2x2 Row Reduction

**Row Reduction**: A method for solving systems of linear equations using augmented matrices.

**Process**

|  |  |  |  |
| --- | --- | --- | --- |
| Given a system of equations | Set up an augmented matrix. | Use row operations to get zero(s) in the lower left corner (echelon form). | Work from the bottom up to find the solution for each variable. |
|  |  |  | Change the bottom row back to an equation. Solve for y. Now use the top row/equation to solve for x. |

**Row Operations**

A row can be… swapped; replaced by a non-zero multiple of itself; replaced by itself (or a multiple) plus r a multiple of another row.

**Use Row Reduction to solve each system.**

1.  2. 

3x3 Row Reduction

**Row Reduction**: A method for solving systems of linear equations using augmented matrices.

**Process**

|  |  |  |  |
| --- | --- | --- | --- |
| Given a system of equations | Set up an augmented matrix. | Use row operations to get zero(s) in the lower left corner (echelon form). | Work from the bottom up to find the solution for each variable. |
|  |  |  | Solve for z first. |

**Row Operations**

A row can be… swapped; replaced by a non-zero multiple of itself; replaced by itself (or a multiple) plus a multiple of another row.

**Use Row Reduction to solve each system.**

1.  2.  3. 

4.  5.  6. 

Answers

1.  2.  3. 

4. No Solution 5.  6. Infinitely many solutions