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,....