Calculus 1 IBDPE Midterm 1 Info

Time and Location

Friday, November 7, 09:10-10:00 at D.A.E. 5825 (for Even student ID number) and D.A.E. 5824 (for Odd student IP number).

Homework 7

Homework 7 will be due on November 7 as well. Solutions will be posted on November 5 for you to check your answers – please use it wisely.

Ground Rules

- Closed book. No notes. No calculator. The only allowed items on your desk are pen/pencil, erasers/whiteout, and ruler. No food is allowed. Coffee or beverage is allowed, although discouraged.
- Please use the bathroom before the exam. If you absolutely have to go to bathroom during the exam, you need to go to the designated ones that we have inspected before the exam. You also need to verify to me that your pockets are empty before you go.
- No hat nor sunglass may be worn unless required by medical condition.
- ABSOLUTELY no electronic device may be turned on during the exam. Any voice from cellular phone is considered cheating.
- Makeup exam is only possible when a student is absent due to university official duties.
- Regrade: please see the syllabus for regrade policy.

Tools

Only writing tools are allowed during this exam.

Format

There will be six equally weighted problems. You will choose four problems to answer and indicate which four problems to be graded. Problems not indicated for grading will be ignored.

Topics to Cover

This exam covers materials from beginning to November 5. Specifically,

- Pre-calculus: All basic knowledge from pre-calculus is assumed. You are required to know how to preform simple algebraic manipulations and applications of trigonometries using simple identities. You do NOT need to study the discussion on curves vs. graphs of functions.
- Limit and continuity: You should be able to compute all limit problems with similar difficulties as homework problems. You do NOT need to prove the existence of limit. You should be able to prove simple facts following from intermediate value theorem.
- Differentiations: You should know all differentiation formulae introduced in class and apply them smoothly. You do NOT need to derive any of the formulae. You should be able to perform chain rules both computationally and conceptually. You should be able to set up equations (using perhaps basic geometry) that are needed to apply implicit differentiation and compute rate of change of certain quantities vs. others.
- Applications of Differentiations: You should be able to prove simple facts (with similar difficulties as homework problems) using mean value theorem and Rolle's Theorem. You do NOT need to prove the theorems themselves. You should be able to classify a function into regions of increasing and decreasing and successfully hunt down extreme values of different types. You should be able to capture absolute extreme values and classify all critical points. You should be able to simple problems concerning concavities of reasonably easy functions.

Study Suggestions

- Get enough sleep the night before the exam.
- Practice homework problems THOROUGHLY and be able to appreciate the insight of the problems so that you can do those problems in any forms and with moderate variations. Exam problems are modelled on homework problems.
- This exam emphasizes on conceptual understanding rather than mechanical computations. If you are stuck in long computations, it is recommended to rethink your process and see if you are forgetting some part of the concepts.