

Name: _____

1. (4 pts.) Use Gauss-Jordan elimination to determine the solution set to the given system.

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

$$10x_1 - 4x_2 + x_3 + 8x_4 = 8$$

$$15x_1 - 6x_2 + 3x_3 + 12x_4 = 9$$

2. (2 pts.) Determine all values of constant k for which the following system has

- (a) no solutions
- (b) an infinite number of solutions
- (c) a unique solution

$$16x_1 + 16k^2x_2 = 1$$

$$8x_1 + 2x_2 = k$$

3. (4 pts.) Determine A^{-1} , if possible, using Gauss-Jordan technique. If A^{-1} exists, check your answer by evaluating AA^{-1} .

$$A = \begin{bmatrix} 3 & 2 & 1 \\ 0 & -2 & 1 \\ 1 & -1 & 1 \end{bmatrix}$$