- All explanations should be written using complete sentences.
- This exam is open book and open notes. You may discuss the problems with your classmates, however you may NOT simply copy work from each other. Even though there are questions it is not easy to distinguish who copied from whom, there are enough free-response questions here to figure out whom worked with whom "very collaboratively" or "just a tad." Also, the portion of the final exam that contains questions from these chapters will have similar questions to the ones in this take home. Based on your performance in the final on those problems I might come back and reduce your Exam 3 grade, especially if I suspect a "very heavy collaboration" on your papers. So, it is ok to collaborate, work together to learn the topic, it is not ok just to copy someone else's work directly.
- Round all decimals to 4 places unless otherwise instructed.
- **TUTORING CENTER** is instructed to answer your questions back with a question, but they are not going to solve these problems for you. A copy of this exam is send to the tutoring center this morning, so the tutors are aware of the nature of the exam and questions in it.

Ch. 5 part 1

Problems

1. *(8pts)* Professor Lax is reputed to be a generous grader. Rumor has it that his grades are normally distributed with a mean of 85 and standard deviation of 5. Not feeling quite confident that she can believe this rumor, Miss Z. obtains a RANDOM sample of 9 of Professor Lax' students. (No, she did not use Reddit or RateMyProfessor as she knows the importance of random sampling in the sampling process and the bias introduced in her result from convenience sampling). Miss Z finds a sample mean of only 80! If the rumor is true, what is the probability that a simple random sample of 9 student papers from Mr. Lax's class will produce a sample mean of 80 or below? Should Miss Z. infer based on your probability computation that the rumor is false and reconsider taking this class with Prof. Lax?
   (Note that you were not provided with a level of significance. Do you need one to make a decision in this problem? If you believe you do, I want you to come up with your own level of significance, putting yourself in place of Miss Z. After all you cannot say you do not do this kind of investigation before deciding on registering a professor's class. What level of significance would you use on your decision and why? Caution: "I think 4% is good enough for me" is not an academically acceptable answer, regardless of how much I respect your feelings. I am looking for a rational thought process here that takes certain tradeoffs into consideration. What is at stake here?)
2. *(12pts)* Going back to problem 1, in real life you can, without much difficulty, get the mean grade of Prof. Lax's classes but that is about it; meaning you will have no idea how his grades would be distributed, nor would you have any idea about the standard deviation of these grades. (I doubt Prof. Lax would advertise his laxness on his website. Contrary what you might believe that is academically bad form and might negatively