Syllabus

MAST

Spring 2020

1 Overview

MAST is for AIME qualifiers who are hoping to improve their AIME score (typically to at least 8 or 9). Even though there is somewhat of an AIME focus, there are many tangential units which aren't really related to the AIME but may still be worth looking at. You decide which of these units are worth looking at and which aren't.

MAST is a primarily self-guided program. I give you a list of units you can do, and you choose the ones that interest you the most. You may work at whatever pace you want (though the suggested pace is at least 1 unit per week.)

1.1 Contact Information

I can be emailed at proofprogram@gmail.com. Direct any inquiries about MAST there. If I haven't responded to something in 24 hours, **please remind me.**

1.2 Prerequisites

You should have qualified for the AIME this year and should be comfortable qualifying for it next year. Exceptions will be made at my discretion for exceptional cases.

1.3 Tuition

Due to the special circumstances, this year's MAST is free. I also need data on the problems, so the problem ratings, your feedback, etc, will be considered as the tuition. (See "Solving a Problem Set" for more details.)

2 Meetings

I do not have any meetings scheduled for MAST and don't intend to have regularly scheduled video meetings. If you would like a meeting for any reason, please email me about it so we can find a good time.

If there is interest, I may consider having group problem-solving sessions. These will not be regularly scheduled and will happen based on the people's will/my availability.

3 To-do List

Here's a list of what to do.

3.1 Diagnostic

This is for before and during the application process.

- **Read "Math Philosophy" on the MAST website.**

This is useful for a number of reasons. It lets you know what you might be getting yourself into. It gives you an idea of my writing style (if you dislike my style, that nearly guarantees the class will not be very useful for you). It also gives general guidelines on how to study (I recommend doing stuff other than MAST as well, if possible).

- **Read the "Application" section on the home page of MAST.**
- **Fill out the Diagnostic.**

It's okay if you don't remember some scores - just fill it out to the best of your ability. This will not hurt you.

- **Do not attach anything for the Diagnostic Quiz.** I will probably add a Diagnostic Quiz in the next round of applications. Current students may, but will not be required to, do the problems in the quiz next year.

3.2 Picking Units

This is primarily for before you start your first unit, but still applies for the whole year.

- **Visit the Unit Catalogue.**
- **Read recommended units.**

You can completely ignore my suggestions, but it's probably a good idea to read my suggestions nonetheless.

- **Fill out the Unit Request Form.**

Two units will be unlocked for you at a time. You can request units sequentially or make one big request that you think will cover you for a while. You do not have to pick conservatively - it's okay if by the end of this season, there are still units you haven't done.

The order you request your units in matters. This is the order I'll unlock them for you in. If you would like to make a change to this order, let me know either via the Unit Request Form or by email.

- **For any changes you want to make, fill out the Unit Request Form again.**

3.3   Solving a Problem Set

These are some guidelines for when you are *doing* a unit.

 • **If necessary/helpful, read the material and the walkthroughs.**

 • **Alternatively, start with the problems, reading the material only when necessary.**

 • **After each problem you solve, rate it from 0 to 3 for two criteria: Difficulty and Usefulness.**

Difficulty is how likely you think you can solve something similar in competition relative to other problems. Usefulness is how much you think it will help you solve similar problems in competition. (I like to think of usefulness as the difference between the likelihood you could solve a similar problem in competition before and after you did the problem.)

Alternatively, you may assign a single rating from 0 to 3 based on a combination of Difficulty and Usefulness. This is heuristically based on the answer to the following question: "How much did I need to do this problem, and how much did I get out of doing it?"

I would appreciate, though do not require, you to keep the rating method consistent in each problem set. You do not need to keep the rating method consistent between different problem sets. (This flexibility is to ensure I get enough good data by not demanding perfect data.) Please make sure to rate the problem immediately after you solve it.

3.4   Submitting a Problem Set

This is the procedure for after you have *finished* the unit.

 • **Email me a PDF of your submission.**

I suggest using LaTeX. Overleaf is a good place to start.

 • **Include any questions/comments/feedback in your email.**

This is really valuable to me. Don't be shy to say something! Problem suggestions for a unit are also really cool and make me very happy.