

Math 54 Quiz 2

September 5, 2019

Question 1 (2 points)

Directions: For each item, circle either True or False. (0.5 points each)

- (True/False) There exists a homogeneous system of equations in four variables whose only solution is $(x_1, x_2, x_3, x_4) = (2, 0, 1, 9)$.
- (True/False) If the reduced row-echelon form for the augmented matrix of a system has a row of the form $[0 \ 0 \ 0 \ \cdots \ 0 \ | \ 1]$, then the system is inconsistent.
- (True/False) A linear system that has more equations than variables is always inconsistent.
- (True/False) If the reduced row-echelon form for the augmented matrix of a consistent system has a row of zeros, then the system has infinitely many solutions.

Question 2 (6 points)

Write the solution to the following system in parametric vector form, if the system is consistent, or state that the system is inconsistent.

$$x_1 + x_2 - 2x_3 + x_4 = 2$$

$$x_1 - 2x_2 + x_3 - x_4 = 1$$

$$3x_1 - 3x_3 + x_4 = 5$$

Question 3 (7 points)

Find conditions on a , b , c , and d so that the following system is consistent.

$$x_1 + 2x_2 + x_3 = a$$

$$x_1 - x_2 + 2x_3 = b$$

$$x_1 + 3x_2 = c$$

$$x_1 + x_2 + x_3 = d$$