MTH 2775 **Quiz I (2 problems, 25 points)** **Name:**_____

Directions: Do the quiz on your own paper and upload it to Moodle by 7:20 pm for grading. **Show all work for full credit.** Using calculators to make matrix operations is prohibited.

1. Consider the following linear system

$$\left(\begin{array}{ccc|c} 1 & 1 & 2 & 1 \\ 2 & 1 & 2 & 2 \\ 1 & 2 & a & 3 \end{array}\right)$$

(a)(8 pts) Find a such that the system has a unique solution.

(b) (2 pts) Find a such that the system has infinitely many solutions.

(c) (2 pts) Find a such that the system has no solution.

2. (13 points) Solve the following linear system by using Gaussian elimination:

$$\begin{aligned} x_1 + 2x_2 - 3x_3 + x_4 &= 1 \\ -x_1 - x_2 + 4x_3 - x_4 &= 6 \\ -2x_1 - 4x_2 + 7x_3 - x_4 &= 1 \\ -x_1 - 2x_2 + 4x_3 &= 2 \end{aligned}$$