

**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  $x$ .**