

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 6 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	10	
2	10	
3	10	
4	12	
5	20	
6	9	
7	14	
8	15	
9	(EC 4)	
Total	100	

Name \_\_\_\_\_

CIRCLE FINAL  
ANSWERS



4) (6 points each) Let  $p$  and  $r$  be true statements and let  $q$  be a false statement. Show the work to determine the truth value of the given compound statement:

a)  $\sim(p \wedge q)$

b)  $(p \vee q) \leftrightarrow r$

5) (5 points each) Negate the following statements:

a) I fell into a burning ring of fire.

b) If you like it, then you should put a ring on it.

c) The sun is in my heart and I'm ready for love.

d) Some of them want to use you.

6) (3 points each) For the statement "If you are here, then you are family.", find the converse, inverse, and contrapositive:

*Converse:*

*Inverse:*

*Contrapositive:*

- 7) (7 points each) Use an Euler diagram to determine whether the argument is valid or invalid:
- a) All male mathematicians have beards.      b) All cats eat mice.  
Erica does not have a beard.                      Mr. Wiggles is a cat.  
Erica is not a male mathematician.                      Mr. Wiggles eats mice.

- 8) (15 points) Use a truth table to determine whether the argument is valid:  $\frac{p \rightarrow q}{q \rightarrow r}$  . Be sure  $\sim r \rightarrow \sim p$  to label the columns!

<i>p</i>	<i>q</i>	<i>r</i>							
<i>T</i>	T	T							
<i>T</i>	T	F							
<i>T</i>	F	T							
<i>T</i>	F	F							
<i>F</i>	T	T							
<i>F</i>	T	F							
<i>F</i>	F	T							
<i>F</i>	F	F							

- 9) (One point per song) Extra credit: Give either the name of the song or the artist in 5.