

EXAM 4 - MATH 111

DATE: Monday, November 22

INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 3 points. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Solve the following system by substitution

$$\left\{ \begin{array}{rcl} -2x & - & y = -3 \\ 5x & + & 2y = 4 \end{array} \right\}.$$

2. Solve the following system using the Gauss-Jordan method:

$$\left\{ \begin{array}{rclcl} 2x & + & y & - & z = -5 \\ x & + & 5y & + & 2z = 1 \\ -3x & - & y & + & z = 4 \end{array} \right\}.$$

3. Let $A = \begin{bmatrix} 3 \\ -2 \\ 1 \end{bmatrix}$, $B = \begin{bmatrix} -3 & 1 \\ 5 & 6 \\ 1 & 7 \end{bmatrix}$ and $C = \begin{bmatrix} 5 & 7 \end{bmatrix}$. Solve the matrix equation $AC + 2X = B$.

4. Find the inverse matrix of $A = \begin{bmatrix} 1 & 1 & 2 \\ 1 & 2 & 2 \\ 1 & 3 & 4 \end{bmatrix}$.

5. A friend of yours, Yolanda, is getting married in a few days. A mathematically inclined friend of Yolanda's has sent her a wedding present. When she asked him what the size of the package she should expect to receive was, he just gave her the following information: "Its length is 5 inches more than its width, its width is 5 inches less than double its height and its height is half its length". Yolanda has not taken George's Math 111[®] and, once she saw the information, she got really confused and started to cry. Can you come to her rescue and find the dimensions of the package for her?
6. You are organizing an end-of-semester party and, having had a great time in Math 111, you decide to invite George to the party to get him to meet your friends. George brings with him a jar containing 5 pounds of a trail mix consisting of pretzels costing \$ 3.00 per pound, peanuts costing \$ 4.00 per pound and almonds costing \$ 8.00 per pound. George says that a pound of the mix cost him \$ 6.00 and that the mix contains twice as many pretzels by weight as peanuts. How many pounds of pretzels, peanuts and almonds did George mix to produce the snack mix?