Source:

1 | new schedule today :/

2 | Systems of equations, matrix equations, and vectors

3 | in class work! See `./KBe20math530srcNull_space_and_column_space_intro.pdf`

3.1 | parts of the question

3.1.1 | How many solutions x satisfy $Ax = 0$?

3.1.2 | When the answer is "infinitely many" what tools might we have to describe the size of that set?

3.1.3 | How many possible outcomes b are there for the equation $Ax = b$ for any x.

3.2 | $A = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

3.2.1 | How many solutions x satisfy $Ax = 0$?

The only solution is x=0, because $Ax = x$.

3.2.2 | When the answer is "infinitely many" what tools might we have to describe the size of that set?

N/A

3.2.3 | How many possible outcomes b are there for the equation $Ax = b$ for any x.

There can be infintely many vaules of b..?

3.3 | $A = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \end{pmatrix}$

3.3.1 | How many solutions x satisfy $Ax = 0$?

Infinitely many (anything of the form $\begin{pmatrix} 0 \\ 0 \\ x \end{pmatrix}$)

3.3.2 | When the answer is ”infinitely many” what tools might we have to describe the size of that set?

The columns of the matrix are linearly dependent

3.3.3 | How many possible outcomes b are there for the equation $Ax = b$ for any x.