

Calculus 2 — Outline for Exam 2

Main ideas

- A. Techniques of integration: trig. integrals; trig. substitution; partial fractions
- B. Improper integrals
- C. Application: arc length of curves

Skills you should have

1. Be able to compute definite and indefinite integrals using trigonometric identities, trigonometric substitution, and/or partial fractions
 - Be able to apply various trig. identities to help solve an integral
 - Be able to recognize when trig. substitution might help and know which substitution to choose
 - Be able to substitute back after finding an antiderivative using trig. substitution
 - Be able perform partial fraction decompositions by recognizing the correct form and solving for the unknown variables
 - Be able to combine techniques including those from before (u -substitution & integration by parts)
2. Be able to compute improper integrals
 - Be able to recognize when an integral is improper and be able to set up the corresponding limits
 - Be able to compute the limits after integrating—this may require various techniques for evaluating limits such as L'Hôpital's Rule
3. Be able to set up and compute the length of a curve given by some function $f(x)$ from $x = a$ to $x = b$

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, October 26**.

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!