**STA 6329 – Assignment 7– Due 11/20/19**

**Text Book Problems:**

Harville: Chapter 11: 6,9 Ch. 12: 1,2,3,4,5,6 Ch. 13: 1,2,3,4,5,8,9,12b

**Other Problems:**

1. Use the absorption method (Section 11.11) to solve the following system of equations.



1. Consider a vector **Y** in 6-dimensional space (R6) and two subspaces of R6: U1 and U2:



* 1. Is one of the two subspaces a subspace of the other? That is, is **X**1 in the column space of **X**2, or vice versa? Give the matrix that demonstrates that.
  2. Give the projection matrices for U1 and U2.
  3. Give the projections **z**1 and **z**2 of **Y** onto U1 and U2
  4. Give the projections **w**1 and **w**2 of **Y** onto U1┴ and U2┴

1. The following correlation matrix was obtained among predictors (in logs) in a study relating carbon emissions (Y) to population (X1), urbanization rate (X2), and percent of population of working age (X3) in China over n = 31 years.



* 1. Obtain the cofactors for each element and the adjoint matrix.
  2. Show that **R** adj **R** = |**R**| **I**
  3. Compare |**R**| with the case it had been **R** = **I**

1. Use Corollary 13.7.4 to obtain the determinant of **A** = *x***I** symbolically for n=3 (A={aij}) then for following numeric values.

 and compare with direct computation.