Midterm: Wednesday, May 7, 4-5pm

Sections 1.2, 2.1, 2.3, 2.4, 3.1, 3.2, and 3.3.

Sample midterm questions (some with solutions) are posted on the class webpage. Sample Matlab code for the Fixed Point Iteration is also posted on the class webpage.

Math 151a: HW #5, due on Wednesday May 7 (or Friday May 9 exceptionally)

[1] Use Neville's method to obtain the approximations for Lagrange interpolating polynomials of degrees one, two and three to approximate each of the following:

$f(0.43)$ if $f(0) = 1$, $f(0.25 = 1.64872$, $f(0.5) = 2.71828$, $f(0.75) = 4.48169$.

[2] Suppose $x_j = j$ for $j = 0, 1, 2, 3$ and it is known that

$$P_{0,1}(x) = 2x + 1, \ P_{0,2}(x) = x + 1, \text{ and } P_{1,2,3}(2.5) = 3.$$

Find $P_{0,1,2,3}(2.5)$.

[3] Use Newton's divided difference formula to construct interpolating polynomials of degree one, two and three for the following data. Approximate the specified value using the each of the polynomials.

$f(8.4)$ if $f(8.1) = 16.94410$, $f(8.3) = 17.56492$, $f(8.6) = 18.50515$, $f(8.7) = 18.82091$.

[4] For a function f, the forward-divided differences are given by:

$x_0 = 0.0$ $f[x_0]$

$f[x_0, x_1]$

$x_1 = 0.4$ $f[x_1]$ $f[x_0, x_1, x_2] = \frac{50}{7}$

$f[x_1, x_2] = 10$

$x_2 = 0.7$ $f[x_2] = 6$.

Determine the missing entries in the table.