

Name: \_\_\_\_\_

MATH 108

Fall 2021

HW 4: Due 10/05

*“There are three choices in this life: be good, get good, or give up.”*

*–Dr. Gregory House, House*

**Problem 1.** (10pt) Find the matrix associated with the system of equations below.

$$2x_1 - x_2 + 5x_3 = 5$$

$$x_1 + x_3 = -1$$

$$3x_2 - 6x_3 = 4$$

**Problem 2.** (10pt) Write the system of equations associated to the matrix below.

$$\begin{pmatrix} 1 & -1 & 3 & 5 & 6 \\ 0 & 1 & 4 & 9 & -2 \\ 1 & 2 & 0 & -6 & 3 \\ 2 & -1 & 4 & 1 & 7 \end{pmatrix}$$

**Problem 3.** (10pt) Use matrix methods to solve the system of equations below. Show all your work.

$$6x_1 - x_2 = 13$$

$$2x_1 + 3x_2 = 1$$

**Problem 4.** (10pt) Use matrix methods to solve the system of equations below. Show all your work.

$$x_1 - x_2 + x_3 = 2$$

$$2x_1 + 2x_2 - x_3 = 9$$

$$x_2 - 3x_3 = 8$$

**Problem 5.** (10pt) Use **WolframAlpha's** RowReduce to find the solution to the following system of equations:

$$-6x_1 - x_2 + 7x_3 - 4x_4 + 3x_5 = 83$$

$$2x_1 + 5x_2 + 2x_3 + 5x_4 + 7x_5 = \frac{67}{3}$$

$$-8x_1 - x_2 - 9x_3 - 10x_4 = -111$$

$$7x_1 - 6x_2 + 3x_3 - 5x_4 + 9x_5 = \frac{97}{2}$$

$$12x_1 - 4x_2 - x_3 + 5x_4 + 6x_5 = 0$$