

Assignment 3

Read Section 6 and 7 of *MATLAB for Math303*. Turn in the printouts of your command window, M-files, and the graphs, if any, for each problem. Also label all the graphs.

1. Consider the function

$$f(x) = x^4 - 3x^2 - x - 1, \quad -3 \leq x \leq 3.$$

- (a) Find x_m where the minimum of $f(x)$ occurs. Also find the minimum value $f(x_m)$.
 - (b) Find x_M where the maximum of $f(x)$ occurs. Also find the maximum value $f(x_M)$.
 - (c) Use `fplot` to plot the graph of $f(x)$ on $[-3, 3]$. You will see there are two roots of $f(x) = 0$.
 - (d) Use `fzero` command to find two roots of $f(x) = 0$ in $[-3, 3]$.
2. Use `rref` command to solve the system of linear equations

$$\begin{aligned}x_1 + 2x_2 + 3x_3 + 4x_4 &= 5, \\x_1 + 4x_2 + 9x_3 + 16x_4 &= 25, \\2x_1 + 3x_2 + 5x_3 + 7x_4 &= 11, \\6x_1 + 7x_2 + 8x_3 + 9x_4 &= 10.\end{aligned}$$