

MULTIVARIABLE CALCULUS

MATH S-21A

Seminar Week 2

200.1. In this seminar part, we review a few parts of the week. As you have participated in class, this assignment should not take a lot of time.

ASSESSMENT AND REVIEW

This Assessment is also due on , 7/7/2020, together with the other 4 assignments.

Problem 200.1: a) What was the most interesting thing you have seen this week?
b) What was the most difficult thing you have seen this week?

Problem 200.2: What is the Zeno problem and how was it solved?

Problem 200.3: Make a list of all definitions and notations you have seen this week.

Problem 200.4: Make a list of all theorems and formulas you have seen this week.

Problem 200.5: When looking at data sets, one can see differences as derivatives. Lets like the following natural data set generated in Mathematica:

$$f = \{2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, \dots\}$$

The difference between successive primes is called the “velocity” of the primes.

$$f' = \{1, 2, 2, 4, 2, 4, 2, 4, 6, 2, 6, 4, 2, 4, \dots\}$$

The second derivative plays the role of the “acceleration” or the primes.

$$f'' = \{1, 0, 2, -2, 2, -2, 2, 2, -4, 4, -2, -2, 2, \dots\}$$

On the website, you have code to compute the probability density functions of these data. Produce them for at least a million primes and either attach them to the paper or sketch them.