

Non-Linear Transformations

Definition

1. Matrix Exponentiation:

- Raising a matrix to a power greater than one, as in A^2 or A^n , is not a linear transformation. The composition of linear transformations is not equivalent to matrix exponentiation.

2. Matrix Logarithm:

- Taking the logarithm of a matrix, denoted as $\log(A)$, is not a linear transformation. The composition of linear transformations is not equivalent to matrix logarithm.

3. Element-Wise Operations:

- Operations that apply nonlinear functions element-wise to the matrix entries, such as taking the square root or applying trigonometric functions to individual elements, are not linear transformations.

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