Midterm 3 Study Guide

This is meant to be a representative sampling of the key concepts you will need to know, and it is not meant to be exhaustive. You should make sure that you are comfortable with Quizzes 10-11 and Homework Assignments 15-17.

1. What do X and $\hat{p}$ represent in the binomial setting?
2. What are the mean and standard deviation of X and $\hat{p}$ in a binomial setting?
3. What condition must n, p satisfy in order for us to be able to use the normal distribution for the computations in a binomial setting?
4. What conditions must hold in order for us to be in the IID setting?
5. What do μ and σ represent in the IID setting?
6. What are the formulas for the mean and standard deviation of $\bar{x}$ in the IID setting?
7. What does the Central Limit Theorem say?
8. What do we refer to when we talk about the *sampling distribution* of $\bar{x}$?
9. What quantities do we refer to as *parameters*, and what quantities do we refer to as *statistics*?
10. What is the general goal of a *confidence interval*?
11. State precisely what the confidence interval for the population mean μ says, describing all the terms needed along the way.
12. What are the options we have when we want to reduce the *margin of error*? What are the tradeoffs?
13. How do we compute the sample size needed to achieve a specific margin of error?
14. What is the general idea behind a hypothesis test?
15. What kinds the two types of results can we get from a hypothesis test?
16. What errors do we refer to as Type I errors? What about Type II errors?
17. What three parts of our work in a hypothesis test or confidence interval are affected by the sample size and a change in the sample size?