Title

> **cond( )** — Condition number

Description   Syntax   Remarks and examples   Conformability
Diagnostics   Also see

Description

cond(*A*) returns cond(*A*, 2).

cond(*A*, *p*) returns the value of the condition number of *A* for the specified norm *p*, where *p* may be 0, 1, 2, or . (missing).

Syntax

>> *real scalar*   cond(*numeric matrix A*)

>> *real scalar*   cond(*numeric matrix A*, *real scalar p*)

Remarks and examples

The condition number of a matrix *A* is

$$cond = \texttt{norm}(A, \, p) \times \texttt{norm}(A^{-1}, \, p)$$

These functions return missing when *A* is singular.

Values near 1 indicate that the matrix is well conditioned, and large values indicate ill conditioning.

Conformability

cond(*A*):
            A: $r \times c$
        result: 1×1

cond(*A*, *p*):
            A: $r \times c$
            p: 1×1
        result: 1×1

Diagnostics

cond(*A*, *p*) aborts with error if *p* is not 0, 1, 2, or . (missing).

cond(*A*) and cond(*A*, *p*) return missing when *A* is singular or if *A* contains missing values.

cond(*A*) and cond(*A*, *p*) return 1 when *A* is void.

cond(*A*) and cond(*A*, 2) return missing if the SVD algorithm fails to converge, which is highly unlikely; see [M-5] **svd( )**.

Also see

[M-5] **norm( )** — Matrix and vector norms

[M-4] **Matrix** — Matrix functions