

Math 109 Assignment Three

Name: _____

Assignments must be completed on this paper.

Attach extra pages if necessary.

Show all your work for full marks.

Coverage: 5.2, 6.1-6.5, 7.1

1. [5 marks] A multiple-choice test has eight questions, with four possible answers for each question. A student guesses randomly on each question. Find the probability that they get at least three questions right.

2. [6 marks] Solve the following system using Gauss-Jordan Elimination:

$$\begin{aligned}3x + 3y + 3z &= -9 \\2x + 4y - 8z &= -20 \\5x + 8y - 10z &= -36\end{aligned}$$

3. [3 marks] Data on prices (in \$) for a pound of bananas, coffee, and pineapple at three different supermarkets are given below. Use a **matrix multiplication** to find the total price at each supermarket if the following items are purchased: 3 pounds of bananas, 1 pound of coffee, and 2 pounds of pineapple.

	Bananas	Coffee	Pineapple
Store A	0.49	15.99	3.29
Store B	0.59	12.99	2.59
Store C	0.79	17.99	2.19

4. [7 marks] Find A^{-1} and use it to solve the system:

$$x + 2y + 2z = 17$$

$$x + y + z = 9$$

$$x + \quad - 2z = -9$$

5. [4 marks] If it rains one day, the probability that it will rain the next day is 0.3. If it doesn't rain one day, the probability that it will rain the next day is 0.1.

a) Draw a transition diagram

b) Find the transition matrix

c) It rained today. Find the probability that it will rain two days from now.