:*



Fun fact: Sandworms run the oldest known book club.

*Contrapositive:*

7) (5 points each) Use an Euler diagram to determine whether the argument is valid or invalid:

- a) All dogs are animals.  
All malamutes are dogs.  
All malamutes are animals.
- b) All four-legged creatures are dogs.  
Garfield has four legs.  
Garfield is a dog.

8) (16 points) Fill in the truth table chart for the statement:  $(p \vee q) \wedge (p \vee \sim r)$ . Be sure to label the column headings.

$p$	$q$	$r$				
T	T	T				
T	T	F				
T	F	T				
T	F	F				
F	T	T				
F	T	F				
F	F	T				
F	F	F				

9) (2 points) Is the statement  $(p \vee q) \wedge (p \vee \sim r)$  in number 8 a tautology? Why or why not?

10) (5 points) For the following argument...

a) Rewrite it using  $p, q, r, \wedge, \vee, \sim,$  and  $\rightarrow$  as needed. Be sure to declare what the letters  $p, q,$  and  $r$  represent.

b) Write the complete statement that would be the conjunction of the premises implying the conclusion. **Do not construct the truth table.**

If you have allergies, then you have a fish.  
If you do not have a fish, then you have a cat.  
 If you have a cat, then you do not have allergies.

a)

b)