**cond() — Condition number**

<table>
<thead>
<tr>
<th>Description</th>
<th>Syntax</th>
<th>Remarks and examples</th>
<th>Conformability</th>
</tr>
</thead>
</table>

**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**

```plaintext
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

\[
cond = \text{norm}(A, p) \times \text{norm}(A^{-1}, p)
\]

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):

\[
A: \quad r \times c \\
result: \quad 1 \times 1
\]

cond(A, p):

\[
A: \quad r \times c \\
p: \quad 1 \times 1 \\
result: \quad 1 \times 1
\]

**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