

Fa 98
EGN 3420

EXAM 2

Name _____

Problem 1 (25 pts)

Solve the system of equations $A\underline{x} = \underline{b}$ by finding A^{-1} and then using $\underline{x} = A^{-1}\underline{b}$. Leave all answers in terms of fractions. Use only methods from class to find A^{-1} .

$$\begin{array}{rcccccc} x & + & y & + & z & = & 2 \\ 2x & - & 3y & - & z & = & 5 \\ 5x & + & 4y & - & 2z & = & -9 \end{array}$$

Fa 98
EGN 3420

EXAM 2

Name _____

Problem 2 (25 pts)

Solve the following system of equations by the Gauss Jordan Method, i.e. transform the augmented matrix $(A|\mathbf{b})$ into a row equivalent form in which the first three columns are the 3×3 Identity Matrix. Leave all answers in terms of fractions.

$$\begin{array}{rcccccl} x_1 & + & 2x_2 & + & 3x_3 & = & 6 \\ 2x_1 & & & - & 3x_3 & = & -1 \\ x_1 & - & 2x_2 & + & x_3 & = & 0 \end{array}$$

Fa 98
EGN 3420

EXAM 2

Name _____

Problem 3 (25 pts)

Find the value(s) of K for which the system of equations $A\underline{x} = \underline{b}$ has the solution $x=-9, y=-6, z=21$.

$$\begin{array}{rcccccc} x & + & y & + & z & = & 6 \\ x & - & Ky & + & z & = & 0 \\ 4x & + & y & + & 2z & = & 0 \end{array}$$

Problem 4 (25 pts)

1. Determine if the equations below are consistent.
2. If they are consistent, find the number of arbitrary unknowns where none implies a unique solution.
3. If there is one or more arbitrary unknowns, determine if b can be arbitrary without solving for the solution.

$$\begin{aligned}a - 8b + 3c &= -2 \\-a + 4b - c &= 0 \\a - 2b &= 2\end{aligned}$$

Work Area