Homework Assignment 6 in MATH309-Spring 2013, ©Igor Zelenko

due March 6, 2013 . **Show your work in all exercises.**

Sections covered 3.6, 4.1: column/row spaces, rank of the matrix, Rank-Nullity theorem, linear transformations, kernel and range of a linear transformation.

On the material of section 3.6:

1. Given the matrix
$$A = \begin{pmatrix} 1 & -2 & 3 & 4 & 1 \\ 2 & -4 & -3 & 1 & 7 \\ -1 & 2 & 15 & 10 & -11 \\ -1 & 2 & 6 & 3 & -6 \end{pmatrix}$$
find

    (a) the rank of A;

    (b) the nullity of A;

    (c) a basis of row space;

    (d) a basis of column space;

    (e) a basis of null space.

2. Exercise 7(a), (b), and (c), page 160.

3. Exercise 10, page 160.

4. Exercise 13, page 160.

5. Exercise 14, page 160.

6. (**bonus 10 pts**) Exercise 27, page 161.

    On the material of section 4.1:

7. Exercise 3, page 174.

8. Exercise 4 page 174.

9. Exercise 6 , all items, page 174.

10. Exercises 9, all items, page 174.

11. Exercise 11 (a),(b), (c), page 174 and then **bonus 5 points** for 11 (d), page 174

12. Exercise 17, all items, page 175.

13. (**bonus 10 points**) Exercise 19 (a),(b), page 175.