Notes:

- If u know basics easy time passing
- Then more complex exercises
- Same points for easy and difficult exercises

- For each assignment Specification of points, and if documentation is required

- Based on pivots there is a B … find minimal value for m and n, what is the smallest the matrix can be and the facts are still true

- 3 statements TRUE/FALSE,

*be alarmed if you see a big matrix in the first part, there is sth you can do so that you can avoid rrefing or … LOOK for

- based on graph figure out the eig.vals. and their multiplicities:

    -local/global max/min that means the alg.multiplicity of the eig.val. is more than 1

- dim ColA, dim NullA, dim NullA.T, …, dimensions of fundamental subspaces

-differential equation (less complex, with 2 equations, NO mixing problem, just with equation stated)

- you get det(A) and you need to calculate …(something with K) combination of det(A) and det(B) /det(AB)=det(A)*det(B)

- you get a system put it to the matrix in the next part you get echelon form and you have to deduce rank, nullspace(=solution), … . Assume that find x-s that solves the system, if there are free vars you need to set them to sth too (the easiest is to set the to 0) give PVF.

(there isn't the b/result vector in Nullspace!) so it is 0-vector

- True/Fals – if it always has a solution, …

- Cofactor expansion (3 unknowns in 3x3 matrix)

- 3. Vector is dep. On the first 2 you need to find its lin.comb (it is first part so you should not use rrf but find sth else to figure it out / look for multiples)

- Dep./Indep.: It is dep. if it contains 0-vector, if one vector is multiple of the other, …

- You get a vector a, check if it is orthogonal? matrix multiplication?

- You get a basis for a subsapace of R4 find its orthogonal complement (= it is the nullspace of the transposed vectors)

PART2:

- *some surprise with the mixing problem

1.

o U get xyz such that the expression=0 (plain eqution, plain spanned by 2 vectors)

o Find its nullspace and you will get its vectors … ?

Projection

a. Project v onto x … (you can use the “classic” projection or the “least square”

b. Calculate a Distance ||projection - …||

c. You get 2 vectors in a null space (you cannot know if they are orthogonal GramSchmidt)

2. Mixing problem:

a. Same solution as we have already seen but there are different questions (4):

i. How much will be in tank-x at time t

ii. At what time it will be quarter of the original

iii. In the long run (limit) !!! to 0 or to inf !!!

iv. + surprise

3. One set of 2 vectors and one with 3 when you put them together they are not necessarily lind.indep.

4. Regression

5. SVD (similar to one we had)