

21001, Section 01, Linear Algebra and applications
HW 8, DUE Wednesday, April 13
Instructor: Prof. Artem Zvavitch
GOOD LUCK!!!

Problem 1. Consider matrix A such that

$$A = \begin{bmatrix} 1 & -1 & 0 & 2 \\ 0 & 1 & 1 & -3 \\ -1 & 4 & 2 & -10 \end{bmatrix}.$$

Please, find

- Basis and dimension of the row space of A .
- Basis and dimension of the column space of A .
- Null set of A . (We will learn this on Monday).
- nullity(A). (We will learn this on Monday)

Problem 2. Consider $n \times n$ matrix A such that

$$\det(A) \neq 0$$

Please, find

- Basis and dimension of the row space of A .
- Basis and dimension of the column space of A .
- Null set of A . (We will learn this on Monday)
- nullity(A). (We will learn this on Monday)

HINT! Problem 2 is simple! Please, think about $\det(A) \neq 0$ and dependence or independence of rows (columns) vectors of A .

Problem 3. Please, read, understand and write the proof of Theorem 4.15 from the book (row and Columns Spaces have equal dimension). Please, let me know if you need a copy of this theorem!!