# Problem Set 6

Use Matlab to calculate the answers to the following:

## Problem 1

Create a row vector that has the following elements: $\sqrt{15}\times 10^3$, $\frac{25}{14-16^2}$, $ln\,35/0.4^3$, $\frac{sin65^\circ}{cos80^\circ}$, 129, and $cos^2(\pi/20)$

## Problem 2

Create a column vector that has the following elements: $\frac{32}{3.2^2}$, $sin^2 35^\circ$, 6.2, $ln\,29^2$, 0.00552, $ln^2 29$, and 133

## Problem 3

Define the variables $x = 0.85$ and $y = 12.5$, then use them to create a column vector that has the following elements: $y, y^x, ln(y/x), x \times y$, and $x + y$ .

## Problem 4

Create a column vector with 9 equally spaced elementsin which the first element is -34 and the last is -7. (A column vector can be created by the transpose of a row vector.)

## Problem 5

Use a single command to create a row vector (assign it to a variable named a) with 6 elements such that the last element is 4.7 and teh rest of teh elements are 0s. Do not type the vector elements explicitly.

## Problem 6

Create two row vectors $a - 2 : 3 : 17$ and $b = 3 : 4 : 15$. Then, by only using the name of the vectors ($a$ and $b$), create a row vector c and a column vector $d$ that is made from the elements of $a$ followed by the elements of $b$.

### Problem 7

Create the following matrix by using vector notation for creating vectors with constant spacing and/or the *linspace* command. Do not type individual elements explicitly

$$A = \begin{bmatrix} 130 & 110 & 90 & 70 & 50 & 30 & 10 \\ 1 & 2.8333 & 4.6667 & 6.5 & 8.333 & 10.1667 & 12 \\ 12 & 22 & 32 & 42 & 52 & 62 & 72 \end{bmatrix}$$

### Problem 8

Create the following matrix by typing one command. Do not type individual elements explicitly

$$E = 0 \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 10 & 20 \\ 0 & 0 & 2 & 8 & 26 \\ 0 & 0 & 3 & 6 & 32 \end{bmatrix}$$

## Problem 9

Create two row vectors:

$$a = [3, 9, -0.5, 3.6, 1.5, -0.8, 4]$$

and

$$b = [12, 0.8, 6, 2, 5, 3, -7.4]$$

a) Use the two vectors in a MATLAB command to create a $3 \times 4$ matrix such that the first row consists of elements 3 through 6 of vector $a$, the second row consists of elements 4 through 7 of vector $a$, the third row consists of elements 2 through 5 of vector $b$.
b) Use the two vectors in a MATLAB command to create a $6 \times 2$ matrix such that the first column consists of elements 2 through 7 of vector $a$, and the second column consists of elements 1 through 3 and 5 through 7 of vector $b$.