

Hilfe

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Übersicht bzw. Hilfe zu einem Thema oder einer Funktion.

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- `lookfor Text`
sucht Funktionen mit *Text* in ihrer Kurzbeschreibung.

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- `helpbrowser`
Dokumentation in HTML-Format.

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- `doc Thema`, `doc Funktionsname`
Beschreibungen zu *Themen* oder *Funktionen*.

Beispiel

```
>> lookfor rank
```

```
CHOLUPDATE Rank 1 update to Cholesky factorization.
```

```
QRUPDATE Rank 1 update to QR factorization.
```

```
RANK Matrix rank.
```

```
SPRANK Structural rank.
```

```
GFRANK Compute the rank of a matrix over a Galois field.
```

```
FITSCALINGRANK Rank based fitness scaling.
```

```
GANGSTR Zero out 'small' entries subject to structural rank.
```

```
FRANKE Franke's bivariate test function.
```

```
...
```

```
>> help rank
```

```
RANK Matrix rank.
```

```
RANK(A) provides an estimate of the number of linearly  
independent rows or columns of a matrix A.
```

```
RANK(A,tol) is the number of singular values of A  
that are larger than tol.
```

```
RANK(A) uses the default tol = max(size(A)) * eps(norm(A)).
```

```
Class support for input A:
```

```
float: double, single
```

```
Overloaded functions or methods (ones with the same name in  
other directories)
```

```
help gf/rank.m
```

```
help sym/rank.m
```

```
Reference page in Help browser
```

```
doc rank
```

The screenshot shows the MATLAB Help Navigator window. The left pane displays a tree view of the help content, with 'Functions -- Categorical List' selected. The right pane shows the 'rank (MATLAB Functions)' page. The page title is 'rank (MATLAB Functions)'. The main content includes the following sections:

MATLAB Function Reference

rank

Rank of a matrix

Syntax

```
k = rank(A)
k = rank(A,tol)
```

Description

The rank function provides an estimate of the number of linearly independent rows or columns of a full matrix.

`k = rank(A)` returns the number of singular values of `A` that are larger than the default tolerance, `max(size(A))*eps(norm(A))`.

`k = rank(A, tol)` returns the number of singular values of `A` that are larger than `tol`.

Remark

Use `sprank` to determine the structural rank of a sparse matrix.

Algorithm

There are a number of ways to compute the rank of a matrix. MATLAB uses the method based on the singular value decomposition, or SVD. The SVD algorithm is the most time consuming, but also the most reliable.

The rank algorithm is

```
s = svd(A);
tol = max(size(A))*eps(max(s));
r = sum(s > tol);
```

See Also

[sprank](#)

References

[1] Anderson, E., Z. Bai, C. Bischof, S. Blackford, J. Demmel, J. Dongarra, J. Du Croz, A. Greenbaum, S. Hammarling, A. McKenney, and D. Sorensen, LAPACK User's Guide