## October 16

## Announcements

- Solutions for worksheet 2 and 3 are posted
- Midterm on Wednesday

## Review

Talk about some worksheet solutions.

Give an example of each of the following. If it is not possible, write "NOT POSSIBLE".

- Give an example of a linear system with no solutions
- Give an example of a linear system with infinitely many solutions
- Give an example of 4 vectors in  $\mathbb{R}^3$  that are linearly independent.
- Give an example of 3 vectors in  $\mathbb{R}^3$  that are spanning.
- Give an example of a linear transformation  $T: \mathbb{R}^2 \to \mathbb{R}^2$  such that T(3,0)=(2,3).
- Give an example of a linear transformation  $T: \mathbb{R}^2 \to \mathbb{R}^3$  that is onto.

Let  $v_1 = (1, 0, 0, 0), v_2 = (1, 2, 0, 0), v_3 = (2, 3, 4, 0), v_4 = (1, 2, 3, 0).$  Let  $S = \{v_1, v_2, v_3, v_4\}.$ 

- Is S a spanning set? If not, what is a vector not in the span?
- Is S a linearly independent set? If not, write one of the vectors as a linear combination of the others.
- Let  $A = [v_1 \ v_2 \ v_3 \ v_4]$ . Give a nontrivial solution to Ax = 0.
- Let T be the linear transformation defined by T(x) = Ax. What is the dimension of the domain and codomain of T?
- Is T one-to-one? Why or why not?
- Is T onto? Why or why not?

And then we go over old midterms.

kdev au13 problem 1. kdev au13 problem 2. talk a bit about homogeneous case just keep going, just keep going, just keep going,....