

MthU343  
Northeastern University  
DiffEQs & Linear Alg. for Engineering  
30 Minutes

Professor Gilmore  
July 31, 2008  
Quiz #4  
Name:\_\_\_\_\_.

Show All Your Work

1. Find all of the solutions of the following system of linear equations, using Gaussian elimination and working by hand:

$$\begin{aligned}x_1 + x_2 + x_3 - x_4 &= 1 \\x_1 + \quad - x_3 + x_4 &= 2 \\x_1 + x_2 - x_3 + x_4 &= -1 \\x_1 - x_2 + \quad - x_4 &= -2\end{aligned}$$

2. Find all solutions to the following system of linear equations:

$$\begin{aligned}3x_1 - 2x_2 + x_3 - x_4 &= 5 \\x_2 - x_3 + x_4 &= 3 \\x_3 - x_4 &= 1 \\-x_3 + x_4 &= 1\end{aligned}$$

**Please Turn Over and Continue Working**

3. . Find all solutions to the following system of linear equations, using Gaussian elimination and working by hand:

$$\begin{aligned}x_1 + x_2 + x_3 - x_4 &= 1 \\x_1 + \quad - x_3 + x_4 &= -1 \\& \quad x_3 + x_4 = 1\end{aligned}$$

4. Find the determinant of the following matrix, working by hand:

$$A = \begin{pmatrix} 2 & 0 & 1 & 3 \\ 0 & 1 & 0 & 2 \\ 3 & 0 & 1 & 4 \\ 1 & 2 & 0 & 0 \end{pmatrix}$$