

Math 122-002 201730
Practice Assignment # 1

(All these questions will look easier after next week).

1. For each linear system, solve by doing elementary row operations. If there are infinitely many solutions, express them in parametric form **in two different ways**.

$$(a) \begin{cases} 3x_1 - x_2 = 3 \\ 4x_1 + x_2 = 1 \end{cases}$$

$$(b) \begin{cases} 3x - 6y + 5z = 2 \\ 4x - 3y + z = 6 \end{cases}$$

$$(c) \begin{cases} 4x + 7y = 1 \\ 5x + 8y = 2 \\ 6x + 9y = 3 \end{cases}$$

$$(d) \begin{cases} 4x + 7y = 1 \\ 5x + 8y = 2 \\ 6x + 9y = 4 \end{cases}$$

$$(e) \begin{cases} x_1 + 2x_2 + 3x_3 + 4x_4 + 5x_5 = 6 \\ x_1 + 3x_2 + 5x_3 + 7x_4 + 9x_5 = 11 \\ x_1 - x_2 = 0 \end{cases}$$

2. In each case, write a system of linear equations consisting of three equations in three unknowns, with all coefficients of all the variables different from zero, and with

- (a) no solution;
- (b) exactly one solution;
- (c) infinitely many solutions.

3. Consider the system

$$\begin{cases} 2x - 3y = 1 \\ x + y = 2 \\ x + 3y = a \end{cases}$$

Find the value of a that makes the system consistent.

Suggested practice questions: 1.1: 1-14.