Review topics for exam 1  Math 220

MATLAB
Know basic MATLAB operations
   Specifying matrices, accessing and defining elements of a matrix or a submatrix
   Array operations .*, ./
   functions operating on arrays
   colon operator
   for loops, if statement
   basic plotting

Error and relative error
Taylor polynomials
   Deriving a Taylor polynomial and the remainder formula
   Estimating the error with mean value remainder formula
   Estimating an interval $|x - a| < r$ that achieves a desired error
Taylor series
Evaluating polynomials by Horner’s algorithm (nested multiplication)

Interpolation
   Interpolation problem as a system of linear equations
   Interpolation using Lagrange fundamental polynomials
   Lagrange fundamental polynomials as the influence of a data value on the interpolant
   Finding the interpolant in Newton form using divided difference table
   Adding in a new datapoint and calculating next term of Newton form interpolant
   Divided differences and derivatives
   Hermite interpolation - how to adjust divided difference table to calculate a Hermite interpolant
Error in polynomial interpolation
   Formula for error
   Estimating the error as in examples: cubic interpolation in a table, cubic Hermite interpolation