

Not Graded

Study Group Members

Name**Only write on one side of each page.**

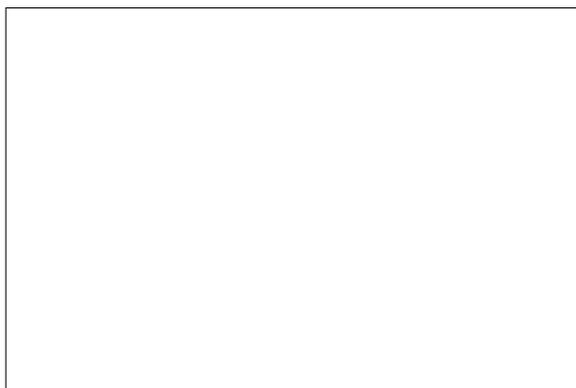
I encourage you to work with others on this quiz. As with all writing you should work out the details in a draft before writing a final solution. Be sure to follow the writing guidelines listed in the course information sheet unless explicitly directed to do otherwise in the problem statement. You do 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.

“No, no, you’re not thinking, you’re just being logical.” -Niels Bohr, physicist (1885-1962)

Problems

Do **one** (1) of the following problems.

1. There are many ways to define (or compute) area. Illustrate your understanding of the notation and method used in Section 2 of Chapter 5 by using the appropriate limit to compute the area of the region between $x = 1$ and $x = 5$ that is bounded below by the x - axis and above by the graph of the curve $y = x^3 - x^2$.



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

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

where $r(x)$ and $s(x)$ are functions of the variable x . Be sure to state any assumptions that need to be made about r , s and g for the rule to make sense.

A useful example is:

$$\text{If } f(x) = \int_4^{x^3} \cos(t^3) dt, \text{ then } f'(x) = (3x^2) \cos(x^9).$$