Lecture 7: Quiz

Name:

Problem 1

Which of the following sets have the same cardinality as the interval $[0, 1]$?
a) The two dimensional plane
b) The three dimensional space
c) The rational numbers.
d) The complex numbers.
e) The algebraic nyumbers.

Problem 2

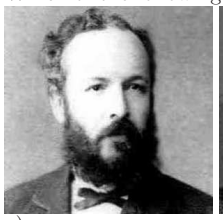
Which two set operations are the addition and multiplication in a Boolean ring?
a) intersection and union
b) intersection and symmetric difference
c) intersection and complement
d) union and complement

Problem 3

Which mathematician established first that there are different types of infinities. Infinities one can count and infinities which one can not count.
a) Alan Turing
b) Georg Cantor
c) Alfred Tarski
d) Kurt Goedel

Problem 4

Which of the following mathematicians is Kurt Goedel?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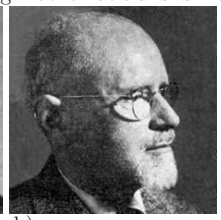
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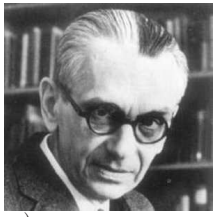
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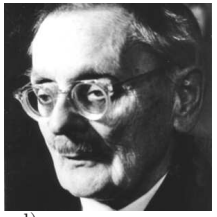
d)

Problem 5

The Continuum Hypothesis (CH) tells that
a) There exists a cardinality larger than 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 6

Which properties hold in a Boolean ring with addition + and multiplication $\cdot$? Remember that for sets the addition is the symmetric difference and the multiplication is the intersection.
a) $A \cdot A = \emptyset$
b) $A \cdot A = A$
c) $A + A = A$
d) $A + A = A \cdot A$
e) $A + A = \emptyset$.

Problem 7

Which of the following paradoxa have been found by Russell:
a) The Berry paradox about the smallest integer which can be described in 10 sentences.
a) The liars paradox: I'm a liar.
c) The set of all sets which do not contain themselves as a set.
d) There is a surprise examination this year.
e) The barber's paradox: the barber shaves everybody who does not shave himself.