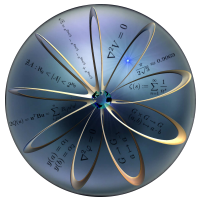

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matrices of special form

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The aim of the present entry is to list matrices with special properties.

Restriction on form

- diagonal matrices
- anti-diagonal matrices
- triangular matrices
- block matrices of either form above or of some other form
- nilpotent matrices
- elementary matrices
- Hadamard matrices
- partly decomposable matrices
- fully indecomposable matrices
- nearly decomposable matrices
- doubly stochastic matrices
- stochastic matrices

In numerical applications, sparse matrices (matrices with few nonzero entries) are important; these can be of any of the forms above.

Other restrictions

- singular matrices
- GL(n): invertible matrices
- SU(n): unitary matrices with determinant 1
- O(n): orthogonal matrices
- SO(n): `http://planetmath.org/RotationMatrix`orthogonal matrices with determinant 1

- normal matrices
- positive definite matrices
- symmetric matrices, antisymmetric matrices, Hermitian matrices, anti-Hermitian matrices
- $\mathrm{Sp}(2n)$: symplectic matrices (also called $\mathrm{Sp}(n)$)

Special matrices

- zero matrix
- identity matrix
- Hilbert matrix
- Vandermonde matrix
- Toeplitz matrix
- Pascal matrix
- Cauchy matrix
- M-matrix
- magic square
- Latin square