Midterm Exam Outline
Math 104A: Numerical Analysis
Professor: Paul J. Atzberger

- Numerical representation and round-off error
  - signed integers (32-bit)
  - floating point IEEE 754 standard
    - 32-bit, 64-bit.
  - k-digit chopping.
  - k-digit rounding.

- Error Analysis
  - absolute error, relative error.
  - number of significant digits.

- Analysis of algorithms
  - Definition of algorithms
  - Big Oh and Little Oh notation $O(f(n))$, $o(g(n))$.
  - Rate of convergence.

- Equations of one variable
  - existence of solution to problem $f(p) = 0$.
  - bisection method
    - conditions for convergence
    - rate of convergence
    - different types of stopping criteria
  - fixed-point iteration
    - conditions for convergence
    - rate of convergence
    - stable and unstable fixed points
  - Newton's method
  - Error Analysis
  - Rates of Convergence.