Math 261, Fall 2002

Homework

Assignment 1, due Friday, Sept. 6

Hoffman and Kunze, to turn in:
p. 5 #1,3,5, p. 10 #1,2,3,5,6, p. 15 #1,6,7,8, p. 21 #1
to present in class:
p. 5 #8, p. 21, #3

Assignment 2, due Friday, Sept. 13

to turn in:
Hoffman and Kunze, p. 26 #2,5,6,8,9, p. 33 #3,4,6
ATLAST, §1.1 #1,2,3, §1.2 #1,4 You can find some basic information about using Matlab in *Excerpts from Engineering Systems: An Introduction*. The excerpts are the chapter about Matlab. Information on linear algebra in Matlab is in the last section of the chapter. For the syntax of ATLAST commands, at the Matlab command line type help name where name is the name of the command so, e.g., to find out how to use rowscale type:

help rowscale

In problems where you are doing several plots, you may want to give the command **pause** after each (so, e.g., in Problem 1.2.1, after each **hold on**). Then the plot will remain in the plot window until you hit a key. If you create a .m file and make the first line **echo on** and the last one **echo off**, when you excecute the file all your commands will appear in the command window.

to present in class from Hoffman and Kunze:
p. 26, #7

Assignment 3, due Friday, Sept. 20

to turn in:
Hoffman and Kunze, p. 39 #1,2,4,8, p. 48 #1-6
ATLAST, §2.1 #4,6,7,9,15 For #4, the matrix commands you need are
(a) ones(n) (b) gridmat(n) (c) checker(n) (d) signmat(n) (e) lmatrix(n)
(f) nmatrix(n) (g) zmatrix(n) (h) xmatrix(n) (i) hmatrix(n)

to present in class from Hoffman and Kunze:

p. 34 #5, p. 40 #5,6

Assignment 4, due Friday, Sept. 27

to turn in:
Hoffman and Kunze, p. 48 #9,10,13, p. 55 #1,4,5,7, and if we get far enough, p. 66 #1-7
ATLAST, §2.2 #2,16

to present in class from Hoffman and Kunze:
p. 49 #14

Assignment 5, due Friday, Oct. 4

to turn in:
Hoffman and Kunze, p. 66 #1-7
ATLAST, §4.1 #5-8,12

Assignment 6, due Friday, Oct. 11

to turn in:
Hoffman and Kunze, p. 73 #1,2,4,5,7,8,11-13
ATLAST, §4.2 #11.

to present in class:
Hoffman and Kunze, p. 73 #3,9,10

Assignment 7, due Friday, Oct. 18

to turn in:
Hoffman and Kunze, p. 83 #1,3,4,6,7,8,9,11
ATLAST, §5.2 #2 (a)-(l). You may work in groups of two or three on this if you want to. (A group turns in one solution with the names of all members of the group on it.)

Note: You might want to use the matlab program multigraf, which allows you to put 6 plots on one page. The program multigraf.m is in the Matlab subdirectory of the course directory /usr/local/courses/math/math261.01 and I also put the ATLAST .m files in that directory. If you use multigraf, be sure to click the finish button before you print. You will want to use the "Insert a MATLAB graph here" button. Be sure to label your graphs.

to present in class:
Hoffman and Kunze, p. 83 #2,10

Extra credit:
ATLAST, §5.2 #2 (m)
You may turn this any time before classes end and you may work in groups of two or three on this if you want to. If you do it, give it to me separately from the regular homework and also make an appointment to show me your animation.

Assignment 8, due Monday, Nov. 4

to turn in:
Hoffman and Kunze, p. 86 #3,4,6, p. 95 #1,4,8,10,12

ATLAST postponed from Assignment 7 and §5.2 #3 (which may also be done in groups of two or three).

If you use matlab under unix or linux, do NOT run matlab in background (that is, do NOT give the command: matlab &). It is a FATAL mistake to run it in background—the transformer window will not appear if you do.

Assignment 9, due Friday, Nov. 15

to turn in:
Hoffman and Kunze, p. 105 #1,2,8,10,11,12,14, p. 115 #1,4,5,7

to present in class:
Hoffman and Kunze, p. 105 #6,13

Assignment 10, due Friday, Nov. 22

to turn in:
Hoffman and Kunze, p. 115 #1,4,5,7, p. 148 #1,4,5,7

Assignment 11, due Friday, December 6

to turn in:
Hoffman and Kunze, p. 155 #2,3,4,7,8,9,10, p. 162 #1,2,5,7. If we get far enough, it will also include p. 122 #1,2,3, p. 126 #1,3,5.

ATLAST §3.1 #6,9,13

ATLAST §3.2 #4-7, which you may do in groups of two or three. In #6 your condition should give necessary and sufficient conditions for the existence

of such a polynomial. You should prove that your condition is necessary, but you do not have to prove that it is sufficient. (*Remember*: A sufficient condition is one which guarantees that the conclusion holds. A necessary one is one whose failure guarantees that the conclusion does not hold.) For #5,6 you will need symbolic matrices, such as

$$A = \begin{bmatrix} a & b \\ c & d \end{bmatrix} \tag{1}$$

The matlab command for a symbolic expression is **sym('expression')**, so to get (1), give the matlab command:

A = sym('[a,b;c,d]')