Solving Systems with Gaussian Elimination

1. Set up the Augmented Matrix for the System of Equations.

2. Perform Row Operations on the Matrix:

   - If there are zero rows, place them at the bottom of the matrix.

   - In any nonzero row, make the first nonzero number a 1 (called the "leading 1").

   - Ensure each leading 1 is below and to the right of the previous leading 1.

   - Each column containing a leading 1 should have zeros in all other positions below the leading 1.

3. Allowed Operations on the Matrix:

   - Interchange (swap) rows.

   - Multiply a row by a constant.

   - Add the product of a row (multiplied by a constant) to another row.

4. Solving the System:

   - Perform the above row operations to convert the augmented matrix into row echelon form.

   - Once in row echelon form, use back-substitution to find the solution.