Math152 at the University of Tennessee, Knoxville - Chat for April 25, 2016 with the course instructor, Louis Gross.

I will be online starting at about 7:30PM and will be happy to answer questions regarding any aspect of the course, assignments, etc. though for this session I suspect that questions will be mostly about any extra credit problems, the extra problems I posted and we discussed in class today and the recent chapters. You can type in this document to ask questions. Note that I will not address detailed questions about the Sample Final tonight so that all have a chance to look at this in some detail before we go over it as requested prior to the Final exam.

When you ask a question, please do not use your name because this document will be saved and publicly posted after we close it. I will be on-line at least until 8:30PM but will stay on longer if there are still questions. Note that I do not know the identity of anyone posting questions - each participant shows up as "Anonymous" animal.

I am online now - Lou

Kinda transcribed this all out before, hand. Sorry, know its a bit much to go through.
Hello, Im working on problem number 18.9, which requires the usage of Matlab code. I have attempted to make a f.m function for the given function P(t)=(t+100)*ln(t+2) as

function y=f(x);
y=(x+100)*(ln(x+2))

And set up a second derivative.m plot by copying the book instructions as

function [LLD,RLD] = derivative(h,x)

LLD=(f(x-h)-f(x))/(-h);
RLD=(f(x+h)-f(x))/(h);

However when i attempt to test the code with [L,R]=derivative(4.9,5)
The system gives me a error message, stating that there is
Undefined function or variable 'ln'.

OK - Matlab uses log for ln - so it doesn't know what ln is unless you define it. So use log
sry
Error in f (line 2)
y=(x+100)*(ln(x+2));

Error in derivative (line 3)
LLD=(f(x-h)-f(x))/(-h);

Next when I tried to create a graph of the function with commands such as

>> graphf (-10,10)
Undefined function or variable 'graphf'.

I think what you want to use here is the function fplot which works if you have defined a function
correctly - see the help for fplot if you want more info
 function y=f(x);
y=(x+100)*(log(x+2))

So i edited my function to
How do i tell Matlab that log is ln? Do i need to use for?

If you have the above revised version of the function f, then Matlab will be using ln - it assumes
when you put in log that you want ln - if you want log base 10 use log10 so for example if you
type log10(10) it gives you the answer 1

Oh, so the revised version does mean Ln then, ok, thanks. Is the help for fplot section in the
index or end of the textbook? Looking for it now

No I meant in the help section for Matlab - just type ?fplot and it will give you the basics

Oh, alright then. Im pretty sure my equation works now, when i enter [L,R]=derivative(4.9,5)
It gives
y =
  74.2679
y =

204.3206

y =

272.1716

y =

204.3206

L =

26.5414

R =

13.8471

The example follows the left hand derivative which gets closer to a number the smaller i will make the first of the two. I believe I can solve and plot this now, thank you.

>> graph f.m(-10,10

Undefined function or variable 'graph'.

>> graphf.m(-10,10)

Undefined variable "graphf" or class "graphf.m".

It would still not work. I need to be able to use the derivative function and create a graph if I want to solve this problem correctly, can you see where my possible errors are? I believe I understand how i will need to enter in a Left hand derivative, such as 4.9,4.99,or 4.999 to estimate the derivative values at a point, but cannot complete that portion yet.

For problem 17.5 part a, how would you go about graphing H(t) using MatLab?

There are several ways to do this in Matlab - if you do it the way it is done in Chapter 17, you first set up a vector of times T to calculate H at and then you calculate H at each of those times in a for loop, save the values (say in a vector called Hvals) and then type plot(T,Hvals,'+') to plot the points as having little + signs or just use plot(T,Hvals) which draws a line graph between each of the points.

Another way to do it is to define a function called H and then use fplot to plot it using fplot(H,[0,5])

So im working to follow the fplot rules and have problem where i dont know what to put in as the variable name. It will not accept y, fplot(y,[0,5]) Undefined function or variable 'y'. Ok

Like this? y=@(x)9(x+100)*(log(x+2)) or do i need to use a different variable than y? I dont know where that 9 came from. Please remove it, it prob would create error in graph, thank you.

fplot(y,[0,5])
Undefined function or variable 'y'.
It still says y undefined, this my full code at moment…..well nuts, it just deleted the function. Ok, imma write this all out real fast, if anyone else has questions, you can work with them first. Maybe writing it our second time will do better.

y=@(x) (x+100)*(log(x+2)) this is how you define it then

OK let me give you an example

If you want to plot the function cos(2t)

You first can define the function - I will call it y

y=@(t) cos(2*t)

Then you plot it using

fplot(y,[0,5])
Which will produce a plot for t between 0 and 5
Try this and make sure you have it working.

I'm working on problem 24.8 and when I try to plug in C(t)= 12*sin((t/pi)*(t-4))+14 but when I enter that into matlab it says that it is a matrix and I don't really know where to go from there?

I'm not sure what you have done - the way to start this is to set up a vector of times
T=[1 2 3   etc]
Then set up the vector of temps
Temps=[2.8 4.8 etc.]
Then plot the points

plot(T,Temps,'+')

Then you want to plot the C(t) function too which means you want to set up a for loop to calculate C(T) for each of the T values

For i=1:10
C= the function you are calculating here ;
calcs(i)=C;
End

Then plot both together using
plot(T,Temps,'+',T,calcs)

Hello, I am slightly confused on where to start for 21.11 part a. I would greatly appreciate it if you could point me in the right direction.

First, you do not need to use Matlab for this - you are estimating the area - first decide what area you are estimating by figuring out where 25 minutes is - the problem is that we didn't really want to use 25 minutes for this because it is only very short time period at the beginning of the experiment. So I suggest you change this to the first 600 minutes and then estimate it.

So I looked over the question itself and it stated i can use the f.m, derivative.m, and graphf.m functions to solve the equation. I believe i have the answer to both parts of the question using the first two functions and the work to show for it. Do i explicitly need the graph, as at this point figuring where my errors are in creating the graph is taking up a lot of time. Im working with 18.9, sorry for the confusion, i also was under the impression that i needed the graph to find part of the answer, but i was able to without it. Sorry for taking up time. Thank you.

One minor question. In question 24.17, it states that the krill distribution is horizontal, not vertical. Will i need to adjust my equations or answer at all to accommodate for this? Alright thanks, pretty sure that's everything i have for the night. Thanks again and good night.

No you do this exactly the same way you would if it was depth rather than distance from shore - this is using the same integrals to calculate the total number of some item (krill in this case) along a certain distance or depth.

It's Ok - for 18.9 you don't need a graph so don't need to include it in the answer you turn in.

I now see that you probably just didn't have the function graphf.m included in the path for your Matlab so it didn't know where it was - this is not part of standard Matlab - it is the code from section 16.4 - but you have to get the graph to do section (b) of the problem (this is 18.10 right?)

OK - anything else from anyone? If not, I'm going offline for the night.

Could you please explain how to start 22.11?

OK - again as I noted above there are many ways in Matlab to graph a function which is the first thing to do in this problem. - one way is to use the graphf.m function we describe in Section 16.4 in the text. You can download the code for this from the book website
http://www.mathematicsforthelifesciences.com/MatlabFiles.html

Then you create a function in the same directory as graphf.m that is the function in 22.11 you want to graph. So you have to define the function for x'(t)

Using

function y = f(x)
y=formula for the derivative in here;

Then all you do is type in the command window

graphf((xmin,xmax) where xmin and xmax give the range of values for the graph's horizontal axis.

You could also use the fplot function in Matlab to do this as i described above using the cos(2t) as an example.

Thank You

Anything else from anyone??

Could you explain how to start 20.18?

Sure - you see from the figure that the assumption is that the person travels in water along a line that goes to the coastal highway some distance from the town - call the distance you go on the
Road x - then the objective is to choose x to minimize the time of travel. The time to travel on the road is how long it takes to go x miles at 55 mph. Then you have to add to this time the time it takes to go along the hypotenuse of the right triangle you see in the graph. One side of the triangle is 10 miles - you figure out the other side. You can get a total time to travel (in water plus on road) as a function of x, take the derivative and see if you can find x to minimize the total time
OK?

That makes more sense, thank you!

OK - I'm going off line now - have a good evening- Lou