How to be a Proactive Math Learner

Math Learning Center

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Learning Outcomes

Students will be able to…

- Estimate their college workload
- Develop strategies for active listening
- Take notes in class and while doing homework
- Develop skills for studying
- Assess if they have learned topics discussed in class
- Develop strategies for time management

Estimating Workload

Estimating Workload

The number of credits of a course corresponds to the *minimum* amount of work you should expect for the course.

The expected workload should also be listed in your syllabus for the course.

In general, for every credit you should expect at least 2 hours outside of class. This includes reading, homework, studying, rewriting notes, etc.

Minimum Workload – Outside of class

Class	Credits	Minimum Workload per week
Math 96	3	6 hours per week
Math 112	3	6 hours per week
Math 113	3	6 hours per week
Math 114	5	10 hours per week
Math 171	5	10 hours per week
Math 211	5	10 hours per week
Math 213	3	6 hours per week
Math 221	5	10 hours per week
Math 222	4	8 hours per week
Math 234	4	8 hours per week

More on Workload

Be honest with yourself about the amount of time you are working on your classes.

If it is a class, you don't like or struggle with, you may need to spend more time on it not less.

These numbers are estimates, your workload will vary at different times of the semester. Try to stay as consistent as possible but know that you may have weeks that you have extra work.

Active Listening

Listening with all of your senses

Active Listening

Learn your instructor’s lecture style.

Be a participant in class.

If you are confused, someone else probably is also. Be brave and ask a question.

Try to sit next to someone who is listening as intently as you. If you miss something, chances are they might have picked it up. Compare notes after class. (Hint: this is also a great way to form a study group.)

Important topics…

Instructor Actions:

Writing on the board

Summarizing

Pausing

Repeating Statements

Enumerating

Working several examples of the same type

Explaining bold-print words

Instructor says:

“This is a tricky problem”

“This is the most difficult step”

“These types of problems will be on the test”

“This will be on the test”

“This is where many students make mistakes”

Note Taking

Taking Notes

Develop a method that works for you – this may be different from other classes>

Use Active Writing techniques:

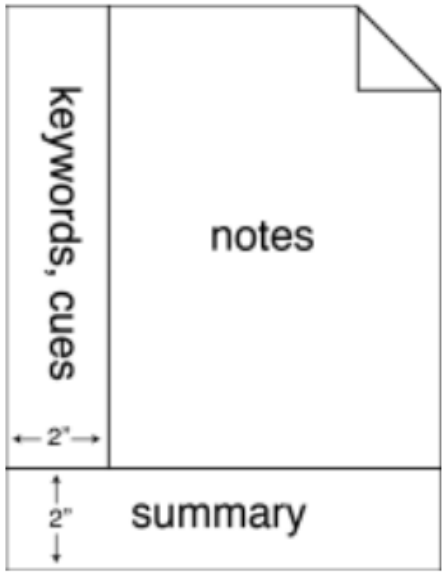
- Handwrite your notes (paper or tablet).
- Think about what you are writing.
- Star or write questions down as you are going.

Color code your notes.

Write down comments the instructor says, not just what is written on the board.

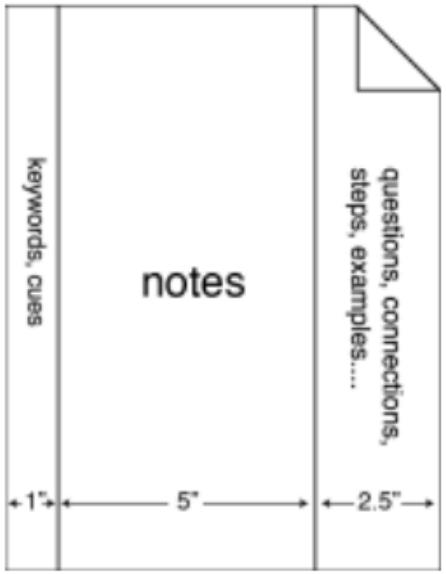
Notetaking Methods

Cornell Method



Malekpour Method

Three-columns Method



Revise after class

1. Rewrite the material you cannot read or will not be able to understand a few weeks later.
2. Fill in the gaps
3. Add additional key words and ideas
4. Create a problem log of the problems worked in class
5. Reflect and synthesis

Glossary

Make your own math glossary

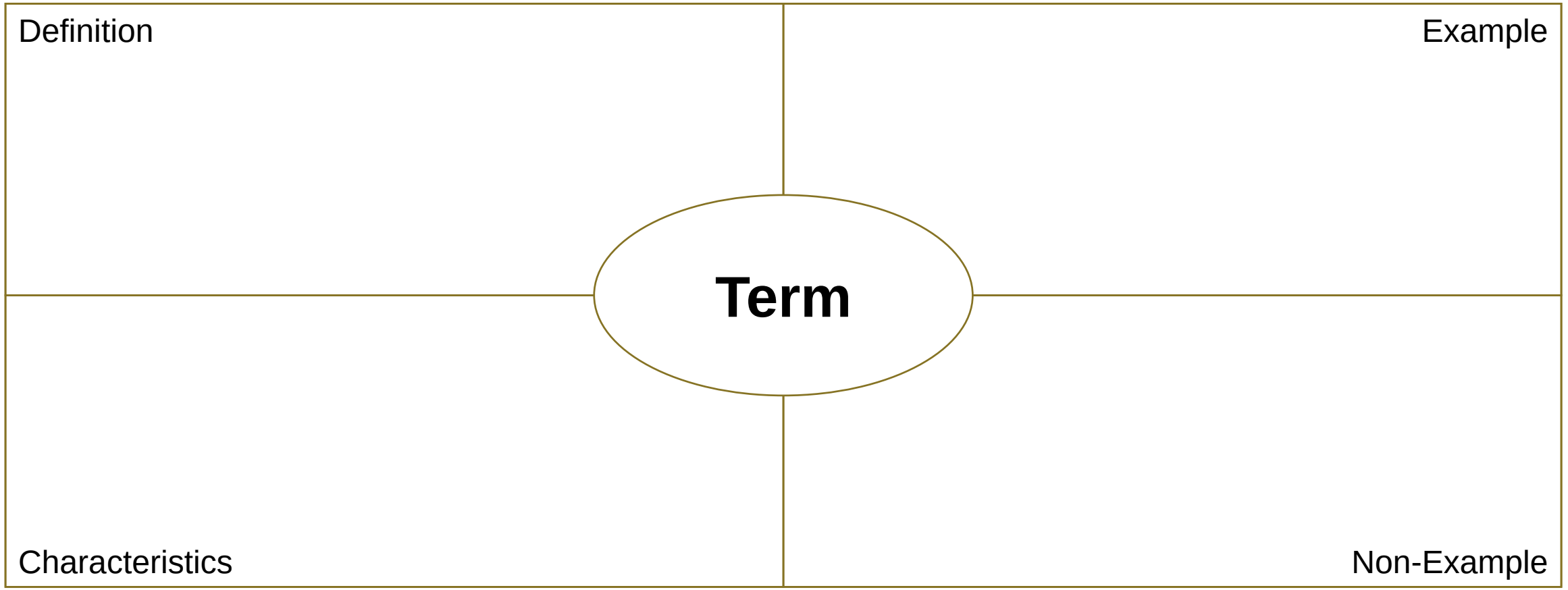
Deeply understand each term

Mathematics terms are exact

- What is the term saying
- What is the term not saying

Highlight key words in each definition

Frayer Model



Problem Log

Write at least one complete example of problems done in-class or discussion.

Write down at least one complete example of homework problems from your online homework.

Complete Example includes the problem statement, *all* the steps of the problem, the solution, and any notes about unclear or tricky steps.

Avoid doing work in your head. On exams you are assessed on what your write, so get in the habit of writing your work. If you are unsure of what this looks like, ask your instructor or TA.

Online Homework

DO:

Write out the problems

Attempt homework without looking at notes

Keep practicing until you have understanding

DON’T

Use “Help me” just to get an answer

Do work in your head

“Google” solve

Study Techniques

Make flash cards

Tricky definitions

Formulas – try to understand how the formula works

Things to look for

General equations you need to memorize

Bring the flash cards with you and review them in your spare time.

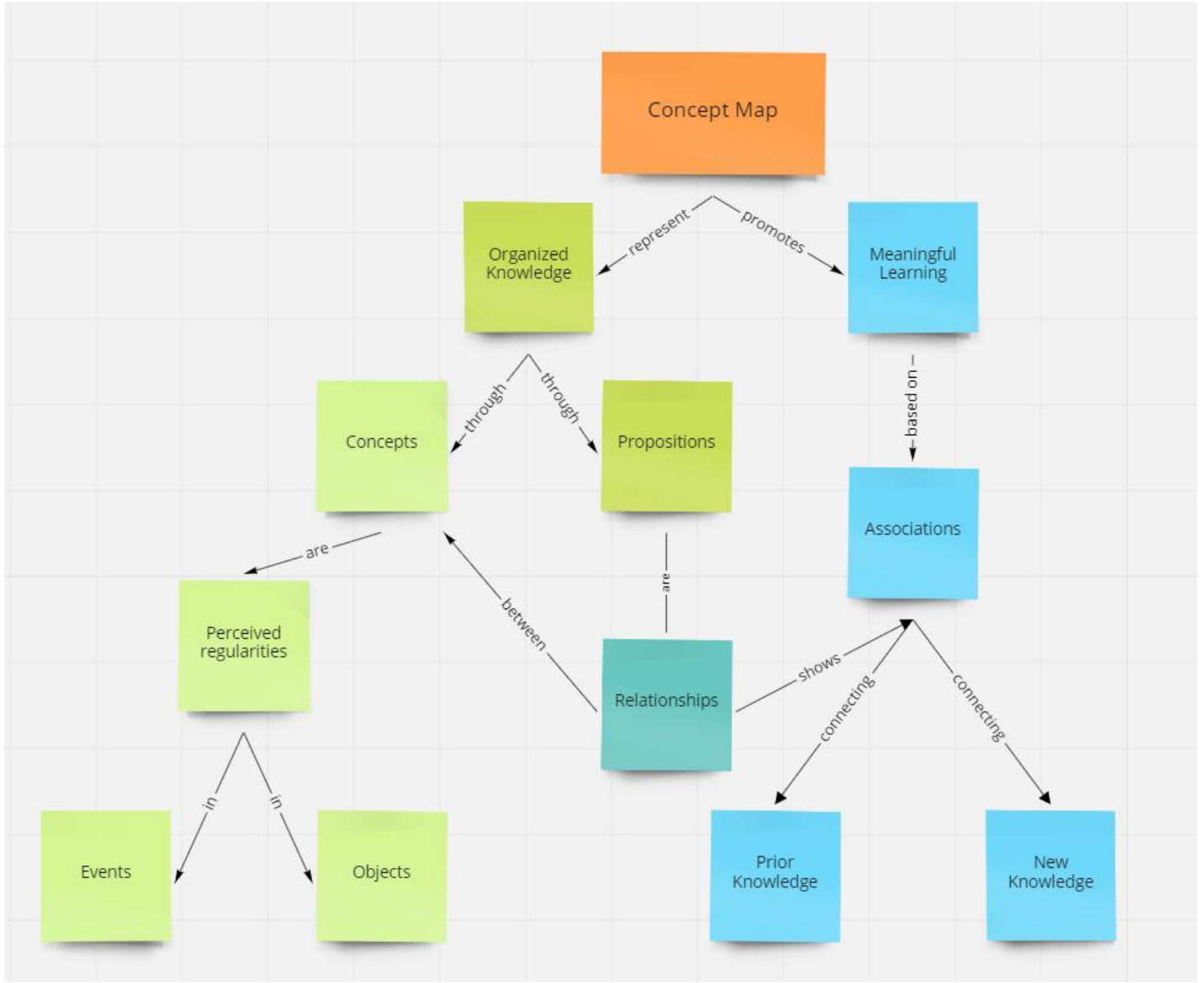
Concept Mapping

A diagram or graphical tool that visually represents relationships between concepts and ideas. Usually, they are structured hierarchically and connected with lines or arrows.

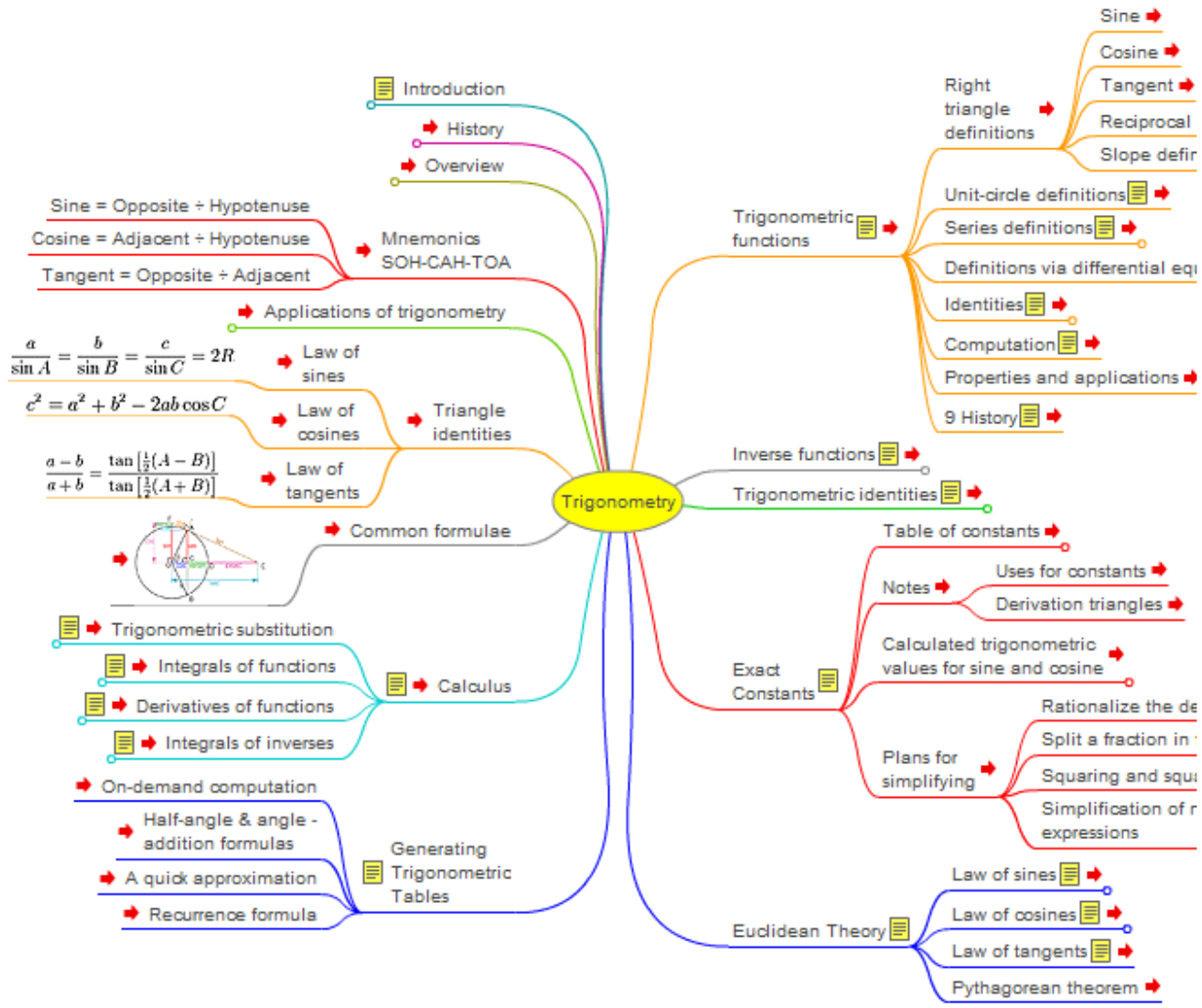
There are many free concept map makers online.

Miro – lets you collaborate with people.

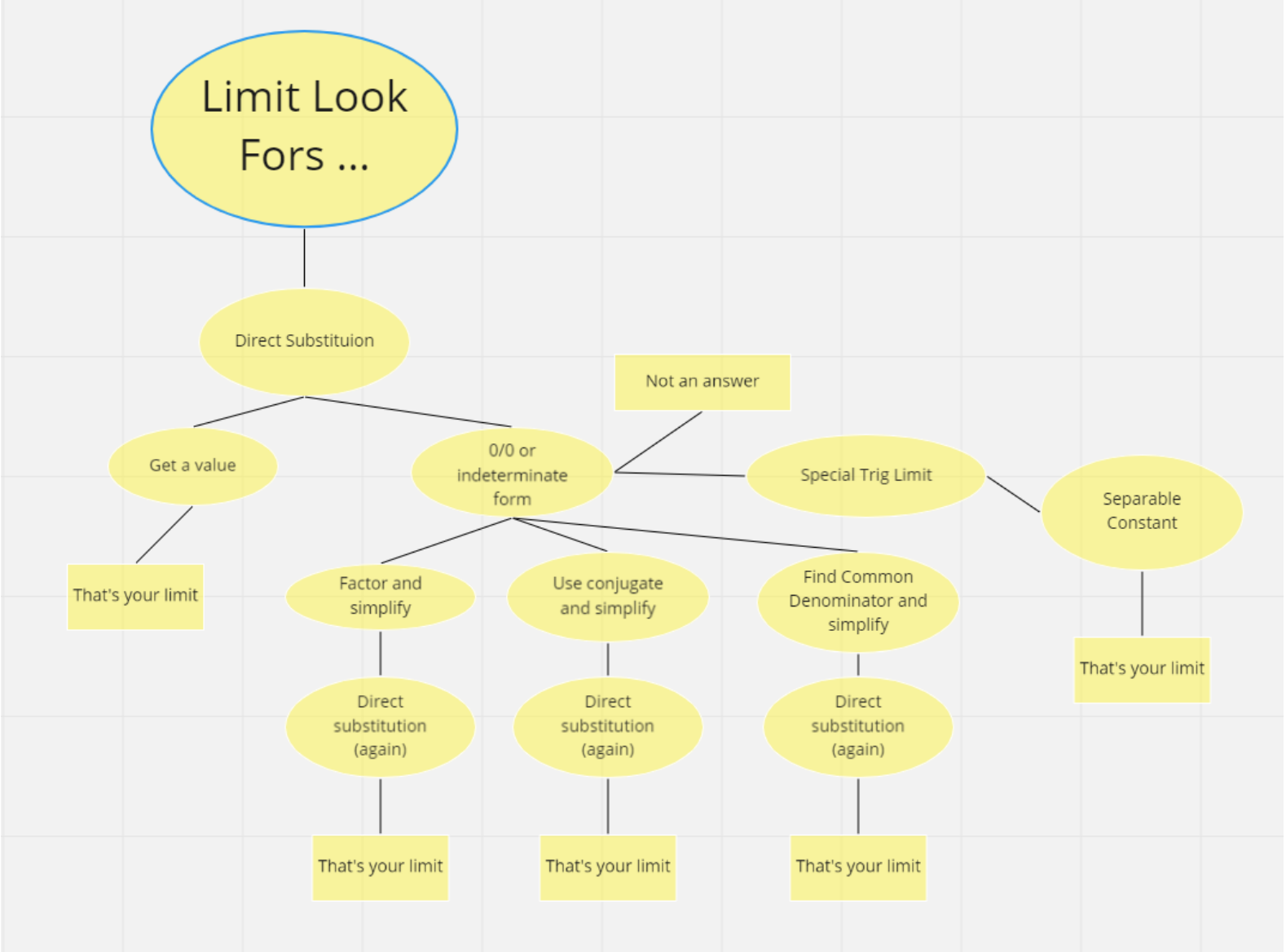
Concept Mapping



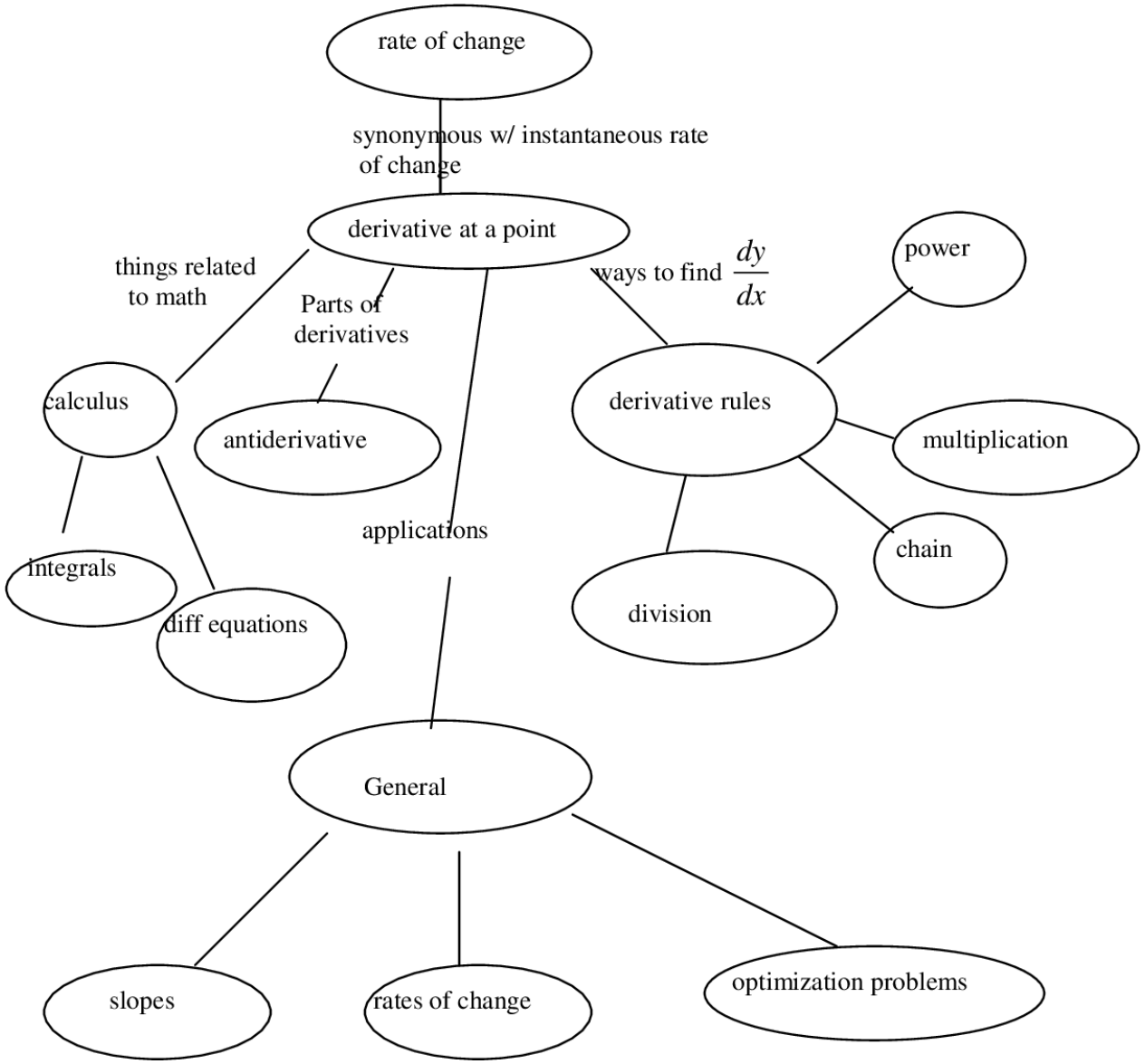
Trig Concept Map



Limit Concept Map



Calculus Concept Map



Create a study group

Ask the people around you in discussion or lecture if they would like to get together to study.

Make a group chat with people.

Meet up and do homework together.

Explain the problems to each other – even if you all know how to do it.

Start trying to make test questions.

Practice

Don’t practice until you get it right.

Practice until you can’t get it wrong.

Have you studied enough?

Plan, Monitor, and Evaluate

Plan – understand what the problem wants, develop strategies to solve the problem, identify protentional obstacles, predicting the outcome

Monitor – putting the steps in order, identifying and finding errors, determine if additional information is needed, knowing when to use a different strategy, knowing you have part of the answer

Evaluate – determine if the answer seems correct, evaluating the answer, performing an inverse operation, measuring the efficiency of the plan and monitoring

Checking your understanding

TRY TO EXPLAIN THE CONCEPTS TO A FRIEND THAT DOESN'T KNOW THE MATERIAL.

LOOK AT A PROBLEM AND TRY IT ON YOUR OWN. IF YOU NEED TO LOOK AT YOUR NOTES, YOU SHOULD DETERMINE WHERE YOU ARE STRUGGLING.

BE HONEST WITH YOURSELF – IF YOU HAVE TO PATTERN MATCH TO COMPLETE YOUR HOMEWORK ASK FOR HELP.

Habits to avoid

Taking pictures of the board *instead* of taking notes. (If you miss part of a problem, take a picture so you can transfer it.)

Relying on a classmate for notes.

Pattern matching to get your homework done. Make sure you understand the steps involved.

Places to get help

Office hours with your TA or instructor

Math Learning Center has drop-in tutoring and peer mentoring for almost every course

Time Management

How are you feeling most days?

- Are you turning in work at the last minute almost every time?
- Do you feel like you don’t have time to complete household chores
- Do you feel like you are on top of most of your work?
- What would you like to do differently to make effective use of your time?

Time management

There is no perfect solution for everyone

If you are trying something new – try it for 3 weeks.

If you deviate from the plan, that’s ok. Analyze why you had to deviate and move forward.

First step

Look ahead – find out when you will have your big projects, papers and exams.

Plan the little things when you don’t have big things going on.

Calendar coding

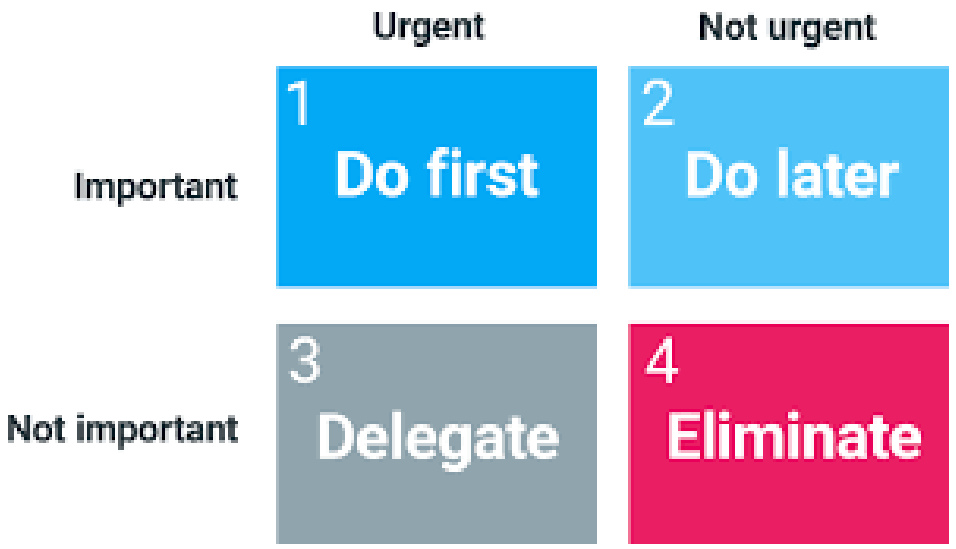
Use Outlook or Google calendar

Color code by course, personal, relaxation, etc.

Schedule as much as you can – with travel times

Resources

Time Matrix



Write things down so you don’t have to keep thinking of them.

If you have a short amount of time, do some small tasks.

Block off large amounts of time for large tasks.

Different Take on Time Matrix

To Do	Doing	Done

Weekly Schedule

Class time	Work time	Eating	Personal care
Study time	Relaxation time	Time with friends	Sleeping

Planned vs. Actual

Plan your week on a Sunday evening

Refer to your monthly calendar for big items

Keep track of the time you spend on each task

Compare it to what you planned

Give yourself some grace if it is different than planned

Analyze (without judgement) what was different

Make a new plan for the following week

Study Goals

Use SMART goals

Plan a realistic amount of time to study.

On your Monthly Calendar, plan when to start studying

When you are ready to study

1. Turn of notifications
2. Put your phone on airplane
3. Find an appropriate place for you
4. Try to go to the same place for the same course

Reward yourself for little tasks completed

Break large tasks into very small tasks

Celebrate the little things

No system is perfect

Find things that work for you

Combine techniques

Try things for 3 weeks, then adjust

Be honest with yourself if something isn’t working

Questions?