Lesson 10: Preparing for Vector Calculus Exam 1

You will cut and paste the photos of your notes and completed classwork and a selfie taken holding up the first page of your work in a googledoc entitled:
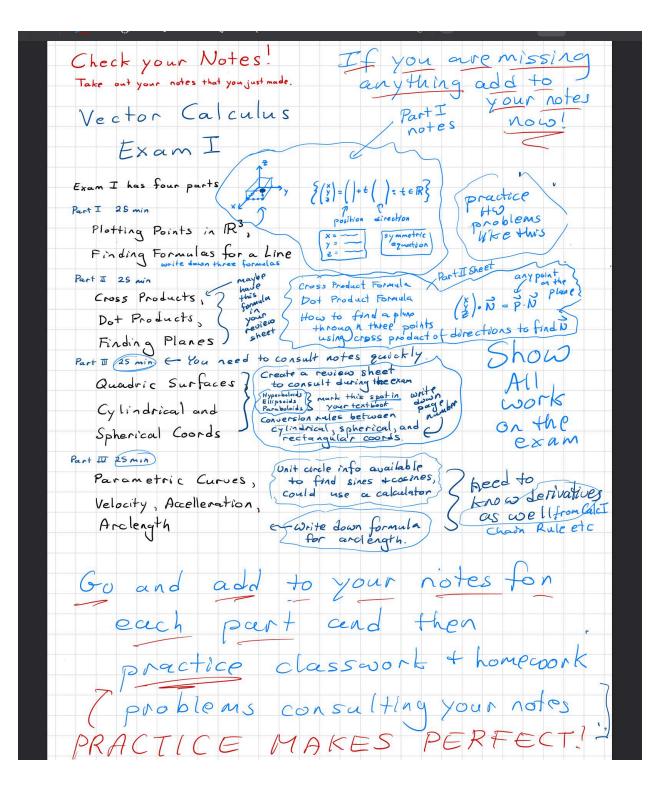
MAT226F21-lesson10-lastname-firstname

and share editing of that document with me sormanic@gmail.com and with our graders. If you have a question, type QUESTION in your googledoc next to the point in your notes that has a question and email me with the subject MAT226 QUESTION. I will answer your question by inserting a photo into your googledoc or making an extra video.

Students who need a trigonometry review here is a trig review.

Watch Playlist 226F21-10-1to3 and prepare notes to consult during the exam! Put your notes in your Lesson10 doc and submit it to prove you are ready for the sample exam.

Review for

Vector Calculus

Exam I

Open notes exam so you need to create reference sheets to use.

Exam I has four parts

Part I (25 min)

Plotting Points in $\mathbb{R}^3$,

Finding Formulas for a Line

} Make a review sheet.

Part II (25 min)

Cross Products,

Dot Products,

Finding Planes

} maybe have this formula in your review sheet

Open Book Open Notes Exam

Part III (25 min) ← You need to consult notes quickly.

Quadric Surfaces }

Cylindrical and

Spherical Coords

Create a review sheet to consult during the exam

Hyperboloids Ellipsoids Paraboloids } mark this spot in your textbook write down page number

Conversion rules between cylindrical, spherical, and rectangular coords.

Show All work on the exam

Part IV (25 min)

Parametric Curves,

Velocity, Accelleration,

Arclength

Unit circle info available to find sines + cosines, could use a calculator

← write down formula for arclength.

} Need to know derivatives as well.

Go Right Now and Create four reference sheets (one for each part) Put photos in today's lesson.

Can include photos of the textbook

[Might also wish to include the derivatives and laws of differentiation]

Check your Notes!
Take out your notes that you just made.

Vector Calculus
Exam I

If you are missing anything add to your notes now!

Exam I has four parts

Part I 25 min
  Plotting Points in $\mathbb{R}^3$,
  Finding Formulas for a Line
    write down three formulas

Part I notes

$$\left\{ \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} \\ \\ \end{pmatrix} + t \begin{pmatrix} \\ \\ \end{pmatrix} : t \in \mathbb{R} \right\}$$
  ↑position ↑direction

$\begin{array}{l} x = \underline{\quad} \\ y = \underline{\quad} \\ z = \underline{\quad} \end{array}$ symmetric equation

practice HW problems like this

Part II 25 min
  Cross Products,
  Dot Products,
  Finding Planes

maybe have this formula in your review sheet

Part II Sheet

Cross Product Formula
Dot Product Formula
How to find a plane through three points
using cross product of directions to find $\vec{N}$

any point on the plane

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix} \cdot \vec{N} = \vec{P} \cdot \vec{N}$$

Part III (25 min) ← You need to consult notes quickly.
  Quadric Surfaces,
  Cylindrical and
  Spherical Coords

Create a review sheet to consult during the exam

Hyperboloids
Ellipsoids
Paraboloids
  mark this spot in your textbook   write down page number

Conversion rules between cylindrical, spherical, and rectangular coords.

Show All work on the exam

Part IV 25 min
  Parametric Curves,
  Velocity, Accelleration,
  Arclength

Unit circle info available to find sines + cosines, could use a calculator

← Write down formula for arclength.

Need to know derivatives as well from Calc I
Chain Rule etc

Go and add to your notes for each part and then practice classwork + homework problems consulting your notes
PRACTICE MAKES PERFECT!

- Now you have a rough idea of what is on the exam, you can go back and practice more before taking the   } Practice Hw

- Take the sample exam with a timer. } Sample TakeExam

- Put your solutions to your sample exam in your googledoc } Upload Solutions

The next video is the solutions. Do not watch until you are ready. } watch Solution

If you got anything wrong, Practice again.

For now practice classwork and homework and graphing neatly and fill in homework that was not completed especially on the topics mentioned above.