Problem Set 3: Linear Algebra

Due: September 6, 2019

Problem 1

Write each of the following systems of equations as an augmented matrix and a matrix equation.

1. $-x_1 + x_2 = 4$
   $4x_1 + 3x_2 = -9$

2. $x_1 + x_2 + x_3 = 6$
   $2x_2 + 5x_3 = -4$
   $2x_1 + 5x_2 - x_3 = 27$

3. $x_1 + x_2 + x_3 + x_4 = 9$
   $-3x_1 + 7x_2 + 2x_3 + 4x_4 = 27$
   $3x_2 - 4x_3 + 2x_4 = 10$
   $8x_1 - 6x_2 - x_4 = 1$

Problem 2

Solve the systems of equations in 1 and 2 from Problem 1 using row operations on the augmented matrices you wrote.

Bonus

Solve the system of equations in 3 from Problem 1 using row operations on the augmented matrix you wrote.