Lecture 13: Quiz

Name: 

Problem 1

The computer on the ground floor of the Harvard science center is called:

a) ENIAC  
b) Bomba  
c) Mark I  
d) Colossus

Problem 2

The ancient Greek analog which is believed to have been designed by Archimedes is called:

a) Antikythera  
b) Astrolabe  
c) Abakus  
d) Schickard machine

Problem 3

What is experimental mathematics?

a) Publish theorems which are likely to be true.  
b) Assist as a mathematician in an experimental lab.  
c) Search for relations and theorems using computers and calculations.  
d) Perform physical experiments in a lab.

Problem 4

Which first significant digit appears more often in Benford’s law?

a) the digit 1 appears most often.  
b) the digit 5 appears most often.  
c) the digit 9 appears most often.  
d) all digits appear with the same frequency

Problem 5

One of the following problems is NP hard. Which one?

a) Deciding whether \( n \) is prime  
b) Deciding whether two graphs are isomorphic.  
c) The Turing halting problem  
d) The Goldbach problem

Problem 6

When was Pascal’s calculator built?

a) 1542  
b) 1642  
c) 1742  
d) 1842

Problem 7

Which of the following is impossible?

a) Enumerate all Turing machines.  
b) Building a Turing machine which decides whether a machine halts or not.  
c) Emulating a Turing machine  
d) Using a Turing machine to factor integers.

Problem 8

What is Moore’s law?

a) Everything which can go wrong, will go wrong.  
b) The number of transistors on a microchip double every 2 years.  
c) It is necessary to replace a computer every 2 years.  
d) The singularity is near.

Problem 9

We have looked at the Goldbach problem. What was this problem?

a) There infinitely many prime twins.  
b) Every even integer is a sum of two primes.  
c) The golden ratio can be approximated by rational numbers.  
d) The problem of finding the statistics of the first significant digit of the primes.

Problem 10

When is the project due?

a) May 16  
b) May 17  
c) May 18  
d) May 19