Math 110 (Section 002) Learning Objectives

Students should be able to do the following things by the end of each respective unit. Additions may be made as the term progresses.

Continuity

1. Define what it means for a function to be continuous.

2. Identify where a given function is continuous/discontinuous.

3. Determine the parameters of a piecewise function that makes a function continuous.

4. State and explain the Intermediate Value Theorem.

5. Give examples of functions that do not satisfy the Intermediate Value Theorem by virtue of their discontinuity either in the interior of an interval or at its endpoints.

6. Use the Intermediate Value Theorem to estimate roots of functions, including non-polynomial functions.

7. Use the Bisection Algorithm to estimate roots of functions to desired accuracy.

8. Use the Intermediate Value Theorem to construct short proofs (eg. Prove that a continuous function $f : [0, 1] \rightarrow [0, 1]$ has a fixed point).