

Preliminaries about functions. Know:

- Formal definition of a function.
- Formal definitions of injection, surjection and bijection; important examples of bijections and definitions of the important inverse functions (website posts on September 25 and October 7)
- The definition of the composition of functions and have understanding of website post on September 29 related to this definition

Limits, continuity Know:

- The ϵ - δ definition of a limit and both definitions of continuity of a function at a point.
- Proofs posted on the website on September 30.
- The Intermediate Value Theorem and the Extreme Values Theorem and how to apply them in simple situations.
- How to decide whether a piecewise function is continuous or whether it can be extended to be a continuous function, Section 2.6 in Notes on Calculus and related exercises.
- Little Oh notation, Section 1.9 in Notes on Calculus and related exercises.

Derivatives. Know:

- The formal definition of differentiability of a function and its connection to local linearity and the concept of the tangent line to a graph, Section 2.4 in Notes on Calculus.
- Use properties of limits to prove that a function which is differentiable at a point is continuous at that point.
- The concept of derivative function and the derivatives of a quadratic polynomial, the exponential function e^x and the natural logarithm function.
- The geometric relationship between the derivative of a bijection and its inverse.
- How to interpret the derivative in applied problems, Section 2.2 in Notes on Calculus and related exercises.
- How to decide whether a piecewise defined function is differentiable or whether it can be extended to be a differentiable function, Sections 2.5 and 2.6 in Notes on Calculus and related exercises.