

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: 1×1

`mreldifsym(X):`

X: $n \times n$

result: 1×1

`mreldifre(X)`:

X: $r \times c$
result: 1×1

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