Problem Set 6 for Math 30

Date Due: March 25, 2011

March 10, 2011

Sections 10.7-10.11
Chapter 10 Problems:
64, 72 (can assume equal population variances), 78, 84, 94, 98, 101, 106, 109
and Additional problems below

Additional:

1. In an animal learning experiment, a researcher wants to assess if a particular drug speeds learning. A group of 5 rats ran a maze without the drug in their systems, and a second independent group of 8 rats ran the maze with the drug in their systems. Run time statistics for the two groups of rats are as follows: for the no-drug group, the sample mean run time was 46.80 seconds with a standard deviation of 3.42 seconds, and for the drug group, the sample mean run time was 36.38 seconds with a standard deviation of 4.78 seconds. Is there significant evidence to conclude that the drug speeds learning on average? You should check the equal variances condition using a hypothesis test. You should use a Bonferroni correction and overall significance level of .05.

2. A new proposal up for a vote in the city council would create a community center building in place of a beloved city park. An activist is interviewing city residents to find out what proportion are opposed to building the center in place of the park. He takes a random sample of 12 residents and finds 10 are opposed to building the center in place of the park. Is there evidence to suggest that a majority of city residents are opposed to building the center in place of the park at a .1 significance level?