25MT103: Linear Algebra

Unit 2: Systems of Linear Equations

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Linear Systems - Tutorial

Syllabus

- Systems of Linear Equations
- Matrix Representation
- Consistency using rank
- Gaussian Elimination
- Gauss-Jordan method
- Do-little method

Tutorial Problems

1. Solve by Gaussian elimination:
   $x+2y+z=5,\ 3x+y-2z=4,\ 2x+3y+4z=10.$
2. Determine consistency and solve if possible:
   $x+y+z=2,\ 2x+2y+2z=4,\ x+y+z=3.$
3. Use Gauss–Jordan to find RREF and solution for:
   $2x+4y-2z=2,\ -x-y+z=-1,\ x+2y+3z=7.$
4. Compute LU (Doolittle) for $A=\begin{pmatrix} 2 & -1 & 1 \\ 4 & 1 & -1 \\ -2 & 2 & 3 \end{pmatrix}$ and solve $A\mathbf{x}=\begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$.

Thank You!

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