STA 572 Practice Problems 3

1. Is it possible that the total variance of the p-variables measured on each of n individuals (or units) can be reduced to a single dimension? Explain.

2. Under what conditions is better to use $\mathbf{S}$ instead of $\mathbf{R}$ to conduct principal component analyses?

3. State the factor analysis model and list the associated assumptions.

4. How many parameters are there in a factor analysis model? What is the purpose of factor rotation?

5. How is PCA related to factor analysis?

6. Under what conditions are the canonical variates described by single variables as opposed to linear combinations of variables?

7. What is the difference between CCA and PCA?

8. Explain how the classification rule of an observation vector into one of two multivariate normally distributed populations must be modified if the two population covariance matrices are not the same.

9. What is the main purpose of cluster analysis?

10. Can you suggest an appropriate hypothesis test to determine if two clusters should be combined?