**Lecture 7: Quiz**

**Name:**

**Problem 1**

Which two set operations are the addition and multiplication in a Boolean ring?

a) intersection and union  
b) intersection and symmetric difference  
c) intersection and complement  
d) union and complement

**Problem 2**

Which mathematician established first that there are different types of infinities. Infinities one can count and infinities which one can not count.

a) Georg Cantor  
b) Kurt Goedel  
c) Euclid  
d) Alfred Tarski

**Problem 3**

Which of the following mathematicians is Kurt Goedel?

**Problem 4**

The Continuum Hypothesis (CH) tells that

a) There exists a cardinality beyond the cardinality of the reals and the cardinality of the integers.

b) There exists a cardinality different from the cardinality of the integers.

c) There exists an infinite set.

d) There does not exist any cardinality smaller than the cardinality of the reals and larger than the cardinality of the integers.

**Problem 5**

Which properties hold in a Boolean ring?

a) \(A \cdot A = A\)  
b) \(A + A = A\)  
c) \(A \cdot A = \emptyset\)  
d) \(A + A = \emptyset\).

**Problem 6**

Which of the following sets have the same cardinality as the interval?

a) The two dimensional plane  
b) The three dimensional space  
c) The rational numbers.  
d) The complex numbers.

**Problem 7**

Which of the following paradoxa have been found by Russell:

a) The liars paradox  
b) The set of all sets which do not contain themselves as a set.  
c) The paradox that one can not make a surprise exam.  
d) The barber paradox.