

epsilon() — Unit roundoff error (machine precision)

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Description

`epsilon(x)` returns the unit roundoff error in quantities of size `abs(x)`.

Syntax

real scalar `epsilon(real scalar x)`

Remarks and examples

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On all computers on which Stata and Mata are currently implemented—which are computers following IEEE standards—`epsilon(1)` is 1.0×10^{-34} , or about 2.22045×10^{-16} . This is the smallest amount by which a real number can differ from 1.

`epsilon(x)` is `abs(x)*epsilon(1)`. This is an approximation of the smallest amount by which a real number can differ from `x`. The approximation is exact at integer powers of 2.

Conformability

`epsilon(x)`:

x: 1×1
result: 1×1

Diagnostics

`epsilon(x)` returns `.` if `x` is missing.

Also see

[M-5] [mindouble\(\)](#) — Minimum and maximum nonmissing value

[M-5] [edittozero\(\)](#) — Edit matrix for roundoff error (zeros)

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