

range() — Vector over specified range

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Description

`range(a, b, delta)` returns a column vector going from a to b in steps of $\text{abs}(delta)$ ($b \geq a$) or $-\text{abs}(delta)$ ($b < a$).

`rangen(a, b, n)` returns a $\text{round}(n) \times 1$ column vector going from a to b in $\text{round}(n)-1$ steps. a may be less than, equal to, or greater than b .

Syntax

numeric colvector `range(a, b, numeric scalar delta)`

numeric colvector `rangen(a, b, real scalar n)`

where a and b are numeric scalars.

Remarks and examples

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`range(0, 1, .25)` returns $(0 \setminus .25 \setminus .5 \setminus .75 \setminus 1)$. The sign of the third argument does not matter; `range(0, 1, -.25)` returns the same thing. `range(1, 0, .25)` and `range(1, 0, -.25)` return $(1 \setminus .75 \setminus .5 \setminus .25 \setminus 0)$.

`rangen(0, .5, 6)` returns $(0 \setminus .1 \setminus .2 \setminus .3 \setminus .4 \setminus .5)$. `rangen(.5, 0, 6)` returns $(.5 \setminus .4 \setminus .3 \setminus .2 \setminus .1 \setminus 0)$.

`range()` and `rangen()` may be used with complex arguments. `range(1, 1i, .4)` returns $(1 \setminus .75+.25i \setminus .5+.5i \setminus .25+.75i \setminus 1i)$. `rangen(1, 1i, 5)` returns the same thing. For `range()`, only the distance of $delta$ from zero matters, so `range(1, 1i, .4i)` would produce the same result, as would `range(1, 1i, .25+.312i)`.

Conformability

`range(a, b, delta)`:

<i>a</i> :	1×1
<i>b</i> :	1×1
<i>delta</i> :	1×1
<i>result</i> :	1×1 , if $a = b$
	$\max(1+\text{abs}(b-a)/\text{abs}(delta), 2) \times 1$, otherwise

`rangen(a, b, n)`:
 a: 1×1
 b: 1×1
 n: $n \times 1$
 result: $\text{round}(n) \times 1$

Diagnostics

`range(a, b, delta)` aborts with error if *a*, *b*, or *delta* contains missing, if $\text{abs}(b-a)/\text{abs}(delta)$ results in overflow, or if $1+\text{abs}(b-a)/\text{abs}(delta)$ results in a vector that is too big given the amount of memory available.

`range(a, b, delta)` returns a 1×1 result when $a = b$. In all other cases, the result is 2×1 or longer.

`rangen(a, b, n)` aborts with error if $\text{round}(n)$ is less than 0 or missing.

Also see

[M-4] **Standard** — Functions to create standard matrices