DTL Assignment 2 Maths Question Paper

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Mathematics Question Paper

Q.1) Solve the given matrix using gauss elimination method

$$A = \begin{pmatrix} 1 & 0 & 1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{pmatrix}$$

Q.2) Solve the following equation of form $AX = B$:

$$\begin{pmatrix} 3 & -10 & 2 \\ -1 & 7 & 4 \\ 5 & 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 3x - 10y + 2z \\ -x + 7y + 4z \\ 5x + z \end{pmatrix}$$

Q.3) Find a linear ordinary differential equation for which the function $e^{-2x}\cos 4x$ and $e^{-x}\sin 6x$ are linearly independent solutions.

Q.4) If x^3 and 1 are solutions of $yy'' - xy' = 0$ then so is any linear combination of these. State true or false and justify.

Q.5)State whether the following differential euations are linear or non linear ,justify and solve:

(a)$xy' + 4y = \frac{e^{2x}}{x}, x > 0 with y(1) = 1 + \frac{e^4}{4}$.
(b)$x^2 y\frac{dy}{dx} - xy^2 = 1$.

Q.6) Find a homogeneous linear second order ordinary differential equation whose solution is the set of all straight lines in the xy-plane.

`AllQuestionsCompulsory`