Math 116-36
Rafe Kinsey
Monday, 9.20.10

Further Comments/Suggestions for Team Homework

After having graded your first team homeworks, I have a few further guidelines and suggestions. If you didn't do too well on the first set, don't worry—if you follow these guidelines and improve, your first score won't affect you much at all. Even if you did do well, I will be grading a bit more carefully now that I have given you these more clear guidelines, so I will still expect improvement. (I might also include an extra five points on each assignment for overall presentation, if I get a sense that this isn't good enough.)

Preface: A large part of the reason that we assign team homework is to give you an opportunity to practice your **communication** skills. This is good both because such skills will come up again and again in college and in your future jobs, and because by clearly explaining what you are doing, you will learn the material much better. This is why we focus so much on presentation. Over the course of the semester, you will only be scribe a few times, so it shouldn't be too much of a commitment to write up your homework carefully.

Remember: You should imagine that the reader of the team homework is another student in 116 or a similar course, to whom you are explaining how you solved a problem.

(1) In particular, you should **restate the problem**: it doesn't have to be a word-for-word copy of the problem, but your reader should be able to figure out exactly what the problem is, without looking at the textbook. In particular, you should include the relevant data you have been given (e.g., a table, a graph, etc.). You should also be clear what you are asked to find in each part of the problem (e.g., *We are asked in this part to find the equation of this function*).

(2) For most problems (this problem set perhaps less so, since there were not as many equations), your answer should be **a mixture of math and text**. What you've written will be read, in order, from top to bottom. First, I should see what the information for the problem is. Then I should read what the problem is. Then, you should explain how you are solving the problem *while* you are doing it. When you have lines of equations with calculations, the formulas should be on new lines, separated from the paragraph; this improves readability.

Example:

> *...Now that we know that the slope of the equation is m = 5, we must solve for the y-intercept b. To do this, we plug in a data point (x,y) = (10,25):*
>
> $y = 5x + b$
>
> $25 = 5 * 10 + b$
>
> $b = -25$
>
> *Thus, we find that the solution for the equation is y = 5x – 25.*

Note that you don't also have to explain simple arithmetic verbally (e.g., you don't have to explain how you got from line two to line three). But you should include the relevant math formulas: it shouldn't appear as if you magically found the answer.

It's a lot easier to read formulas when they are on a new line, and when they are indented slightly, as I have done above. Also, don't try to pack everything into a small space: it's often much easier to read math when there is more "white space" on the page.

(3) You should **explain how** you got your answer, and, if appropriate, **why** this works. Some of you said things like this: "We calculated the area under the curve to find the displacement." A better way of saying this would be: "By the first fundamental theorem of calculus, the displacement is given by the area under the curve, so we estimated this integral by counting boxes…" (Because these problems were on the fundamental theorem, you want to be explicit in explaining that you are using it; later on in the semester, when that is no longer the focus of the problem, you wouldn't have to state it explicitly.)

(4) Be careful about terminology. When you're talking in person with someone, it's (usually) fine to be sloppy about things like calling the derivative the "slope of the curve", but when you are writing something up formally (or on an exam), to be precise, you should say "the slope of the tangent line to the curve." You should be careful about the difference between velocity and speed. And you should be very careful about how you phrase things involving "area", "integral", etc. You could say things like "the integral of the velocity function from a to b" or "the area between the graph of f(x) and the x-axis from a to b, counted negatively"; these are precise statements.

(5) Related to point (4): Be careful about your explanations. A lot of you said things like "since the area from a to b is less than the area from b to c" the displacement is positive. You want to state things clearly: "Since the area between the function and the x-axis from a to b, where it is below the x-axis, is smaller than the area between the function and the x-axis from a to c, where it is positive, we know that the integral from a to c of the function will be positive. Therefore, by the fundamental theorem, the displacement from a to c will be positive."

(7) It's important to explain what you are doing and why, but it's also important to do so **concisely**. Don't say the same thing twice (or three times, or four times), and don't say extraneous information. Good diagrams and charts help communicate efficiently. The longest answer is not usually the best answer.

(8) Please pay attention to the quality of your prose. You should write in clear and effective English. Learning to write effectively is a crucial skill for college; if you need work on it, consider taking advantage of the writing center, as well as your peers. I won't take off points for a single misspelling or typo, but I will if there are consistent misspellings and sloppy writing.

(9) You don't have to type your work, as long as what you have is neat and presentable. But if your handwriting isn't neat it's probably a good idea.

Please let me know if you have any questions. For more guidance, remember the tutorial on the course website.