MATH 211: HOMEWORK 4

Book problems

Sec 3.5: 1, 19, 22 (for 22, skip the part about deriving an error bound for problem 21)

Problem 1

Consider $f(x) = \cos(5\cos(5x))$ and $x_j = \frac{2\pi j}{10}$, $j = 0, \cdots 10$. Consider the data $f(x_j)$ over query points $x_0, \cdots x_{10}$. Use the natural cubic spline to create a polynomial interpolation $P(x)$. Plot $P(x)$ on $[0, 2\pi]$. Do the same again, but for query points $x_j = \frac{2\pi j}{100}$, $j = 0, \cdots 100$.

Hint: Don't code the spline computation yourself, but you may use MATLAB's built in cubic spline interpolation function spline(x,y,xq).

Check the documentation at https://www.mathworks.com/help/matlab/ref/spline.html to implement.

Date: today.