

Homework #5  
Due Tuesday, September 30  
No late homework accepted! No excuses!

1. Give the negation of each statement. Do not use “it is not true that...” or “Not all ...”
  - a) All men are mortal.
  
  - b) Some circles are round.
  
  - c) Nothing is certain but death and taxes.
  
2. The chairperson of the city council told the members that if they declared a holiday, at least one of the ten banks in the city would remain open. The chairperson was mistaken. Which of the following statements (if any) is consistent with this situation?
  - a) The council did not declare a holiday and all the banks remained open.
  - b) The council did not declare a holiday and all the banks remained closed.
  - c) The council declared a holiday and none of the banks remained closed.
  - d) The council declared a holiday and none of the banks remained open.
  
3. Construct a truth table for each statement.
  - a)  $(p \vee q) \vee (r \wedge \sim q)$

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b)  $[(p \rightarrow q) \rightarrow p] \rightarrow q$

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4. Find the truth value of each statement.

a) If  $2 + 2 = 22$ , then  $22 = 4$ .

b) If  $2 + 2 = 4$ , then  $8 = 5$ .

5. Write each statement in the if/then form.

a) Alice fails the test or she gets the job.

b) All dogs are mammals.

c) Joe had an accident or he would be able to get car insurance.

6. Use one of DeMorgan's laws to write each statement in its equivalent form.

a) It is false that it is not warm and it is not sunny.

b) Today is not Tuesday and tomorrow will not be cold.

