

## Digest 1

(A compilation of emailed homework questions, answered around Wednesday.)

**Question.** [Exercise 4] Let  $j$  be a positive integer. Let  $f(x) = x^j e^x$ . Find the critical points of  $f$ . Classify these critical points as local maxima, local minima, or neither.

(From a student): For problem 4 in the HW, I get that the critical points are 0 and  $-j$ . Only knowing that  $j$  is a positive integer allows me to understand that anything to the right of 0 is positive, and anything to the left of zero will produce the same sign. However knowing whether or not  $j$  is an even or odd number seems to be a crucial factor in getting whether or not the points are a min or max.  $-j$  is not a local min or max, but  $x = 0$  certainly depends on the (even or odd) value of  $j$ . Am I thinking incorrectly? Thank you.

*Answer.* I believe you are correct about the even/odd nature of  $j$  playing a role. Some of the other things you said you may want to check a bit closer.

**Question.** (From a student): I cannot turn in my homework in person on Friday due to (insert reason). What should I do?

*Answer.* You have a few options. You could: turn in the homework early directly to me, slide the homework under my door (before noon on Friday please), have a friend in the class turn it in for you, etc. I would rather not get the TAs involved in homework collection (though they administer the quizzes and return the homework, of course).

**Question.** (From a student): Can we use the internet to do our homework?

*Answer.* No.

There are a couple reasons for this. First, the internet makes certain problems too easy. Second, if you don't try to do the homework on your own, you won't learn anything and you won't do well on the exams. I do encourage you to form study groups and do your homework with friends, etc. since this will help you learn, improve your communication skills, etc. However, you should still first try all the problems on your own.

**Question.** (From a student): How is the course curved?

*Answer.* The Math Department guidelines for Math 31B recommend that the top 25% of the class gets A's (grades of A+, A, or A-), and the next 29% of the class gets B's (grades of B+, B, or B-). (There are no percentage recommendations for the other letter grades.) These recommendations apply to all sections of 31B. So, the median course grade in the class is usually around a B or B- (since 54% of the class have A's or B's), and this applies for all 31B instructors. However, I can adjust these percentages depending on student performance.

For example, last quarter in my 32B class I had 30% A's and the next 27% B's (so that 57% of the class had A's or B's). Also, if you individually show noticeable improvement over the quarter, and if you are close to a borderline grade, then your final course grade will probably be higher than you expect.

Since the grades are curved, your performance on homeworks, on midterms or on the final mostly has a meaning in comparison to the performance of others. For example, last quarter I had an exam out of 50 points with a median grade of 30 and a standard deviation of 8. So, in this case, a score of 38 is roughly an A, a score of 30 is roughly a B, and a score of 22 is roughly a C. This curving also means that if there is a question on a midterm that no one gets correct (which happens sometimes), then it will not affect anyone's final course grade. Similarly, if everyone gets a 100% homework grade (which occasionally happens), then it will not really affect anyone's final course grade.

However, if you individually exceed my expectations by showing A-level performance in the class, then you will get an A.