

2) A square matrix A is said to be symmetric if $A^T = A$.
A square matrix A is said to be skew-symmetric if $A^T = -A$.
A square matrix A is said to be orthogonal if $A^T = A^{-1}$.
A square matrix A is said to be idempotent if $A^2 = A$.

3) The rank of a matrix is the number of non-zero rows (or columns) in its echelon form.
The rank of a matrix is the number of linearly independent rows (or columns) in the matrix.
The rank of a matrix is the number of non-zero eigenvalues of the matrix.

4) The determinant of a square matrix is a scalar value that can be computed from the elements of the matrix. It is used to determine if the matrix is invertible.
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