

MTH 309 - Activity 2
Solutions to Linear Systems

1. Consider the system of equations

$$\begin{aligned}2x + 3y &= 7 \\4x - y &= 3.\end{aligned}$$

- (a) Graph the two lines represented by the equations.
- (b) Identify and label the solution on the graph.
- (c) What can you say in general about the graphical interpretation of solutions to linear systems?

2. Now consider the system of equations

$$\begin{aligned}2x + 3y &= 7 \\4x + 6y &= 15.\end{aligned}$$

- (a) Use a graph to find the solution(s).
- (b) Verify your findings by reducing the system using Gaussian elimination.
- (c) What stands out to you about your results?

3. Now consider the system of equations

$$\begin{aligned}8x - 2y &= 6 \\-4x + y &= -3.\end{aligned}$$

- (a) Use a graph to find the solution(s).
- (b) Verify your findings by reducing the system using Gaussian elimination.
- (c) What stands out to you about your results?

4. What are the possible answers to the question "How many solutions does a system of linear equations have?"

5. Generalize your findings from questions 2 and 3 to larger systems of equations.