

**APM 153 Assignment One** (Due at the beginning of lab on Friday, January 27<sup>th</sup>)

Start the Matlab program, change the working directory to your USB drive, and open a new diary file by typing in the following

diary assignment1.txt  
followed by diary on

Use Matlab to solve the following problems. As you work, the diary file will record everything you type in and every result Matlab returns.

(1) Suppose that the variables  $x = 1$  and  $y = 3$ . **Evaluate** the following equations.

(a)  $\frac{4x}{3y}$  (hint, how do you **multiply** and **divide** in Matlab?)

(b)  $\frac{2y^{-2}}{(x+y)^2}$  (hint, how do you use **exponents** in Matlab?)

(c)  $\frac{y^3}{x^3 - y^3}$  (hint, what should you put in **parentheses**?)

(d)  $\frac{4}{3} p y^2$  (hint, how do you use p in Matlab?)

(2) Assume that A, B, c, D are defined as follows, and calculate the results of the following operations, if they are possible. If they are not possible, explain why.

$$A = \begin{bmatrix} 2 & -2 \\ -1 & 2 \end{bmatrix} \quad B = \begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix}$$

$$c = \begin{bmatrix} 1 \\ 2 \end{bmatrix} \quad D = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

(a) A plus B (hint, how do you add matrices?)

(b) A times D (hint, how do you multiply matrices?)

(c) A .\* D (hint what does .\* do? - page 49)

(d) A times c

(e) A .\* c

(f)  $A \setminus B$  (hint, what is the difference between  $\setminus$  and  $/$  ?)

(g)  $A . \setminus B$

(h)  $A .^{\wedge} B$  (hint,... well, you get the hint)

3. Question - What kind of matrix is D? (hint, what does the book say about matrices that consist entirely of ones and zeros?)

### **What to turn in for Assignment One**

(1) After you have completed the calculations listed above, your diary file will contain a record of all the stuff you typed into Matlab as well as the results. If you made an error and had to type something in twice, both versions will be in the diary file. If you tried to multiply two matrices together and Matlab wouldn't let you, the error message you got will be in the diary file.

(2) Once you have finished working in Matlab, exit the program. Your diary file will be stored on your USB drive. Start Microsoft Word and OPEN your diary file from your USB drive.

(3) Edit your diary file. Start by typing your name, course number, assignment number, and date at the top of the diary file.

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APM 153  
Assignment One  
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(4) Next, edit your diary file to clean it up. If you made an error, you can delete the part of the diary file that recorded the error.

(5) Last, add comments to your diary file. If you need to explain why something did or did not work in Matlab, write a comment about what happened at that point in the diary file.

(6) Finally, save your edited diary file as a Microsoft Word document (Assignment1.doc). Print out a hardcopy of your document. You will turn in the hardcopy of Assignment1.doc in lab on Friday. Turn your work in on time!