

# Calculus 2 — Outline for Exam 1

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## Main ideas

- A. Techniques of integration:  $u$ -substitution; integration by parts
- B. Applications: area between curves; volume of a solid of revolution using disks/washers

## Skills you should have

1. Be able to compute definite and indefinite integrals using  $u$ -substitution and/or integration by parts
  - Be able to choose an appropriate substitution (and choose again if it doesn't work)
  - Be able to apply the integration by parts formula
  - Remember, you might need to use a substitution and integration by parts to solve a problem
2. Be able to sketch the region enclosed by curves and find the points of intersection.
  - You will be allowed to use a graphing calculator (or website like Desmos), but you still need to know how to put everything together to sketch/shade the region and label points of intersection
3. Be able to compute the area enclosed by curves
4. Be able to compute the volume of a solid of revolution using the disk/washer method
  - Remember that when using the disk/washer method, you need to work in terms of  $x$  when revolving about the  $x$ -axis and in terms of  $y$  when revolving about the  $y$ -axis

## How to study

- I. Review core topics
- II. Work/rework problems all of the way through—focus on WeBWorK problems and Discussion questions
- III. Talk with me if you have any questions at all!

INFORMATION FOR THE EXAM

**Due date.** This take-home exam is due at **11:59PM** on **Monday, September 28**.

**Rules for the exam.**

1. You are allowed to use:
  - A calculator/Desmos/Geogebra for *basic* computations and *basic* graphing, but **not** for derivatives or integrals.
  - Either of our books: *Calculus: Early Transcendentals, Eighth Edition* by J. Stewart or *Active Calculus* by M. Boelkins et al.
  - Your notes or my notes that I posted in Canvas.
  - Me as a resource: you can email me at anytime if you have any questions at all.
2. You are **not** allowed any resources on this exam except those listed above.
3. You are **not** allowed to discuss the exam—in any way—with anyone (or any website) other than Josh Wiscons. This includes no Chegg or anything similar.
4. You are **not** allowed to look at another person's exam or their work, and you are **not** allowed to let another person see your exam or your work.
5. Please fully justify your work.
6. If you have any questions about these rules, please email me as soon as possible.

**Any violation of the rules will be regarded as cheating and reported to the Sacramento State Office of Student Conduct.**

**Recommendations.** I recommend setting aside **1.5 continuous, uninterrupted hours** to devote to the exam. But you can take as long as you want until it's due. Please email me if you have any questions!