General Instructions:

- You can discuss HW problems with others, but your write-up must be your own.
- Homework should be legible, coherent, well-organized and oem stapled.
- You should submit the first two problems on different sheets than the last problem. Treat the two groups of problems as separate packets: labeled and stapled separately as if they were two different assignments. Remember to put your name and section on both packets and also to label clearly at the top of each packet which problems are contained therein. Homeworks not submitted as separate packets will not be graded.
- Read sections 4.8 and 5.1–5.3 of VINING.

Do problems:

1. Problem #4.54 on p.208 of your textbook.
2. Problem #4.32 on p.193 of your textbook.
3. Acceptance Sampling is just a type of hypothesis testing. Suppose you receive a large shipment of a particular part. You only want to accept the shipment if no more than 5% of the parts are defective. This suggests the following hypothesis test:
   \[ H_0 : p \leq .05 \]
   \[ H_A : p > .05 \]

   Because we are really only concerned with whether or not the true proportion is greater than .05, we tend to simplify this hypothesis to:
   \[ H_0 : p = .05 \]
   \[ H_A : p > .05 \]

   So, \( p_0 = .05 \) in this example. Suppose you sample 50 items and 4 of them are defective.
   (a) Calculate the appropriate test statistic.
   (b) Suppose that the true proportion defective is, in fact, .05. What is the probability of obtaining a test statistic of this size or larger?
   (c) Based on your answer to part b, would you accept this shipment? Why or why not?