

### Homework 3: Systems of Linear Equations and Inverse Matrix

1. Solve by Gauss-Jordan elimination method

$$\begin{aligned}x + 2y - 3z + 8u &= -4 \\2x - 2y + z - 4u &= 1 \\-3x + 3y + z + u &= 6\end{aligned}$$

2. Solve by Gauss-Jordan elimination method

$$\begin{aligned}x + 2y + 3z &= 3 \\x + y + z &= 1 \\3x - y + 2z &= 1\end{aligned}$$

3. Solve by Gauss-Jordan elimination method

$$\begin{aligned}2x + 3y - z + u &= -3 \\3x - y + 2z + 4u &= 8 \\x + y + 3z - 2u &= 6 \\-x + 2y + 3z + 5u &= 3\end{aligned}$$

4. Solve the matrix equation

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

5. Find by Gauss-Jordan elimination method the inverse matrix of

$$\begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & -1 & -1 \\ 1 & -1 & 1 & -1 \\ 1 & -1 & -1 & 1 \end{bmatrix}$$

Please write the solutions clearly (by hand) on A4 paper and give it to me before 18/12/2018. Every solution will be given 1 point (correct, minor error possible), 0.5 pt. (good idea, but not all correct), 0 pt. (nothing worthy). The maximum for this homework is 5 pts.