

Exam 2 Review

MA110 – Nicholson

First a few pointers:

1. On all systems that say “solve by any means” you may use any means, but probably the easiest means is going to be to use your calculator’s *rref* feature. In order for me to judge mistakes, please show me the output of your calculator and not just your answer.
2. Remember that you can check any answer by plugging it back in to the equations.
3. Please always supply the final answer and not just the output from the *rref* function on your calculator.
4. If a system is dependent don’t forget to create dummy variables and write the solution in terms of them.
5. If a system is inconsistent, make sure you say so.
6. Your graphs need not be perfect for the systems of inequalities, but make sure they get the idea across.

Sample questions

1. Solve 2x2 system by elimination

$$\begin{aligned}3x - 2y &= -1 \\ x + 4y &= 9\end{aligned}$$

2. Solve systems using Gauss-Jordan elimination by calculator

a.

$$\begin{aligned}2x_1 - x_2 &= 4 \\ 3x_1 + 2x_2 &= 13\end{aligned}$$

b.

$$\begin{aligned}x_1 + 2x_2 - x_3 &= 11 \\ 2x_1 - 5x_2 + x_3 &= -20 \\ 5x_1 - x_2 - 2x_3 &= 5\end{aligned}$$

c.

$$\begin{aligned}x_1 + 2x_2 - 4x_3 - x_4 &= 7 \\ 2x_1 + 5x_2 - 9x_3 - 4x_4 &= 16 \\ x_1 + 5x_2 - 7x_3 - 7x_4 &= 13\end{aligned}$$

3. Solve a system of inequalities

a. Graph the region of solutions and identify all corner points

$$x - 2y \leq -4$$

$$2x + y \leq 7$$

$$x \geq 0$$

$$y \geq 0$$

4. Maximize or minimize a function subject to constraints

a. Maximize and minimize $z = 2x - y$ subject to

$$x - 2y \leq -4$$

$$2x + y \leq 7$$

$$x \geq 0$$

$$y \geq 0$$

5. Applications – All word problems pertaining to any of the following topics

a. Solving a system of constraint equations

b. Graphing the solutions to a system of constraint inequalities

c. Maximizing or minimizing a function subject to constraint inequalities