

**all()** — Element comparisons

<a href="#">Description Diagnostics</a>	<a href="#">Syntax Also see</a>	<a href="#">Remarks and examples</a>	<a href="#">Conformability</a>
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## Description

`all(L)` is equivalent to `sum(!L)==0` but is significantly faster.

`any(L)` is equivalent to `sum(L)!=0` but is slightly faster.

`allof(P, s)` returns 1 if every element of  $P$  equals  $s$  and returns 0 otherwise. `allof(P, s)` is faster and consumes less memory than the equivalent construction `all(P==s)`.

`anyof(P, s)` returns 1 if any element of  $P$  equals  $s$  and returns 0 otherwise. `anyof(P, s)` is faster and consumes less memory than the equivalent `any(P==s)`.

## Syntax

*real scalar*    `all(real matrix L)`

*real scalar*    `any(real matrix L)`

*real scalar*    `allof(transmorphic matrix P, transmorphic scalar s)`

*real scalar*    `anyof(transmorphic matrix P, transmorphic scalar s)`

## Remarks and examples

These functions are fast, so their use is encouraged over alternative constructions.

`all()` and `any()` are typically used with logical expressions to detect special cases, such as

```
if (any(x < 0)) {
    ...
}
```

or

```
if (all(x >= 0)) {
    ...
}
```

`allof()` and `anyof()` are used to look for special values:

```
if (allof(x, 0)) {
    ...
}
```

or

```
if (anyof(x, 0)) {  
    ...  
}
```

Do not use `allof()` and `anyof()` to check for missing values—for example, `anyof(x, .)`—because to really check, you would have to check not only `.` but also `.a`, `.b`, `...`, `.z`. Instead use `missing()`; see [M-5] [missing\(\)](#).

## Conformability

`all(L)`, `any(L)`:

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

`allof(P, s)`, `anyof(P, s)`:

*P*:  $r \times c$   
*s*:  $1 \times 1$   
*result*:  $1 \times 1$

## Diagnostics

`all(L)` and `any(L)` treat missing values in *L* as true.

`all(L)` and `any(L)` return 0 (false) if *L* is  $r \times 0$ ,  $0 \times c$ , or  $0 \times 0$ .

`allof(P, s)` and `anyof(P, s)` return 0 (false) if *P* is  $r \times 0$ ,  $0 \times c$ , or  $0 \times 0$ .

## Also see

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

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