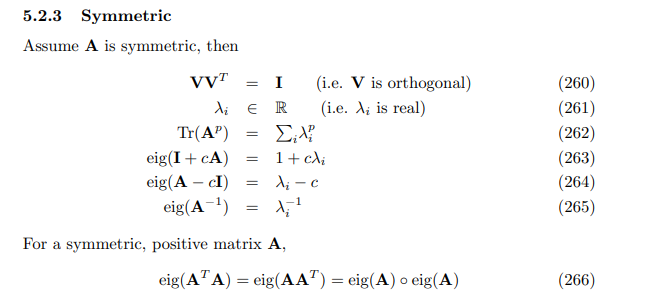
Matrix

Intro

A 2D matrix consists of a collection of vectors.

Property

Symmetric matrix



Proof of property of symmetric matrix

By Vieta’s formula, one can prove that

=

=> =

=

=> =

=

=> = =

is symmetric

=>

=> = = = =

( since is square if is symmetric, it is one of requirements of a symmetric matrix. )

On the other hand, for an invertible matrix, by definition, one has

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which implies

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=> =

=> =

=> = =

=> =

A positive matrix refers a matrix whose all elements are positive.

For all positive matrix,

=

=> = = = =

(due to communicativity of multiplications for two scalars.)

On the other hand,

=

=> = = =

=> = =

=> =

Conclude the above equations.

=> = =

Ref

[Symmetric matrix - Wikipedia](https://en.wikipedia.org/wiki/Symmetric_matrix)