Lecture 6: Quiz

Name:

Problem 1

Archimedes was proud of his achievement of computing the volume of a sphere. How did he do it?
a) He compute the integral $\int_0^1 1 - x^2 \, dx$
b) Placed a golden ball in bath and noticed how much water swapped over. Heureka!
c) Compute the difference of the volumes of a cylinder and a cone.
d) He exhausted the sphere with a sequence of polyhedra and compute their volumes.

Problem 2

The numbers $1, 3, 6, 10, 15, 21, 28, ..$ are called
a) Tetrahedral numbers.
b) Geometric numbers
c) Harmonic numbers.
d) Triangular numbers.

Problem 3

Which of the following mathematicians was the first to ponder calculus questions? Especially about the concept of limit?
a) Archimedes
b) Plato
c) Newton
d) Gregory
e) Pascal
f) Zeno
g) Kepler
h) Fermat

Problem 4

Gauss had to compute is the sum of the first 100 numbers. What is the sum of the first 1000 natural numbers 1-1000?
a) 50500
b) 5050
c) 500500
d) 50501

Problem 5

We have seen that calculus helps to find the next digit in a sequence. What is the next element in the sequence $1, 6, 21, 46, 81, 126, 181, ...$?

a) 246
b) 226
c) 221
d) 300

Problem 6

We demonstrated Pecha-Kucha. How long was each slide shown?

q) 20 seconds
b) 6 minutes 40 seconds
c) The entire lecture
d) 20 Minutes

Problem 7

The two statements make up the fundamental theorem of calculus?

a) $d/dx \int_0^x f(t)\, dt = f(x) - f(0)$
b) $\int_0^x f'(t)\, dt = f(x)$
c) $\int_0^x f'(t)\, dt = f(x) - f(0)$
d) $d/dx \int_0^x f(t)\, dt = f(x)$

Problem 8

What can you say about the series $\sum_{k=1}^{\infty} 1/k$?

a) It is the geometric series and converges.
b) It is the Riemann hypothesis and unsolved.
b) It is the harmonic series and diverges.
d) The sum is equal to $\pi^2/6$.

Problem 9

Who was the guy who presented on Youtube Calculus in 20 minutes?

a) Oliver in his Pecha Kucha
b) Tom Lehrer
c) Ed Burger
d) Will Ferrell in Saturday night live

Problem 10

Newton (1642-1726) and Leibniz (1646-1716) battled for years over the controversy whether Leibniz discovered calculus independently. Newtons called his work on calculus
a) The method of fluxions and fluents
b) The method of differentials and integrals.
c) The Newton method
d) The Leibniz rule.