

# Math 4133 - Linear Algebra

## Quiz #2 - 2015.01.15

Name: \_\_\_\_\_

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Consider the following system of equations:

$$2x_1 - 4x_2 + 5x_3 + 6x_4 = 1$$

$$-3x_1 + 2x_2 + x_3 - 4x_4 = -3$$

$$-13x_1 + 14x_2 - 7x_3 - 24x_4 = -11$$

$$7x_1 - 10x_2 + 9x_3 + 16x_4 = 5$$

1. Express the above system of equations in augmented matrix form.

2. After performing row operations on the matrix, the new augmented matrix is given by:

$$\left[ \begin{array}{cccc|c} 1 & 0 & -\frac{7}{4} & \frac{1}{2} & \frac{5}{4} \\ 0 & 1 & -\frac{17}{8} & -\frac{5}{4} & \frac{3}{8} \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{array} \right]$$

Express the solution to the original system of equations using this new, but equivalent matrix.

3. What is the dimension of the solution to this system of equations?