AMS 510

Homework 1 (Due 11:59, Monday, 9/14)

1. Use Gauss elimination to transform the following matrices to the echelon and reduced echelon forms

$$\text{(a).}\quad A = \begin{pmatrix} 0 & 1 & 2 & 2 & 3 \\ 1 & 3 & 1 & -3 & 1 \\ 2 & 7 & 4 & -4 & 5 \\ 2 & 1 & 1 & 1 & 4 \end{pmatrix}, \qquad \text{(b).}\quad B = \begin{pmatrix} 0 & 0 & 2 & 2 \\ 2 & 3 & 1 & 4 \\ 2 & 1 & 4 & 2 \\ 3 & 1 & 1 & 1 \end{pmatrix}$$

   What are the row ranks and column ranks of the matrices? For (b) calculate the determinant of the matrix.

   The following are from Gilbert Strang, 4th Edition.

2. Section 1.4 Exercises: 22, 30, 43
3. Section 1.6 Exercises: 6, 18, 29, 30.
4. Section 2.1 Exercises: 21, 22, 24.
5. Section 2.2 Exercises: 2, 7, 33.
6. Section 2.3 Exercises: 6, 13, 29.
7. Section 2.4 Exercises: 3, 6.
8. Section 4.2 Exercises: 4, 10.
9. Section 4.3 Exercises: 5, 19.