

# Package ‘ordering’

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**Type** Package

**Title** Test, Check, Verify, Investigate the Monotonic Properties of Vectors

**Version** 0.7.0

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**Description** Functions to test/check/verify/investigate the ordering of vectors. The 'is\_[strictly\_]\*' family of functions test vectors for 'sorted', 'monotonic', 'increasing', 'decreasing' order; 'is\_constant' and 'is\_incremental' test for the degree of ordering. `ordering` provides a numeric indication of ordering -2 (strictly decreasing) to 2 (strictly increasing).

**Suggests** testthat, na.tools(>= 0.3.0)

**License** GPL (>= 2)

**URL** <https://github.com/decisionpatterns/ordering>

**BugReports** <https://github.com/decisionpatterns/ordering/issues>

**RoxygenNote** 6.1.1

**Repository** CRAN

**Encoding** UTF-8

**NeedsCompilation** no

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`is_constant`*ordering Tests*

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**Description**

Tests vectors for (strictly) increasing, decreasing, monotonic and constant properties

**Usage**

```
is_constant(x, na.rm = TRUE)
is_increasing(x, na.rm = TRUE)
is_strictly_increasing(x, na.rm = na.omit)
is_decreasing(x, na.rm = na.omit)
is_strictly_decreasing(x, na.rm = na.omit)
is_incremental(x, step = 1, na.rm = TRUE)
is_uniform(x, step = NULL, na.rm = TRUE)
is_monotonic(x, na.rm = TRUE)
is_strictly_monotonic(x, na.rm = TRUE)
is_sorted(x, na.rm = TRUE)
is_strictly_sorted(x, na.rm = TRUE)
is_unsorted(...)
is_strictly_unsorted(...)
```

**Arguments**

<code>x</code>	vector
<code>na.rm</code>	function or NULL; action to perform on input to handle the missing values
<code>step</code>	integer; step size for <code>is_incremental</code> . (Default: 1)
<code>...</code>	used for passing default arguments

**Details**

Tests to various monotone properties of vectors.

`is_incremental` determines if `x` is incremental, i.e. monotonic and equally spaced.

is\_uniform is a wrapper around is\_incremental with step=1

is\_[strictly\_]monotonic determine the sort properties of x.

This differs from `base::is.unsorted()` which should more properly be called `is.increasing` since `base::is.unsorted(3:1) == TRUE`; `3:1` is obviously sorted.

`is_sorted()` is a alias for `is_monotonic()` and `is_strictly_sorted()` is an alias for `is_strictly_monotonic()`.

### Value

logical or NA. (NB: NA is returned because it is a logical vector and this is needed to put these results cleanly in tables.)

logical

### Note

The behavior of this package is The functions `base::is.unsorted()` is perhaps misnamed and should properly be names `is_not_increasing` since `base::is.unsorted(3:1) == TRUE` after all vector `3,2,1` is sorted but not increasing.

### See Also

- `base::diff()`
- `base::is.unsorted()`

### Examples

```
is_constant( rep(3,5) )

is_increasing( 1:5 )           # TRUE
is_increasing( c(1,2,1,3) )   # FALSE

is_increasing( c(1,NA,2,3) )   # NA
is_increasing( c(1,NA,2,3), na.omit ) # TRUE

is_monotonic( 1:5 )           # TRUE
is_monotonic( -5:5 )          # TRUE
is_monotonic( 5:-5 )          # TRUE
is_monotonic( c(1,5,3))       # FALSE

is_incremental(1:5 )
is_incremental( c(1,2,5))

is_incremental(1:5, step=NULL)
is_uniform(1:5)

is_monotonic( 1:3 )
is_strictly_monotonic(1:3)
```

```
is_monotonic( c(1,3,2) )
is_strictly_monotonic( c(1,3,2) )

is_sorted(1:3)
is_sorted(c(1,3,2))

lets <- letters[1:3]
is_monotonic( lets )
is_monotonic( c('a', 'c', 'b') )

is_sorted(1:10)

is_sorted(-5:5)
is_sorted(5:-5)

is_sorted( letters )
is_sorted( rev(letters) )
```

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ordering

*ordering*

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## Description

Determining the ordering (monotonicity) of a vector

## Usage

```
ordering(x, na.rm = TRUE)
```

```
monotonicity(x, na.rm = TRUE)
```

## Arguments

x	numeric vector
na.rm	logical; whether to omit NA values. (Default: TRUE)

## Details

monotonicity determines the monotonicity (first derivative) of a numeric vector as one of:

- strictly increasing,
- increasing / monotonically increasing / non-decreasing,
- decreasing / monotonically decreasing / non-increasing,
- strictly decreasing, or
- constant

ordering tests, e.g. [is\\_increasing](#) are more efficient at testing.

monotonicity() is an alias for ordering.

**Value**

integer;

- **2** : stictly increasing
- **1** : increasing / montonically increasing / non-decreasing
- **0** : non-ordered or constant
- **-1**: decreasing / monotonically decreasing / non-increasing
- **-2**: strictly decreasing
- **NA**:contains onlyNAs all na.rmdid not resolve allNA's

**References**

[http://en.wikipedia.org/wiki/Monotonic\\_function](http://en.wikipedia.org/wiki/Monotonic_function) <http://stackoverflow.com/questions/13093912/how-to-check-if-a-sequence-of-numbers-is-monotonically-increasing-or-decreasing>

**Examples**

```
ordering( 1:3 )      # 2
ordering( c(1,1,3) ) # 1
ordering( c(1,0,1) ) # 0 "No ordering, does not apply constant"
ordering( c(3,1,1) ) # -1
ordering( 3:1 )      # -2
```

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