MATH 426 - Assignment 3

June 4, 2008

1 Subscripting:

Use Matlab's subscripting capabilities to do the following.
(a) Given N produce a vector w as follows:

$$\begin{bmatrix} 1 & 2 & 2 & 2, \ldots, 2 & 1 \end{bmatrix}_{1 \times N}$$

(b) Given N even produce a vector w as follows:

$$\begin{bmatrix} 1 & 4 & 2 & 4, \ldots, 2 & 4 & 1 \end{bmatrix}_{1 \times N+1}$$

Note: For submission, choose $N = 10$ for (a) and (b) above.

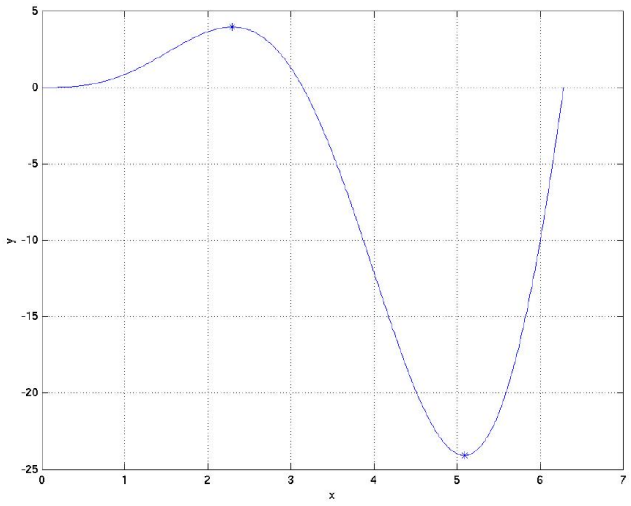

Figure 1: Sample Figure for Problem 5

2 Data Analysis:

Let $f(x) = x^2 sin(x)$ and let x range over $[0, 2\pi]$.
(a) Define a vector x that discretizes $[0, 2\pi]$ with step size $h = \frac{2\pi}{N}$. Then define the vector $y = f(x)$ and plot the function using the vectors x and y. Experiment with some different N, but use $N = 128$ for submission.
(b) Approximate the minimum and maximum of $f(x)$ by finding the minimum and maximum element in vector $y = f(x)$. You will also need the indices of the extreme points of vector y. Then, use the `plot` command to put an asterisk at the minimum and maximum points of the curve. Your result should look like Figure 1.