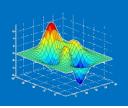
## **Midterm Exam Outline**



Math 104A: Numerical Analysis Professor: Paul J. Atzberger

- · Numerical representation and round-off error
  - o signed integers (32-bit)
  - o floating point IEEE 754 standard
    - 32-bit, 64-bit.
  - k-digit chopping.
  - o k-digit rounding.
- Error Analysis
  - o absolute error, relative error.
  - o 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
  - o existence of solution to problem f(p) = 0.
  - o 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
  - o Rates of Convergence.
- Interpolation Methods
  - Interpolation and Data Approximation
  - Lagrange Polynomial Interpolation
  - Neville's Method