

Quiz 1; Tuesday, August 30
MATH 54 with Ming Gu
GSI: Eric Hallman

Student name:

You have 15 minutes to complete the quiz. Calculators are not permitted.

1. (4 points) Solve the system of equations

$$\begin{aligned}x_1 + 5x_2 &= 7 \\ -2x_1 - 7x_2 &= -5\end{aligned}$$

by setting up the augmented matrix and using elementary row operations to convert it to *reduced* echelon form. Describe which row operation you are using with every step.

2. (4 points) Describe the set of solutions for the system whose augmented matrix is given below:

$$\begin{bmatrix} 1 & 0 & -5 & 0 & 0 & 3 \\ 0 & 1 & 4 & -1 & 0 & 6 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

3. (4 points) Mark each statement as True or False. You do not have to explain your reasoning.

- (a) Every elementary row operation is reversible.
- (b) Elementary row operations on an augmented matrix never change the solution set of the associated linear system.
- (c) If one row of an echelon form of an augmented matrix is $[0 \ 0 \ 0 \ 5 \ 0]$, then the associated linear system is inconsistent.
- (d) Whenever a system has free variables, the solution set contains infinitely many solutions.