BMA 2301
LINEAR ALGEBRA I
ASSIGNMENT
CAT II

1. Let w be a subspace of IR^4 generated by the vectors (1, -2, 5, -3) (2, 3, 1, -4) and (3, 8, -3, -5). Find a basis and dimension of w

2. Show whether w = $\{(x, y)/\, y \leq x^2\}$ is a subspace of IR^2

3. Show whether the differential operator defined below is a linear transformation or not.

   T x(t) = $x^1(t) = \frac{d}{dt}x(t)$

4. Given the matrix

   $$A = \begin{bmatrix} 1 & 2 & 0 & 1 \\ 2 & 4 & 1 & 4 \\ 3 & 6 & 3 & 9 \end{bmatrix}$$

   Find a lower triangular L and an upper triangular U so that A = LU