

Week 1

1.1 Introduction to the Program (May / Rudenko)

- 6/21:
- Mainly given by Peter May.
 - A far broader range of mathematics than any other REU.
 - Things you have to do:
 1. Soak up as much mathematics as you can.
 2. Work with a mentor to write a paper.
 - You can work with people to write a joint paper?
 - This is fairly unique to this REU.
 3. Meet with your mentors at least twice a week.
 - Don't be shy and unwilling to ask questions.
 - Daniil Rudenko is in charge of the apprentice program.
 - Apprentice program:
 - An opportunity particularly early in one's mathematical career to explore mathematics.
 - Asynchronous video lectures.
 - Feel free to share with friends.
 - Problem solving.
 - Problems that are not merely exercises but more difficult, interesting processes.
 - Spend a couple hours a day thinking about these problems.
 - Emphasis on relations between different subjects.
 - They will be organizing social activities.
 - Social meet and greet at 6:00 PM tonight.
 - Breakout rooms:
 1. Apprentice Program.
 2. Probability.
 3. Analysis and Dynamical Systems.
 4. Algebraic Topics.
 5. Main room: Algebraic Topology.
 - More on the apprentice program:

- Daniil wants us to see much more than classical analysis/calculus. He doesn't see dividing lines between fields of mathematics.
- Bijections, binomial coefficients, Catalan numbers, etc. to start.
- Group of permutations, group of isometries of the plane, what a group is, etc.
- We can solve problems individually or in groups.
 - Some problems will say not to collaborate.
- Don't try to solve every problem. Don't try to solve everything fast; it's fine if you fail, if you just think about something for a couple hours that's interesting and don't get everywhere.
- On campus classes option for participants in Chicago.
- This week 10-11 AM Wed/Fri?
- Office hours 10-11 AM on Thursday.
- He will send an email with more information.
- Be consistent in whether you want to be on or off campus.
- You may attend whatever you want, but be careful: The apprentice program is your priority, so don't spend too much time on the other stuff.
 - Follow Piazza groups to get links.
- L^AT_EX one solution each week.