

Recap for Midterm

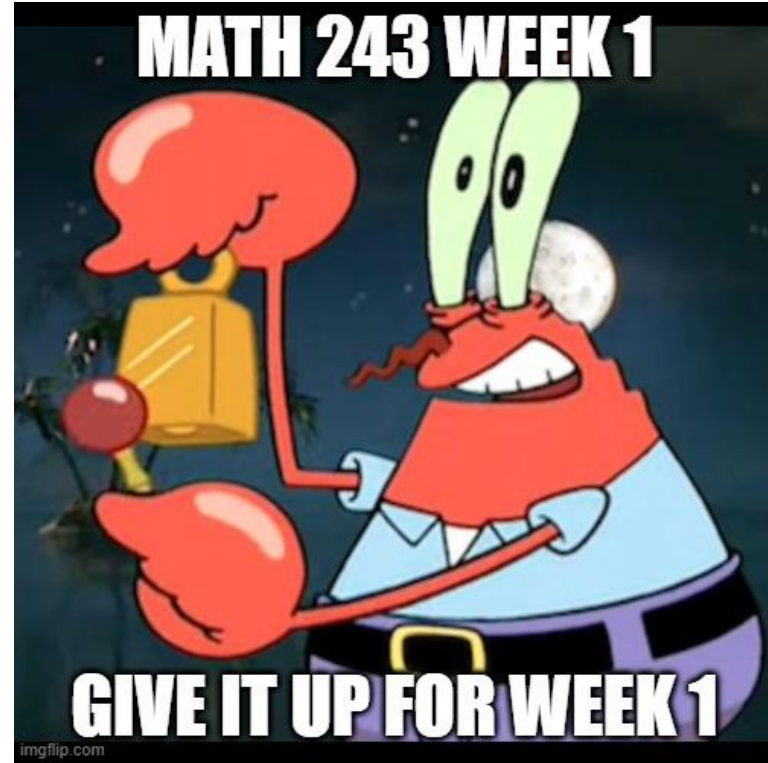
Review video for 6/19

Logistics of Midterm

- During lecture time: 6/20 at 11:40am
 - Exam unlocks 11:45, you have 90 minutes to work (+10m for uploads or issues)
 - Exam locks at 1:25
- Taken on Canvas and found under “assignments”
- Joining Zoom is required
 - Mentioned in syllabus
 - If you don't join and don't contact me, you will get a 0
- Check practice quiz to practice formatting & file upload
 - Many students didn't for quiz and made submission mistakes
 - Mistakes given in Quiz 1 mistakes document
- Instructions, content covered, rules, other details on exam landing page
 - Similar to quiz 1 landing page
 - Check the page before taking the exam

Vector Arithmetic & Calculus

- Basics
 - Compute sums, magnitudes
 - Compute dot & cross products
 - Compute derivatives and integrals
- Vectors with Derivatives
 - How \times , \cdot , and derivatives interact
 - Compute arc length



Lines, Planes, and Other Geometry

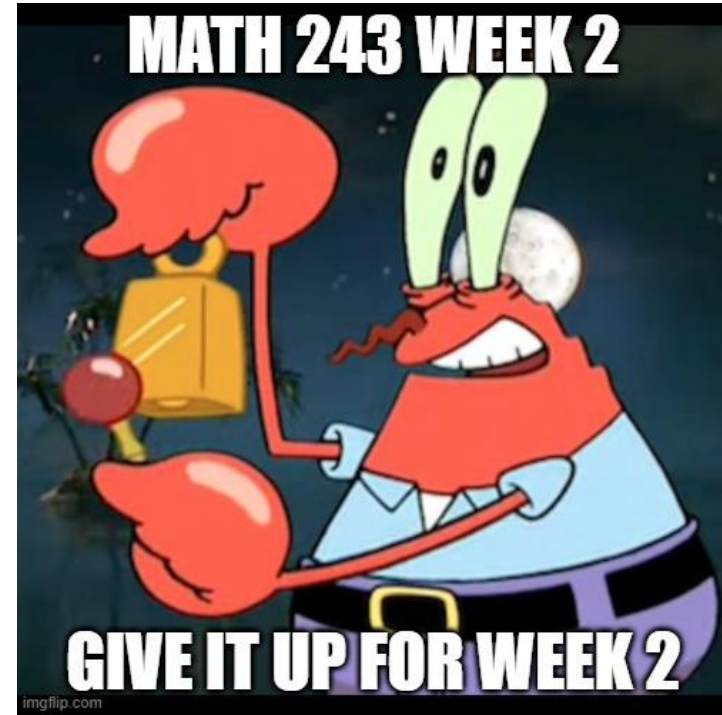
- Equations of Lines
 - Find from many different scenarios
- Equations of Plane
 - From normal vector and point
 - From 3 points
 - From conditions relating it to other lines/planes
- Volume of parallelepiped

Special Vectors, Physics, Coordinates

- Special vectors
 - Applying T , N , B , κ
 - Applying a_T , a_N formulas
- Coordinate conversions
 - Spherical
 - Cylindrical
 - Cartesian
- Equation conversion
 - Describe shapes

Limits, Continuity, Partial Derivatives

- Determine limits
 - Explain why exists or not
 - If exists, find value
- Determine continuity
 - May need to use limits
- Compute partial derivatives
 - 1st order
 - Higher order



Approximations, Chain Rule, Gradient

- Compute tangent plane
- Find linear approximations
- Chain rule
 - Find the chain rule to use
 - Apply the rule, do algebra
- Directional Derivatives
 - Formula for D_u
 - Maximal values

Resources for Preparation

Practice problem sources:

- Discussion worksheets and solutions
- Quiz 1 and solutions
- Prerequisite quiz (if your mistakes were algebra/Calc 1 mistakes)
- WebAssign homeworks (HW 1, 2, 3 are up)
- Lecture & pre-lecture slides, lecture notes, pre-lecture videos
- Lecture recordings
- More notes & practice: [Paul's Online Math Notes](#)

Other: read instructions carefully, check exam strategies document