

Homework 7

Due: *Tuesday* 3/13/2018

- Assignments are due at the beginning of class on the due date.
- Any Matlab/R files are to be submitted as .m or .R files via Moodle (with a corresponding run/driver file if necessary).
- Each file must be uploaded individually. Zipped files will not be graded.
- Show all work and provide discussion where needed in order to receive full credit.

1. Write a Matlab function which takes inputs, x and y , and computes and plots the natural cubic splines that interpolate the data.
2. Use your code to interpolate the following data and obtain an approximation for $y(900)$.

x	y
805	0.710
825	0.763
845	0.907
865	1.336
885	2.169
905	1.598
925	0.916
945	0.672
965	0.615
985	0.606

3. Use natural cubic spline interpolation to obtain an approximation of $f(x) = \cos(2x)$ on the interval $[0, 2\pi]$. Experimentally play around with your data and determine how many nodal points, $n + 1$, are required to obtain an approximation accurate to within 10^{-4} . Show all work regarding how you arrive at your conclusion.