Homework 3

3.1. An experimenter has conducted a single-factor experiment with four levels of the factor, and each factor level has been replicated six times. The computed value of the *F*-statistic is $F_0 = 3.26$. Find bounds on the *P*-value.

3.3.

Compute the missing values in the ANOVA table

One-way ANOVA					
Source	DF	SS	MS	F	P
Factor	3	36.15	??	??	??
Error	16	??	??		
Total	??	196.04			

3.5. The tensile strength of Portland cement is being studied. Four different mixing techniques can be used economically. A completely randomized experiment was conducted and the following data were collected.

Mixing Technique	Tensile Strength (lb/in^2)			
1	3129	3000	2865	2890
2	3200	3300	2975	3150
3	2800	2900	2985	3050
4	2600	2700	2600	2765

(a) Test the hypothesis that mixing techniques affect the strength of the cement. Use alpha= 0.05.

(d) Draw a normal probability plot of the residuals. What conclusion would you draw about the validity of the normality assumption?

(e) Plot the residuals versus the predicted tensile strength. Comment on the plot.