MA322-001 Jan 15 quiz Name: Key

Old material: Generally there would be a more difficult question that is suspiciously similar to the homework.

1.1 (New material): Generally here I ask some lighter questions that you should have picked up from class. If you did not understand this part, you should put a question mark.

1.1.1 Write the augmented matrix of this system of equations:

$$\left\{\begin{array}{l} 3x_1+4x_2+5x_3+6x_4=7 \\ x_1+x_2=x_3+x_4 \\ x_1=8 \end{array}\right\} \quad \left[\begin{array}{cccc|c} 3 & 4 & 5 & 6 & 7 \\ 1 & 1 & -1 & -1 & 0 \\ 1 & 0 & 0 & 0 & 8 \end{array}\right]$$

1.1.2 Which of these are "elementary row operations"?

✓ (a) Replace one row by the sum of itself and a multiple of another row.

✓ (b) Interchange two rows.

✓ (c) Multiply all entries in a row by a nonzero constant.

✗ (d) ~~Multiply two rows together.~~ If $1x+1y=11$ and $1x-1y=9$ Does well $x=10, y=1$, so $x-y=9$, not 99

$1x - 1y = 99$? 11 $(1)(1)x+(1)(-1)y=(11)(9)$

1.1.3 If we use elementary row operations, what happens to the solution set?

Nothing. That is the point. We replace the question with an easier question that has the same answer.

1.2.1 Find the general solution to the linear system whose augmented matrix is given below. Make sure to answer in complete sentences. "x=4" is a complete sentence (it is read, "x is 4," and while not very poetic, it does contain the essential features of the complete sentence).

$$\begin{array}{cccc} x_1 & x_2 & x_3 & \\ \left[\begin{array}{cccc} 1 & 0 & -2 & 9 \\ 0 & 1 & 3 & 5 \end{array}\right] \end{array}$$

$1x_1 - 2x_3 = 9$ $x_1 = 9+2x_3$

$$\left\{\begin{array}{l} x_1 = 9+2x_3 \\ x_2 = 5-3x_3 \\ x_3 \text{ is free} \end{array}\right.$$

1.2.2 "Just give me some numbers!!!" For the same matrix, give specific numeric values for variables that do actually work (even if there might be other answers).

$$\left[\begin{array}{cccc} 1 & 0 & -2 & 9 \\ 0 & 1 & 3 & 5 \end{array}\right]$$

$$\left\{\begin{array}{l} x_1 = 11 \\ x_2 = 2 \\ x_3 = 1 \end{array}\right.$$

You should get this back on Jan 20.