

- 1) (2 pts) Give the command that will create a row vector from -1 to 1 in steps of 0.1 and store it in the variable x . How many elements are in x ?

Use MATLAB to compute the quantities below and *explain the results you obtain*; for example, the explanation of part a) below is that the command extracts the first 11 elements of x . If you encounter an error, explain why the error occurs.

- $x(1:11)$
 - $x(0:22)$
 - $x(1:2:21)$
 - $x(21:-1:10)$
 - $x(1:.1:2)$
- 2) (3 pts) Suppose x is a column vector of length 100. Write a single MATLAB command that will produce the vector

$$y = \begin{pmatrix} x(1) + x(2) \\ x(3) + x(4) \\ \vdots \\ x(99) + x(100) \end{pmatrix}$$

HINT: Think of y as the sum of the two vectors

$$y = \begin{pmatrix} x(1) \\ x(3) \\ \vdots \\ x(99) \end{pmatrix} + \begin{pmatrix} x(2) \\ x(4) \\ \vdots \\ x(100) \end{pmatrix}.$$

How can you use array indicies to create these two vectors?

- 3) (1 pt) Suppose you were given a vector of equally spaced values (and nothing else). How could you determine the step size between the elements?
- 4) (2 pts) Suppose you have a column vector x . Give a single MATLAB command that will invert the elements of x . For example, if you had

$$x = \begin{pmatrix} 5 \\ -3 \\ 2 \\ -1 \end{pmatrix},$$

you would want to wind up with

$$x = \begin{pmatrix} -1 \\ 2 \\ -3 \\ 5 \end{pmatrix}.$$

MATLAB already has a `flipud` command that does this, but you can't use that here.

- 5) (5 pts) Re-do Problem 4 Homework 13, but this time use vectorized operations. You won't need the outer `i` loop because you can use the `linspace` to generate the x -coordinates, but you will still need a loop to accumulate the terms of the polynomial.