

Homework 3 for Winter 2006 Math 266A Section 01 (Barsamian)			
Assignment	Section	Problems to turn in	Suggested additional problems (do not turn in)
H3	3.1	2, 20, 26, 38, 48	1, 5, 15, 17, 19, 21, 29, 33, 37, 45, 49
	3.2	8, 12, 22, 45	7, 11, 18, 19, 25, 41
	3.3	6, 12, 18, 28, 30d	5, 9, 15, 17, 20, 25
	3.4	none	4, 6, 7, 11, 12, 14
	3.5	none	2, 5, 6
	Matlab 3	Matlab 3 problems	

MATLAB 3: Graphs for Exercises 3.3#28 and 3.3#30d

In exercise 3.3#28 from Homework 3, you study the end behavior of the function $N(t) = \frac{100}{1+9e^{-t}}$, where $t \geq 0$. You will use MATLAB to make the graph for part (a). (You do part (b) without MATLAB.)

- 1) Start the MATLAB program. You should see the *command window*, with the command prompt `>>`.
- 2) Type `>>clear`.
- 3) Type `>>t=0:.1:10`.
- 4) Question: What does the command you typed in step (3) do? (Hint: refer to MATLAB 2.)
- 5) Type `>>N=100./(1+9.*exp(-t))` Be sure to include the periods.
- 6) Question: What does the command you typed in step (5) do? Why are there periods in it?
- 7) Type `>>plot(t,N)`.
- 8) Set the scale of the axes to show $0 \leq x \leq 10$ and $0 \leq y \leq 100$. (Don't be fooled by the x and y .)
- 9) Notate your plot appropriately and print it.

In exercise 3.3#30d from Homework 3, you study the end behavior of the function $f(x) = e^{ax} \sin(x)$, where $x \geq 0$. You will use MATLAB to make the graphs. (But you will still need to answer other questions in part (d) without MATLAB.) In the first graph for 3.3#30d, you will plot $f(x) = e^{.1x} \sin(x)$, $g(x) = -e^{.1x}$, and $h(x) = e^{-.1x}$.

- 10) Type `>>clear`.
- 11) Type `>>x=0:.1:50`.
- 12) Type `>>f=exp(.1.*x).*sin(x)` Be sure to include the periods.
- 13) Type `>>g=-exp(.1.*x)` Be sure to include the periods.
- 14) Type `>>h=exp(-.1.*x)` Be sure to include the periods.
- 15) Type `>>plot(x,f)`.
- 16) Type `>>hold on`.
- 17) Question: What does the command you typed in step (16) do? (Hint: refer to MATLAB 1.)
- 18) Type `>>plot(x,g)`.
- 19) Type `>>plot(x,h)`.
- 20) Set the scale of the axes to show $0 \leq x \leq 50$ and let y be auto scaled.
- 21) Notate your plot appropriately and print it.

In the second graph for 3.3#30d, you will plot $f(x) = e^{-.1x} \sin(x)$, $g(x) = -e^{-.1x}$, and $h(x) = e^{-.1x}$.

- 22) Type `>>hold off`.
- 23) Repeat steps 10) through 21), but with the functions f , g , and h , changed as necessary. (Use the *up arrow* key to reduce typing!) (You don't need to answer question (17) again.)

You should have printed three graphs, with notations, and you should have written answers to questions (4), (6), and (17) above. Attach all this stuff to your Homework 3.