

Math 116: Written Homework Set 10

This assignment is due on Thursday, November 16th in class. Show all work where possible! Answers magically appearing will receive no credit.

1. Write the negation of the following statements (note that De Morgan's laws may be helpful).
 - a. I like school and I like this class.
 - b. I will pass this class or I will quit school.
 - c. I do not like math and I do not like history.
 - d. If I quit talking, then he'll leave the room.

2. Use a truth table to determine the validity of the following argument.

$$p \rightarrow q$$

$$\sim q$$

$$\sim p$$

3. Symbolize the following arguments and use a truth table to determine its validity.

- a. If Jane is short, then she eats bacon with a spoon.
Jane eats bacon with a spoon.

Therefore, Jane is short.

- b. Mary is either sweet or clever.
Mary is not clever.

Therefore, Mary is sweet.

- c. If I don't get up, I'll never get going.
I get up.

Therefore, I get going.

4. Negate the following sentences.
 - a. All fish live in trees.
 - b. Some fish do not live in trees.
 - c. No trees grow under water.
 - d. Some presidents are well-liked.

Selected Answers

1. a. I do not like school or I do not like this class.
c. I like math or I like history.

2. Truth table will show this is a valid argument.

- 3a. $s \rightarrow b$
 b

 s Truth table will show this argument is not valid.

4. a. Some fish do not live in trees.
d. No presidents are well-liked.