STAT525 HOMEWORK#5

1. Use the **patient satisfaction** data described in KNNL Problem 6.15.

   a Compute the pairwise correlations between the X's and between each X and Y. Which X variable appears to be the best individual predictor?

   b Run the linear regression with age, severity of illness and anxiety level as the explanatory variables and satisfaction as the response variable. Summarize the regression results.

   c Plot the residuals versus the predicted satisfaction and each of the explanatory variables. Are there any unusual patterns?

   d Examine the assumption of normality for the residuals using a qqplot or histogram. State your conclusions.

   e Predict the satisfaction for a 55 year old patient with illness severity 50 and anxiety level 2.8. Provide a 95% prediction interval with your prediction.

2. KNNL Problem 7.5

3. KNNL Problem 7.6 (Please try to only use SAS statement `model y = x1 x2 x3/ss1;`, and derive the test based on it. Then justify your answer with `test x2 x3;`)

4. Derive the equation (7.56) on page 281 (HINT: Recall that b_1 can be obtained by regressing the residuals of $Y|X_2$ vs the residuals of $X_1|X_2$)

5. KNNL Problem 8.6

6. KNNL Problem 8.15