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| Name: | Section: |

First Midterm Exam MATH 131

Question 1

**Choose the correct answer**:

a) is equivalent to:

 i) ii)P iii)Q iv)None.

b)The contrapositive of is:

 i)ii) iii) .iv)None

c) is equivalent to:

 i)

 ii)

 iii) iv)None

d) is :

 i)a tautology ii)a contradiction iii)None.

Question 2

a)Write the following in a symbolic form:

For every integer x there exist an integer y such that or

b)Write the converse ,the inverse and the contrapositive of:

 If

 Question 3

a)By using contradiction show that:

 If

b)Write a proof by contraposition to show that for any real number x:

**Question 4**

a) Which of the following are true in the universe of all real numbers?

 i)

 ii)(

b) If is an open sentence with variable x,

 prove that:

 مع تمنياتنا بالتوفيق