

**reldif()** — Relative/absolute difference
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## Description

`reldif(X, Y)` returns the relative difference defined by

$$r = \frac{|X - Y|}{|Y| + 1}$$

calculated element by element.

`mreldif(X, Y)` returns the maximum relative difference and is equivalent to `max(reldif(X, Y))`.

`mreldifsym(X)` is equivalent to `mreldif(X', X)` and so is a measure of how far the matrix is from being symmetric (Hermitian).

`mreldifre(X)` is equivalent to `mreldif(Re(X), X)` and so is a measure of how far the matrix is from being real.

## Syntax

*real matrix* `reldif(numeric matrix X, numeric matrix Y)`

*real scalar* `mreldif(numeric matrix X, numeric matrix Y)`

*real scalar* `mreldifsym(numeric matrix X)`

*real scalar* `mreldifre(numeric matrix X)`

## Conformability

`reldif(X, Y):`

*X:*  $r \times c$

*Y:*  $r \times c$

*result:*  $r \times c$

`mreldif(X, Y):`

*X:*  $r \times c$

*Y:*  $r \times c$

*result:*  $1 \times 1$

`mreldifsym(X):`

*X:*  $n \times n$

*result:*  $1 \times 1$

`mreldifre(X)`:

*X*:  $r \times c$   
*result*:  $1 \times 1$

### Diagnostics

The relative difference function treats equal missing values as having a difference of 0 and different missing values as having a difference of missing (.):

```
reldif(., .) == reldif(.a, .a) == ... == reldif(.z, .z) == 0
```

```
reldif(., .a) == reldif(., .z) == ... == reldif(.y, .z) == .
```

### Also see

[M-4] [Utility](#) — Matrix utility functions

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