

1. What's the difference between row echelon form and reduced row echelon form?

row echelon:

1. Each nonzero row lies above every zero row.
2. The leading entry of a nonzero row lies in a column to the right of the column with the leading entry of any preceding row.
3. If a column contains the leading entry of some row, then all entries of that column below the leading entry are 0.

reduced row echelon:

the same conditions but also

4. If a column contains the leading entry of some row, then all the other entries of that column are 0.
5. The leading entry of each nonzero row is 1.

2. When transforming a matrix into the reduced row echelon form, we are only allowed to perform elementary row operations. Describe these three elementary row operations.

1. Interchange Operation: Interchange any two rows of the matrix.
2. Scaling Operation: Multiply every entry of some row of the matrix by the same nonzero scalar.
3. Row Addition Operation: Add a multiple of one row of the matrix to another row.

3. If the reduced row echelon form of an augmented matrix has a pivot in the last column, how many solutions does the corresponding system of equations have?

None.

4. If the reduced row echelon form of an augmented matrix has a column without a pivot and that column is not the last column of the augmented matrix, how many solutions does the corresponding system of equations have?

Infinitely many.

5. If every column but the last column of the reduced row echelon form of an augmented matrix has a pivot, how many solutions does the corresponding system of equations have?

One solution.