

Calculus 1 — Outline for Exam 1

Main ideas

- A. Limits (one-sided, two-sided, and at infinity) and connection to asymptotes
- B. Continuity

Skills you should have

1. Be able to compute limits and determine if a function is continuous *from a graph*.
2. Be able to compute limits and determine if a function is continuous *numerically* (by plugging numbers into a function and studying the outputs).
3. Be able to compute limits and determine if a function is continuous *algebraically*.
 - Be able to “simplify” limits if direct substitution yields something indeterminate. Remember that the techniques to “simplify” are different if you are computing a limit as $x \rightarrow a$ versus $x \rightarrow \infty$.
 - Be able to work with piece-wise defined functions.
4. Be able to determine the vertical and horizontal asymptotes of a function.
5. Be able to state the definition of a function being continuous at a , which is that $\lim_{x \rightarrow a} f(x) = f(a)$ (and that both sides of the equality exist).

How to study

- I. Review core topics
- II. Work *lots* of problems all of the way through—focus on WeBWorK problems and Worksheet problems
- III. Practice doing several problems in a short amount of time (by timing yourself)
- IV. Come talk with me if you have any questions