STAT525 HOMEWORK #9

1. KNNL Problem 19.4
2. KNNL Problem 19.5
3. KNNL Problem 19.14
4. KNNL Problem 19.15
5. KNNL Problem 19.28
6. A clay tile company was interested in studying the effects of oven and cooling temperature on the strength of their tiles. The company's five ovens, used to bake the tiles, and four cooling temperatures (°C) were considered. The data are shown below.

Cooling	Oven					
Temp	1	2	3	4	5	Mean
5	5	10	7	4	3	5.80
10	3	8	12	2	8	6.6
15	9	13	15	4	10	10.20
20	7	12	9	6	13	9.40
Mean	6.00	10.75	10.75	4.00	8.50	8.00

   a. Here MSE=5.375, compute the F-statistic to determine if there is a difference among the four cooling temperatures and the five ovens (use $\alpha = .05$). If significant, perform pairwise comparisons using Tukey's procedure (HINT: Use Table B.9)
   b. Suppose the company believes there is a jump in the tile strength at 12.5 °C but otherwise cooling temperature has no effect (i.e., step function _____-----). Find a set of three contrasts that would allow you to test this (HINT: Contrasts in this set need to test the jump but also the relationship among the means before and after 12.5 °).
   c. Test these contrasts using SAS (or by hand). State your conclusions.

7. KNNL Problem 20.4