Answer on Question#38440 – Math - Calculus

Null matrix is a matrix with all its entries being zero. Some examples of zero matrices are

$$0_{1x1} = [0], \quad 0_{2x2} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}, \quad 0_{3x2} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \\ 0 & 0 \end{bmatrix}.$$

A matrix is in Echelon form if:

1. All zero rows are at the bottom of the matrix.

2. The leading entry of each nonzero row after the first occurs to the right of the leading entry of the previous row.

3. The leading entry in any nonzero row is 1.

4. All entries in the column above and below a leading 1 are zero.

In an m x n zero matrix, (1) is true because the rows of zeros can be viewed as stacked from the bottom up; and (2), (3), and (4) are vacuously satisfied because there aren't any nonzero rows or leading 1's at all.