MTH 201 2024-2025 (1)

Tutorial 1

06/08/2024

1. Prove that it two homogeneous system in two unknowns have the same solutions, then they are equivalent.

2. Find the solution of

$$2x_1 - 3x_2 - 7x_3 + 5x_4 + 2x_5 = -2$$
$$x_1 - 2x_2 - 4x_3 + 3x_4 + x_5 = -2$$
$$2x_1 - 4x_3 + 2x_4 + x_5 = 3$$
$$x_1 - 5x_2 - 7x_3 = 6x_4 + 2x_5 = -7.$$

3. Show that the system of linear equation

$$x_1 - 2x_2 + x_3 + 2x_4 = 1$$
$$x_1 + x_2 - x_3 + x_4 = 2$$
$$x_1 + 7x_2 - 5x_3 - x_4 = 3$$

   has no solution.

4. Determine the row reduced form of the following matrix:

$$M = \begin{bmatrix} 1 & 2 & 1 & 0 \\ -1 & 0 & 3 & 5 \\ 1 & -2 & 1 & 1 \end{bmatrix}$$

   . Also find the invertible 3×3 matrix such that P such that $R = PM$.

5. Suppose A is 2×1 matrix and B is 1×2 matrix. Prove that the matrix AB matrix is not invertible matrix. Generalise this result.