Lecture 4: Quiz

Name:

Problem 1

When was the largest known prime found?

a) (300 B) Euclid   b) 1980
c) 2013   d) There is no largest known prime

Problem 2

One knows that the minimum of the gaps $p_{n+1} - p_n$ of prime numbers

a) grows like $\log(n)$ b) is unbounded.
c) is bounded   d) goes to zero.

Problem 3

Which movie features the Goldbach conjecture

a) A beautiful mind.   b) Goodwill hunting.
c) Calculus of love.   d) Enigma

Problem 4

When plotting the number of times an even number n can be written as a sum of two primes we get the

a) Goldbach spiral   b) Sieve of Erastostenes
c) Goldbach comet   d) Euler spiral

Problem 5

What is a twin prime?
a) A pair of integers n, m which are both divisible by 1 only.
b) A pair of integers n, m which both are prime.
c) A pair of integers $n, n + 1$ which both are prime.
d) A pair of integers $n, n + 2$ which both are prime.

Problem 6

Which theorem assures that $2^{11} - 2$ is divisible by 11?

a) Wilson's theorem   b) Fermat's little theorem   c) Chinese remainder   d) Unique factorization

Problem 7

Which of the following statements is called **Wilson's theorem**:

a) $(n-1)! + 1$ is divisible by n b) $(n! - 1)$ is divisible by n.
c) $(n! + 1)$ is divisible by n.   d) $(n+1)! - 1$ is divisible by n.

Problem 8

Two of the following numbers are **perfect numbers**. Which one?

a) 28   b) 6
c) 10   d) 12

Problem 9

Which of the following theorems assures that a number is prime
a) Fermat's little theorem.
b) The Chinese remainder theorem.
b) Euclid's theorem on the infinity of primes.
c) Wilson's theorem
e) The structure theorem of perfect numbers.

Problem 10

Who proved first that there are infinitely many primes?

a) Gauss   b) Euclid   c) Eudoxos   d) Euler   e) Goldbach