Package ‘deformula’

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Type Package
Title Integration of One-Dimensional Functions with Double Exponential Formulas
Version 0.1.2
Description Numerical quadrature of functions of one variable over a finite or infinite interval with double exponential formulas.
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BugReports https://github.com/okamumu/deformula/issues
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deformula.moneone

Integration of one-dimensional functions over finite interval with the double exponential formula.

Description

Numerical quadrature of functions of one variable over (lower, upper) with the double exponential formula.

Usage

```r
deformula.moneone(
  f,
  lower,
  upper,
  ..., 
  zero.eps = 1e-12,
  rel.tol = 1e-08,
  start.divisions = 8,
  max.iter = 12
)
```
Arguments

- **f** An R function taking a numeric first argument.
- **lower** The lower limit of integration.
- **upper** The upper limit of integration.
- **...** Additional arguments to be passed to ‘f’.
- **zero.eps** A threshold value to be zero.
- **rel.tol** A relative accuracy requested.
- **start.divisions** An integer. The initial number of subintervals.
- **max.iter** An integer for the maximum number of iterations to increase subintervals.

Value

A list with components;

- **value** A value for integral.
- **x** A vector of subintervals.
- **w** A vector of weights.
- **t** A vector of subintervals for trapezoid integral.
- **h** A value of subinterval.
- **message** OK or a string for the error message.

Examples

```r
f <- function(x, a) exp(-a*x)
deformula.moneone(f, 0, 1, a=0.1)
```

Description

Numerical quadrature of functions of one variable over [0, infinity) with the double exponential formula.

Usage

```r
deformula.zeroinf(
  f,
  ...
  zero.eps = 1e-12,
  rel.tol = 1e-08,
  start.divisions = 8,
  max.iter = 12
)
```
Arguments

- **f**: An R function taking a numeric first argument.
- **...**: Additional arguments to be passed to ‘f’.
- **zero.eps**: A threshold value to be zero.
- **rel.tol**: A relative accuracy requested.
- **start.divisions**: An integer. The initial number of subintervals.
- **max.iter**: An integer for the maximum number of iterations to increase subintervals.

Value

A list with components:

- **value**: A value for integral.
- **x**: A vector of subintervals.
- **w**: A vector of weights.
- **t**: A vector of subintervals for trapezoid integral.
- **h**: A value of subinterval.
- **message**: OK or a string for the error message.

Examples

```r
def <- function(x, a) exp(-a*x)
deformula.zeroinf(def, a=0.1)
```
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