Name hum Move

Quiz 1 Math 2210Q, Section 12

Consider

$$\begin{bmatrix} 1 & 1 & 0 \\ 1 & 4 & 3 \\ 5 & 20 & 15 \end{bmatrix} \vec{x} = \begin{bmatrix} 2 \\ 2 \\ 10 \end{bmatrix}.$$

(1) Write above equation as a vector equation.

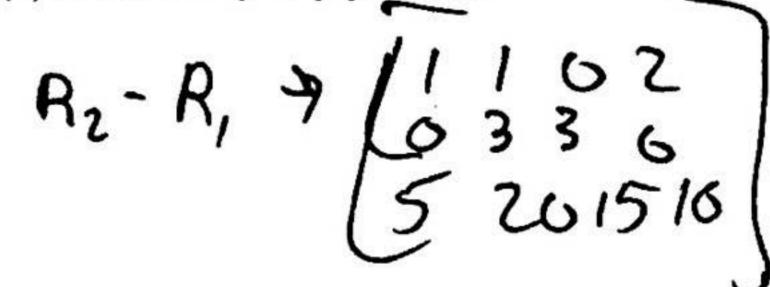
$$A \times = b \qquad \left[\begin{array}{c} \sqrt{1} & \sqrt{2} \\ \sqrt{2} & \sqrt{2} \\ \sqrt{2} & \sqrt{2} \end{array} \right] = \left(\begin{array}{c} 2 \\ 2 \\ 10 \end{array} \right)$$

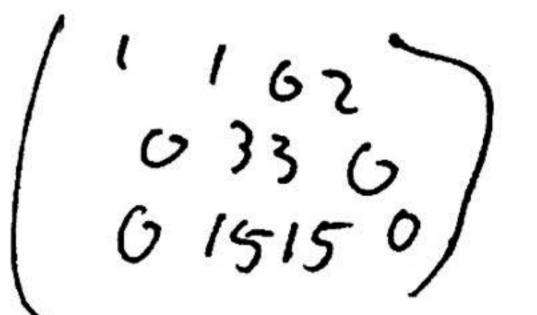
(2) Write it as a a system of linear equations.

$$|x_{1} + /x_{2} = 2$$

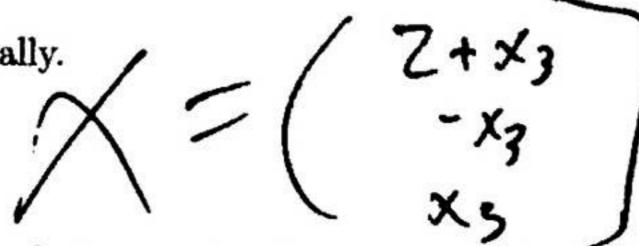
$$x_{1} + 4x_{2} + 3x_{3} = 3$$

$$5x_{1} + 20x_{2} + 15x_{3} = 10$$
(3) Solve it any way you like.





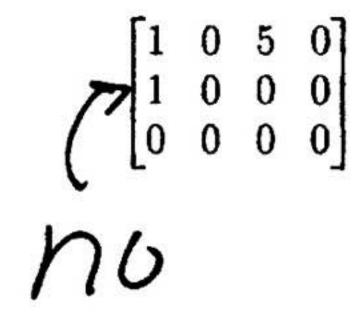
(4) Write the solution parametrically.



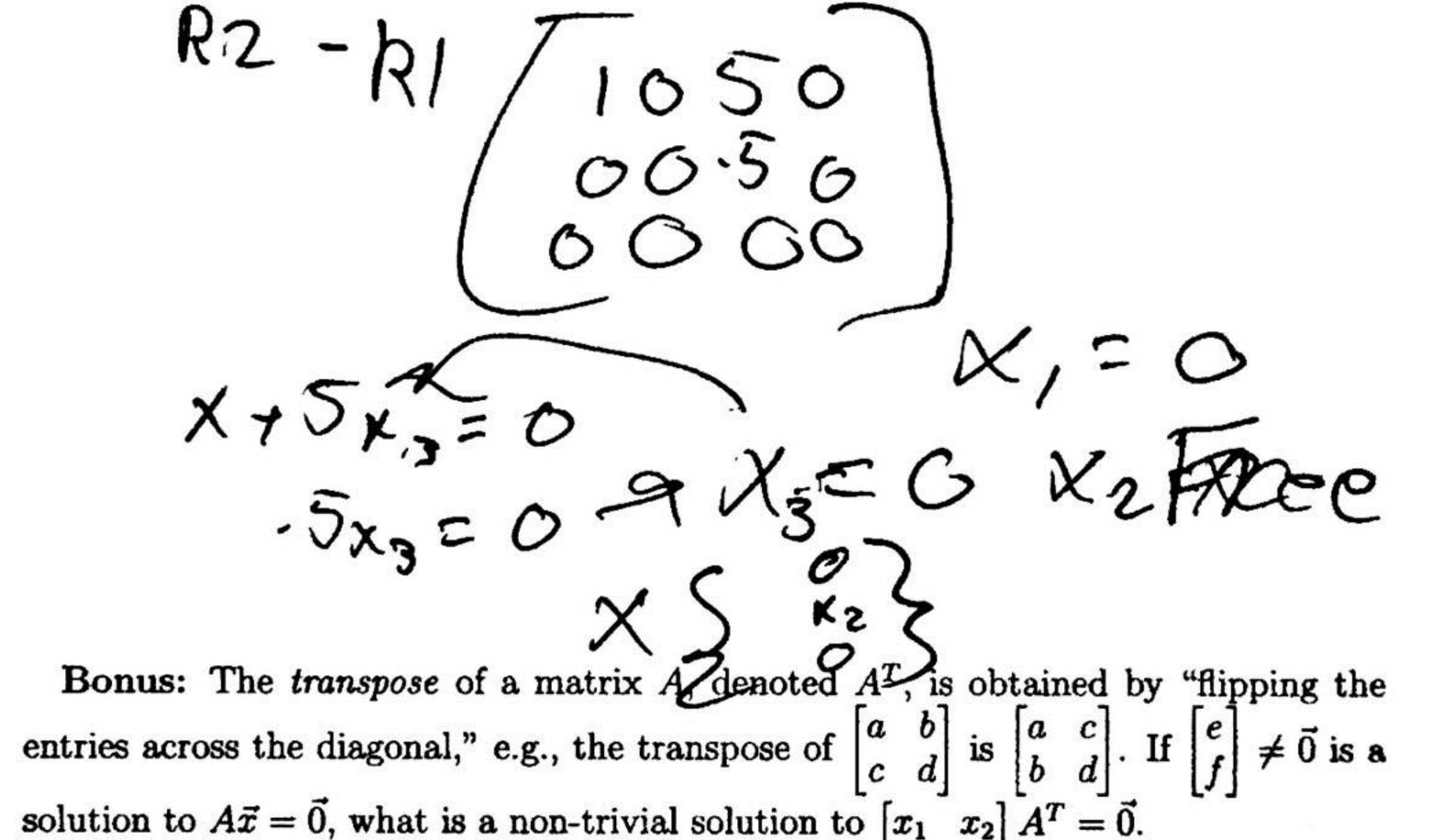
(5) What is the dimension of the solution set, i.e., how many free variables are there?

/ Fre variable

(6) Is the following matrix in reduced echelon form?



(7) If the matrix above is the augmented matrix for a linear system, what are the solutions to the system?



solution to $A\vec{x} = \vec{0}$, what is a non-trivial solution to $\begin{bmatrix} x_1 & x_2 \end{bmatrix} A^T = \vec{0}$.