

Assignment 1

Read sections 1 and 2 of *MATLAB for Math303* if you are not familiar with Matlab. Turn in the printouts of your command window, m-files, and the graphs, if any, for each problem. Also label all the graphs.

1. The goal is to obtain the graph of $f(x) = \cos x^4$ on $[0, 2]$.
 - (a) Create an m-file for $f(x)$.
 - (b) Use the plot command with subintervals of length $h = .2$.
 - (c) Use the fplot command to obtain the graph.

2. Let

$$A = \begin{pmatrix} 1 & -2 \\ 0 & 3 \end{pmatrix}, \quad B = \begin{pmatrix} -2 & -3 \\ 0 & 1 \end{pmatrix}$$

Use Matlab to show that A and B commute, i.e., $AB = BA$.

3. Find the eigenvalues and eigenvectors of

$$A = \begin{pmatrix} 1 & 2 & 3 \\ 2 & 5 & 4 \\ 3 & 4 & 6 \end{pmatrix}.$$