

Package ‘deformula’

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Title Integration of One-Dimensional Functions with Double Exponential Formulas

Type Package

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Description Numerical quadrature of functions of one variable over a finite or infinite interval with double exponential formulas.

Encoding UTF-8

License GPL (>= 2)

NeedsCompilation yes

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deformula-package	<i>Integration of one-dimensional functions with double exponential formulas</i>
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Description

Numerical quadrature of functions of one variable over a finite or infinite interval with double exponential formulas.

Details

Package: deformula
 Type: Package
 Version: 0.1.1
 Date: 2015-10-12
 License: GPL (>= 2)
 LazyLoad: yes

Author(s)

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See Also

[deformula.zeroinf](#) [deformula.moneone](#)

deformula.moneone	<i>Integration of one-dimensional functions over finite interval with the double exponential formula.</i>
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Description

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

Usage

```
deformula.moneone(f, upper, lower, ...,
  zero.eps = 1.0e-12, rel.tol = 1.0e-8,
  start.divisions = 8, max.iter = 12)
```

Arguments

f	an integrand function for integral.
lower, upper	the limits of integration.
...	additional arguments to be passed to 'f'.
zero.eps	a threshold value to be zero.
rel.tol	a value for relative tolerance.
start.divisions	the initial number of divides.
max.iter	an integer for the maximum number of iterations to increase divides.

Value

returns a list with components;

value	an 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.

See Also

[deformula.zeroinf](#)

Examples

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

deformula.zeroinf	<i>Integration of one-dimensional functions over infinite interval with the double exponential formula.</i>
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Description

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

Usage

```
deformula.zeroinf(f, ...,
  zero.eps = 1.0e-12, rel.tol = 1.0e-8,
  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	relative accuracy requested.
start.divisions	the initial number of subintervals.
max.iter	an integer for the maximum number of iterations to increase subintervals.

Value

returns a list with components;

value	an 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.

See Also

[deformula.moneone](#)

Examples

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

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