Mathematics 122A,B   Fall 2004   Project 3

Due September 22

_____   _____
         Study Group Members   **Name**

Only write on one side of each page.

I encourage you to work with others on this quiz. As with all writing you should work out the details in a draft before writing a final solution. Be sure to follow the writing guidelines listed in the course information sheet unless explicitly directed to do otherwise in the problem statement. You do not need to include every algebra or arithmetic step but you should include enough detail to allow a member of your target audience to reconstruct any missing steps. Be sure to include in-line citations, with page numbers if appropriate, every time you use the results of discussion, a text, notes, or technology. If you include graphs, they should be done carefully on graph paper. Finally, there is to be no collaboration in the writing of your solution even if you worked out the details with other people.

"It takes at least a couple of decades to realize that you were well taught. All true education is a delayed-action bomb assembled in the classroom for explosion at a later date. An educational fuse of 50 years long is by no means unusual" (Kenneth D. Gangel)

Problems

1. Find, state and justify a general rule for computing the derivative with respect to x of

$$f\left(x\right) = \int_{r(x)}^{s(x)} g\left(t\right)\, dt$$

   where $r\left(x\right)$ and $s\left(x\right)$ are functions of the variable x. Carefully describe the assumptions that need to be made about r, s and g for the rule to make sense.