University of Colorado
Department of Computer Science

Numerical Computation CSCI 3656

Spring 2016

Problem Set 7

Issued: 1 March 2016

Due: 8 March 2016

1. *[10 pts]* Use Newton's divided differences to fit a parabola to the last three points in your data set from PS6. Do you get the same polynomial as you did in problem 3 of that problem set? *Should* you?

2. *[16 pts]* Problem 2 on page 156 of the textbook. (Note: there is no Theorem 3.3 in the book. He meant Theorem 3.4.)

3. *[24 pts]* In your favorite programming language, implement a program that takes a bunch of $(x, f(x))$ pairs, computes the corresponding cubic natural splines, and draws the curve defined by those equations. (It should also plot the points themselves, so that you can see whether the spline curve goes through them.) Test your code out on the following data set. Please turn in a plot of the results as well as a copy of your code.

x	$f(x)$
1	1
2	3
3	2
4	1
5	2
6	4
7	5