PRACTICE 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

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

3. Let $A = \begin{bmatrix} 1 & 3 \\ 2 & 5 \\ -1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & -2 \\ 1 & 5 \\ -3 & 0 \end{bmatrix}$. Solve the matrix equation 2A + 3X = B.

4. Find the inverse matrix of $A = \begin{bmatrix} 1 & 1 & 0 \\ 1 & 0 & 1 \\ 1 & 1 & -2 \end{bmatrix}$.

- 5. (a) Find the equation of the straight line passing through (0, 2) and (4, 3).
 - (b) Find the equation of the line with slope $-\frac{1}{2}$ going through the point (8,0).
 - (c) Find the point of intersection of the two lines.
- 6. A wine maker has two large casks of wine. One wine is 8% alcohol and the other is 18% alcohol. How many gallons of each wine should be mixed to produce 30 gallons of wine that is 12% alcohol?