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Hermintian Matrix and Skew Hermitian Matrix

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Introduction:

Hermitian matrix and skew hermitian matrix in the same condition satisfying by, A=^T, A=-A^T.

Hermitian matrix:

Definition: A hermitian matrix is a square matrix that is equal to its conjugate transpose in other words take the complex conjugate of each element the transpose the matrix you get the matrix back, A=A^T.

Skew hermitian matrix:

Definition: Hermintian matrix is square matrix that A is said to be skew hermitian e if it's conjugate transpose is equal to its negative , mathematical that expressed as A=-A^T.

Hermintian matrix and skew hermintian matrix example:

i) A=\begin{bmatrix} 3& 1-i \\

1+i& 2

\end{bmatri)

=6-(1+i)(1-i) = 6- (1-i+i-i^2) = 6-1+1=6.

A^T=\begin{bmatrix} 3& 1+i \\

1+i&2

\end{bmatrix}

=6-(1-i+i-i^2)

=6-1+1=6.

A=A^T is a Hermitian matrix .

Skew hermitian matrix example:

i) A=\begin{bmatrix} I & 3 \\

2& 2i

\end{bmatrix}

=2i(i)-3(2)

= 2(-1)-6=-8.

A^T=\begin{bmatrix} I & 2 \\

2 &2i

\end{bmatrix}

=2i^2-3(2)=2(-1)-6=-8.

A=-A^T.it is a skew hermitian matrix.

Even odd number of matrix:

Definition: Even odd number of matrix first row is a even number and second row is a odd number is a called by positive value is a even odd number of matrix is a A=A^T.

Odd even number of matrix:

Definition: Odd even number of matrix is first row is a odd number and second row is a even number is a called negative value is A=-A^T.

Even odd and odd even number of matrix example:

i) A=\begin{bmatrix}

2 & 4 \\

1&3

\end{bmatrix}

=6-4=2.

A^T=\begin{bmatrix}

2 & 1 \\

4& 3

\end{bmatrix}

=6-4=2. A=A^T.Is a even odd number of matrix.

ii)A=\begin{bmatrix} 1& 3\\

2& 4

\end{bmatrix}

=4-6=-2.

=4-6=-2.

ii) A^T=\begin{bmatrix} 1& 2\\

3& 4

\end{bmatrix}

=4-6=-2. A=-A^T is a odd even number of matrix.

Conclusion:

Hermintian matrix and skew hermitian matrix is a equal condition of the satisfy by the even odd and odd even number of matrix is a called by “equivalence matrix”.A=A^T and A=-A^T.

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