Package 'ActuDistns'

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Type Package

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Description Computes the probability density function, hazard rate function, integrated hazard rate function and the quantile function for 44 commonly used survival models

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`ActuDistns-package` *Computes functions for actuarial use*

Description

Computes the probability density function, hazard rate function, integrated hazard rate function and the quantile function for 44 commonly used survival models

Details

Package:	ActuDistns
Type:	Package
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probability density functions, hazard rate functions, integrated hazard rate functions and quantile functions

Author(s)

Saralees Nadarajah

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References

S. Nadarajah, S. A. A. Bakar, A new R package for actuarial survival models, Computational Statistics

---

`daddweibull` *Additive Weibull pdf*

Description

Computes the pdf of the additive Weibull distribution

Usage

```
daddweibull(x, a = 1, b = 1, c = 1, d = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
a	the value of a parameter (the first scale parameter), must be positive
b	the value of b parameter (the first shape parameter), must be positive
c	the value of c parameter (the second scale parameter), must be positive
d	the value of d parameter (the second shape parameter), must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=daddweibull(x)
```

---

dbeard *Beard pdf*

Description

Computes the pdf of the Beard distribution

Usage

```
dbeard(x, alpha = 1, beta = 1, rho = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive
rho	the value of rho parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dbeard(x)
```

---

dburrx *BurrX pdf*

Description

Computes the pdf of the BurrX distribution

Usage

```
dburrx(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dburrx(x)
```

---

dchen *Chen pdf*

Description

Computes the pdf of the Chen distribution

Usage

```
dchen(x, beta = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
beta	the value of beta parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dchen(x)
```

---

dee *Exponentiated exponential pdf*

Description

Computes the pdf of the exponentiated exponential distribution

Usage

```
dee(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dee(x)
```

del *Exponentiated logistic pdf*

Description

Computes the pdf of the exponentiated logistic distribution

Usage

```
del(x, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=del(x)
```

dew *Exponentiated Weibull pdf*

Description

Computes the pdf of the exponentiated Weibull distribution

Usage

```
dew(x, alpha = 1, c = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
c	the value of c parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dew(x)
```

`dexpext` *Exponential extension pdf*

Description

Computes the pdf of the exponential extension distribution

Usage

```
dexpext(x, alpha = 1, lambda = 1)
```

Arguments

`x`	scale or vector of positive values at which the pdf needs to be computed
`alpha`	the value of alpha parameter, must be positive
`lambda`	the value of lambda parameter, must be positive

Value

An object of the same length as `x`, giving the pdf values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dexpext(x)
```

`dfrechet` *Gumbel II pdf*

Description

Computes the pdf of the Gumbel II distribution

Usage

```
dfrechet(x, a = 1, b = 1)
```

Arguments

`x`	scale or vector of positive values at which the pdf needs to be computed
`a`	the value of a parameter, must be positive
`b`	the value of b parameter, must be positive

Value

An object of the same length as `x`, giving the pdf values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dfrechet(x)
```

dfw *Flexible Weibull pdf*

Description

Computes the pdf of the flexible Weibull distribution

Usage

```
dfw(x, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dfw(x)
```

dgenF *Generalized F pdf*

Description

Computes the pdf of the generalized F distribution

Usage

```
dgenF(x, beta = 0, sigma = 1, m1 = 1, m2 = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
beta	the value of beta parameter, can be any real
sigma	the value of sigma parameter, must be positive
m1	the value of m1 parameter, must be positive
m2	the value of m2 parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package flexsurv.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dgenF(x)
```

dgengammad *Generalized gamma pdf*

Description

Computes the pdf of the generalized gamma distribution

Usage

```
dgengammad(x, b = 1, d = 1, k = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
b	the value of b parameter, must be positive
d	the value of d parameter, must be positive
k	the value of k parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package VGAM.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dgengammad(x)
```

dgompertz *Gompertz pdf*

Description

Computes the pdf of the Gompertz distribution

Usage

```
dgompertz(x, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the positive value of alpha parameter
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dgompertz(x)
```

dgpw *Generalized power Weibull pdf*

Description

Computes the pdf of the generalized power Weibull distribution

Usage

```
dgpw(x, alpha = 1, theta = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
theta	the value of theta parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dgpw(x)
```

dgumbeld *Gumbel pdf*

Description

Computes the pdf of the Gumbel distribution

Usage

```
dgumbeld(x, mu = 1, sigma = 1)
```

Arguments

x	scale or vector of any real values at which the pdf needs to be computed
mu	the value of mu parameter, can be any real
sigma	the value of sigma parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dgumbeld(x)
```

dhjorth *Hjorth pdf*

Description

Computes the pdf of the Hjorth distribution

Usage

```
dhjorth(x, delta = 1, theta = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
delta	the value of delta parameter, must be positive
theta	the value of theta parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dhjorth(x)
```

dige *Inverse exponentiated exponential pdf*

Description

Computes the pdf of the inverse exponentiated exponential distribution

Usage

```
dige(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dige(x)
```

dinvgauss *Inverse Gaussian pdf*

Description

Computes the pdf of the inverse Gaussian distribution

Usage

```
dinvgauss(x, alpha = 1, sigma = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
sigma	the value of sigma parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package SuppDists.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dinvgauss(x)
```

djshape *J-shaped pdf*

Description

Computes the pdf of the J-shaped distribution

Usage

```
djshape(x, b = 1, nu = 1)
```

Arguments

x	scale or vector of values at which the pdf needs to be computed, values are positive and bounded below by b
b	the value of b parameter, must be positive
nu	the value of nu parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=djshape(x)
```

dkum *Kumaraswamy pdf*

Description

Computes the pdf of the Kumarawamay distribution

Usage

```
dkum(x, a = 1, b = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
a	the value of a parameter, must be positive
b	the value of b parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=1,max=2)
y=dkum(x)
```

dlai *Lai pdf*

Description

Computes the pdf of the Lai distribution

Usage

```
dlai(x, lambda = 1, beta = 1, nu = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
lambda	the value of lambda parameter, must be positive
beta	the value of beta parameter, must be non-negative but both beta and nu cannot be zero
nu	the value of nu parameter, must be non-negative but both beta and nu cannot be zero

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dlai(x)
```

dle *Logistic exponential pdf*

Description

Computes the pdf of the logistic exponential distribution

Usage

```
dle(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dle(x)
```

dlgammad *Log gamma pdf*

Description

Computes the pdf of the log gamma distribution

Usage

```
dlgammad(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of values greater than one at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package actuar.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=dlgammad(x)
```

`dlinear` *Linear failure rate pdf*

Description

Computes the pdf of the linear failure rate distribution

Usage

```
dlinear(x, a = 1, b = 1)
```

Arguments

`x`	scale or vector of positive values at which the pdf needs to be computed
`a`	the value of a parameter, must be non-negative but both a and b cannot be zero
`b`	the value of b parameter, must be non-negative but both a and b cannot be zero

Value

An object of the same length as `x`, giving the pdf values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dlinear(x)
```

dlld *Loglog pdf*

Description

Computes the pdf of the loglog distribution

Usage

```
dlld(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dlld(x)
```

`dloglogistic` *Log-logistic pdf*

Description

Computes the pdf of the Log-logistic distribution

Usage

```
dloglogistic(x, alpha = 1, sigma = 1)
```

Arguments

`x`	scale or vector of positive values at which the pdf needs to be computed
`alpha`	the value of alpha parameter, must be positive
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the pdf values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dloglogistic(x)
```

dlr *Logistic Rayleigh pdf*

Description

Computes the pdf of the logistic Rayleigh distribution

Usage

```
dlr(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dlr(x)
```

dmakeham *Makeham pdf*

Description

Computes the pdf of the Makeham distribution

Usage

```
dmakeham(x, alpha = 1, beta = 1, epsilon = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive
epsilon	the value of epsilon parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dmakeham(x)
```

`dmakehambeard` *Makeham-Beard pdf*

Description

Computes the pdf of the Makeham-Beard distribution

Usage

```
dmakehambeard(x, alpha = 1, beta = 1, rho = 1, epsilon = 1)
```

Arguments

`x`	scale or vector of positive values at which the pdf needs to be computed
`alpha`	the value of alpha parameter, must be positive
`beta`	the value of beta parameter, must be positive
`rho`	the value of rho parameter, must be positive
`epsilon`	the value of epsilon parameter, must be positive

Value

An object of the same length as `x`, giving the pdf values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dmakehambeard(x)
```

`dmakehamperks` *Makeham-Perks pdf*

Description

Computes the pdf of the Makeham-Perks distribution

Usage

```
dmakehamperks(x, alpha = 1, beta = 1, epsilon = 1)
```

Arguments

`x`	scale or vector of positive values at which the pdf needs to be computed
`alpha`	the value of alpha parameter, must be positive
`beta`	the value of beta parameter, must be positive
`epsilon`	the value of epsilon parameter, must be positive

Value

An object of the same length as `x`, giving the pdf values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dmakehamperks(x)
```

dmoe *Marshall-Olkin exponential pdf*

Description

Computes the pdf of the Marshall-Olkin exponential distribution

Usage

```
dmoe(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dmoe(x)
```

dmow *Marshall-Olkin Weibull pdf*

Description

Computes the pdf of the Marshall-Olkin Weibull distribution

Usage

```
dmow(x, alpha = 1, beta = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dmow(x)
```

dpareto *Pareto pdf*

Description

Computes the pdf of the Pareto distribution

Usage

```
dpareto(x, alpha = 1, m = 1)
```

Arguments

x	scale or vector of values at which the pdf needs to be computed, values must be greater than m
alpha	the value of alpha parameter, must be positive
m	the value of m parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=dpareto(x)
```

dperks *Perks pdf*

Description

Computes the pdf of the Perks distribution

Usage

```
dperks(x, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the pdf needs to be computed
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dperks(x)
```

dschabe *Schabe pdf*

Description

Computes the pdf of the Schabe distribution

Usage

```
dschabe(x, theta = 1, gamma = 0.5)
```

Arguments

x	scale or vector of values at which the pdf needs to be computed, must be positive and less than theta
theta	the value of theta parameter, must be positive
gamma	the value of gamma parameter, must be between zero and one

Value

An object of the same length as x, giving the pdf values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dschabe(x)
```

`dxie` *Xie pdf*

Description

Computes the pdf of the Xie distribution

Usage

```
dxie(x, lambda = 1, alpha = 1, beta = 1)
```

Arguments

`x`	scale or vector of positive values at which the pdf needs to be computed
`lambda`	the value of lambda parameter, must be positive
`alpha`	the value of alpha parameter, must be positive
`beta`	the value of beta parameter, must be positive

Value

An object of the same length as `x`, giving the pdf values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=dxie(x)
```

`haddweibull` *Additive Weibull hazard rate function*

Description

Computes the hazard rate function of the additive Weibull distribution

Usage

```
haddweibull(x, a = 1, b = 1, c = 1, d = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`a`	the value of a parameter (the first scale parameter), must be positive
`b`	the value of b parameter (the first shape parameter), must be positive
`c`	the value of c parameter (the second scale parameter), must be positive
`d`	the value of d parameter (the second shape parameter), must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=haddweibull(x)
```

`hbeard` *Beard hazard rate function*

Description

Computes the hazard rate function of the Beard distribution

Usage

```
hbeard(x, alpha = 1, beta = 1, rho = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`alpha`	the value of alpha parameter, must be positive
`beta`	the value of beta parameter, must be positive
`rho`	the value of rho parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hbeard(x)
```

`hbeta` *Beta hazard rate function*

Description

Computes the hazard rate function of the beta distribution

Usage

```
hbeta(x, a = 1, b = 1)
```

Arguments

`x`	scale or vector of values at which the hazard rate function needs to be computed, values must be in the unit interval
`a`	the value of a parameter, must be positive
`b`	the value of b parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hbeta(x)
```

hburrx *BurrX hazard rate function*

Description

Computes the hazard rate function of the BurrX distribution

Usage

```
hburrx(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hburrx(x)
```

hchen *Chen hazard rate function*

Description

Computes the hazard rate function of the Chen distribution

Usage

```
hchen(x, beta = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
beta	the value of beta parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hchen(x)
```

hee *Exponentiated exponential hazard rate function*

Description

Computes the hazard rate function of the exponentiated exponential distribution

Usage

```
hee(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hee(x)
```

hel *Exponentiated logistic hazard rate function*

Description

Computes the hazard rate function of the exponentiated logistic distribution

Usage

```
hel(x, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hel(x)
```

hew *Exponentiated Weibull hazard rate function*

Description

Computes the hazard rate function of the exponentiated Weibull distribution

Usage

```
hew(x, alpha = 1, c = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
c	the value of c parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hew(x)
```

hexpext *Exponential extension hazard rate function*

Description

Computes the hazard rate function of the exponential extension distribution

Usage

```
hexpext(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hexpext(x)
```

`hexponential` *Exponential hazard rate function*

Description

Computes the hazard rate function of the exponential distribution

Usage

```
hexponential(x, alpha = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`alpha`	the value of alpha parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hexponential(x)
```

`hfrechet` *Gumbel II hazard rate function*

Description

Computes the hazard rate function of the Gumbel II distribution

Usage

```
hfrechet(x, a = 1, b = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`a`	the value of a parameter, must be positive
`b`	the value of b parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hfrechet(x)
```

hfw *Flexible Weibull hazard rate function*

Description

Computes the hazard rate function of the flexible Weibull distribution

Usage

```
hfw(x, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hfw(x)
```

hgamma *Gamma hazard rate function*

Description

Computes the hazard rate function of the gamma distribution

Usage

```
hgamma(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hgamma(x)
```

hgenF *Generalized F hazard rate function*

Description

Computes the hazard rate function of the generalized F distribution

Usage

```
hgenF(x, beta = 0, sigma = 1, m1 = 1, m2 = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
beta	the value of beta parameter, can be any real
sigma	the value of sigma parameter, must be positive
m1	the value of m1 parameter, must be positive
m2	the value of m2 parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package flexsurv.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hgenF(x)
```

hgengamma *Generalized gamma hazard rate function*

Description

Computes the hazard rate function of the generalized gamma distribution

Usage

```
hgengamma(x, b = 1, d = 1, k = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
b	the value of b parameter, must be positive
d	the value of d parameter, must be positive
k	the value of k parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package VGAM.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hgengamma(x)
```

hgompertz *Gompertz hazard rate function*

Description

Computes the hazard rate function of the Gompertz distribution

Usage

```
hgompertz(x, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hgompertz(x)
```

hgpw *Generalized power Weibull hazard rate function*

Description

Computes the hazard rate function of the generalized power Weibull distribution

Usage

```
hgpw(x, alpha = 1, theta = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
theta	the value of theta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hgpw(x)
```

hgumbel *Gumbel hazard rate function*

Description

Computes the hazard rate function of the Gumbel distribution

Usage

```
hgumbel(x, mu = 1, sigma = 1)
```

Arguments

x	scale or vector of any real values at which the hazard rate function needs to be computed
mu	the value of mu parameter, can be any real
sigma	the value of sigma parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hgumbel(x)
```

`hhjorth` *Hjorth hazard rate function*

Description

Computes the hazard rate function of the Hjorth distribution

Usage

```
hhjorth(x, delta = 1, theta = 1, beta = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`delta`	the value of delta parameter, must be positive
`theta`	the value of theta parameter, must be positive
`beta`	the value of beta parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hhjorth(x)
```

hige *Inverse exponentiated exponential hazard rate function*

Description

Computes the hazard rate function of the inverse exponentiated exponential distribution

Usage

```
hige(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hige(x)
```

hinvgauss *Inverse Gaussian hazard rate function*

Description

Computes the hazard rate function of the inverse Gaussian distribution

Usage

```
hinvgauss(x, alpha = 1, sigma = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
sigma	the value of sigma parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package SuppDists.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hinvgauss(x)
```

`hjshape` *J-shaped hazard rate function*

Description

Computes the hazard rate function of the J-shaped distribution

Usage

```
hjshape(x, b = 1, nu = 1)
```

Arguments

`x`	scale or vector of values at which the hazard rate function needs to be computed, values are positive and bounded below by `b`
`b`	the value of b parameter, must be positive
`nu`	the value of nu parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hjshape(x)
```

hkum *Kumaraswamy hazard rate function*

Description

Computes the hazard rate function of the Kumarawamay distribution

Usage

```
hkum(x, a = 1, b = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
a	the value of a parameter, must be positive
b	the value of b parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=1,max=2)
y=hkum(x)
```

`hlai` *Lai hazard rate function*

Description

Computes the hazard rate function of the Lai distribution

Usage

```
hlai(x, lambda = 1, beta = 1, nu = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`lambda`	the value of lambda parameter, must be positive
`beta`	the value of beta parameter, must be non-negative but both beta and nu cannot be zero
`nu`	the value of nu parameter, must be non-negative but both beta and nu cannot be zero

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hlai(x)
```

hle *Logistic exponential hazard rate function*

Description

Computes the hazard rate function of the logistic exponential distribution

Usage

```
hle(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hle(x)
```

`hlgamma` *Log gamma hazard rate function*

Description

Computes the hazard rate function of the log gamma distribution

Usage

```
hlgamma(x, alpha = 1, lambda = 1)
```

Arguments

`x`	scale or vector of values greater than one at which the hazard rate function needs to be computed
`alpha`	the value of alpha parameter, must be positive
`lambda`	the value of lambda parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output. This function uses the `R` contributed package `actuar`.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=hlgamma(x)
```

`hlinear` *Linear failure rate hazard rate function*

Description

Computes the hazard rate function of the linear failure rate distribution

Usage

```
hlinear(x, a = 1, b = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`a`	the value of a parameter, must be non-negative but both a and b cannot be zero
`b`	the value of b parameter, must be non-negative but both a and b cannot be zero

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hlinear(x)
```

hll *Loglog hazard rate function*

Description

Computes the hazard rate function of the loglog distribution

Usage

```
hll(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hll(x)
```

`hlogistic` *Logistic hazard rate function*

Description

Computes the hazard rate function of the Logistic distribution

Usage

```
hlogistic(x, alpha = 1, sigma = 1)
```

Arguments

`x`	scale or vector of any real values at which the hazard rate function needs to be computed
`alpha`	the value of alpha parameter, can be any real
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hlogistic(x)
```

`hloglogistic` *Log-logistic hazard rate function*

Description

Computes the hazard rate function of the Log-logistic distribution

Usage

```
hloglogistic(x, alpha = 1, sigma = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`alpha`	the value of alpha parameter, must be positive
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hloglogistic(x)
```

`hlognormal` *Lognormal hazard rate function*

Description

Computes the hazard rate function of the lognormal distribution

Usage

```
hlognormal(x, alpha = 1, sigma = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`alpha`	the value of alpha parameter, can be any real
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hlognormal(x)
```

`hlr` *Logistic Rayleigh hazard rate function*

Description

Computes the hazard rate function of the logistic Rayleigh distribution

Usage

```
hlr(x, alpha = 1, lambda = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`alpha`	the value of alpha parameter, must be positive
`lambda`	the value of lambda parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output. This function uses the `R` contributed package `reliaR`.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hlr(x)
```

`hmakeham` *Makeham hazard rate function*

Description

Computes the hazard rate function of the Makeham distribution

Usage

```
hmakeham(x, alpha = 1, beta = 1, epsilon = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`alpha`	the value of alpha parameter, must be positive
`beta`	the value of beta parameter, must be positive
`epsilon`	the value of epsilon parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hmakeham(x)
```

`hmakehambeard` *Makeham-Beard hazard rate function*

Description

Computes the hazard rate function of the Makeham-Beard distribution

Usage

```
hmakehambeard(x, alpha = 1, beta = 1, rho = 1, epsilon = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`alpha`	the value of alpha parameter, must be positive
`beta`	the value of beta parameter, must be positive
`rho`	the value of rho parameter, must be positive
`epsilon`	the value of epsilon parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hmakehambeard(x)
```

hmakehamperks *Makeham-Perks hazard rate function*

Description

Computes the hazard rate function of the Makeham-Perks distribution

Usage

```
hmakehamperks(x, alpha = 1, beta = 1, epsilon = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive
epsilon	the value of epsilon parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hmakehamperks(x)
```

hmoe *Marshall-Olkin exponential hazard rate function*

Description

Computes the hazard rate function of the Marshall-Olkin exponential distribution

Usage

```
hmoe(x, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hmoe(x)
```

hmow *Marshall-Olkin Weibull hazard rate function*

Description

Computes the hazard rate function of the Marshall-Olkin Weibull distribution

Usage

```
hmow(x, alpha = 1, beta = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hmow(x)
```

hnormal *Normal hazard rate function*

Description

Computes the hazard rate function of the normal distribution

Usage

```
hnormal(x, alpha = 1, sigma = 1)
```

Arguments

x	scale or vector of any real values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, can be any real
sigma	the value of sigma parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hnormal(x)
```

`hpareto` *Pareto hazard rate function*

Description

Computes the hazard rate function of the Pareto distribution

Usage

```
hpareto(x, alpha = 1, m = 1)
```

Arguments

`x`	scale or vector of values at which the hazard rate function needs to be computed, values must be greater than m
`alpha`	the value of alpha parameter, must be positive
`m`	the value of m parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=hpareto(x)
```

hperks *Perks hazard rate function*

Description

Computes the hazard rate function of the Perks distribution

Usage

```
hperks(x, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the hazard rate function needs to be computed
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hperks(x)
```

hschabe *Schabe hazard rate function*

Description

Computes the hazard rate function of the Schabe distribution

Usage

```
hschabe(x, theta = 1, gamma = 0.5)
```

Arguments

x	scale or vector of values at which the hazard rate function needs to be computed, must be positive and less than theta
theta	the value of theta parameter, must be positive
gamma	the value of gamma parameter, must be between zero and one

Value

An object of the same length as x, giving the hazard rate function values computed at x

Note

If incorrect values are input for x or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hschabe(x)
```

`huniform` *Uniform hazard rate function*

Description

Computes the hazard rate function of the uniform distribution

Usage

```
huniform(x, a = 1, b = 2)
```

Arguments

`x`	scale or vector of values at which the hazard rate function needs to be computed, values must be between a and b
`a`	the value of a parameter, must be positive
`b`	the value of b parameter, must be greater than a

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=1,max=2)
y=huniform(x)
```

`hweibull` *Weibull hazard rate function*

Description

Computes the hazard rate function of the Weibull distribution

Usage

```
hweibull(x, alpha = 1, sigma = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`alpha`	the value of alpha parameter, must be positive
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hweibull(x)
```

`hxie` *Xie hazard rate function*

Description

Computes the hazard rate function of the Xie distribution

Usage

```
hxie(x, lambda = 1, alpha = 1, beta = 1)
```

Arguments

`x`	scale or vector of positive values at which the hazard rate function needs to be computed
`lambda`	the value of lambda parameter, must be positive
`alpha`	the value of alpha parameter, must be positive
`beta`	the value of beta parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x`

Note

If incorrect values are input for `x` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=hxie(x)
```

`iaddweibull` *Additive Weibull integrated hazard rate function*

Description

Computes the integrated hazard rate function of the additive Weibull distribution

Usage

```
iaddweibull(x, t = 1, a = 1, b = 1, c = 1, d = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`a`	the value of a parameter, must be positive
`b`	the value of b parameter, must be positive
`c`	the value of c parameter, must be positive
`d`	the value of d parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=iaddweibull(x)
```

ibeard *Beard integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Beard distribution

Usage

```
ibeard(x, t = 1, alpha = 1, beta = 1, rho = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive
rho	the value of rho parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ibeard(x)
```

ibeta *Beta integrated hazard rate function*

Description

Computes the integrated hazard rate function of the beta distribution

Usage

```
ibeta(x, t = 1, a = 1, b = 1)
```

Arguments

x	scale or vector of values at which the integrated hazard rate function needs to be computed, values must be in the unit interval
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
a	the value of b parameter, must be positive
b	the value of nu parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ibeta(x)
```

iburrx *BurrX integrated hazard rate function*

Description

Computes the integrated hazard rate function of the BurrX distribution

Usage

```
iburrx(x, t = 1, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=iburrx(x)
```

ichen *Chen integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Chen distribution

Usage

```
ichen(x, t = 1, beta = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
beta	the value of beta parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ichen(x)
```

iee *Exponentiated exponential integrated hazard rate function*

Description

Computes the integrated hazard rate function of the exponentiated exponential distribution

Usage

```
iee(x, t = 1, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=iee(x)
```

`iel` *Exponentiated logistic integrated hazard rate function*

Description

Computes the integrated hazard rate function of the exponentiated logistic distribution

Usage

```
iel(x, t = 1, alpha = 1, beta = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive
`beta`	the value of beta parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output. This function uses the `R` contributed package `reliaR`.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=iel(x)
```

iew *Exponentiated Weibull integrated hazard rate function*

Description

Computes the integrated hazard rate function of the exponentiated Weibull distribution

Usage

```
iew(x, t = 1, alpha = 1, c = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive
c	the value of c parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=iew(x)
```

`iexpext` *Exponential extension integrated hazard rate function*

Description

Computes the integrated hazard rate function of the exponential extension distribution

Usage

```
iexpext(x, t = 1, alpha = 1, lambda = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive
`lambda`	the value of lambda parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=iexpext(x)
```

`iexponential` *Exponential integrated hazard rate function*

Description

Computes the integrated hazard rate function of the exponential distribution

Usage

```
iexponential(x, t = 1, alpha = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=iexponential(x)
```

`ifrechet` *Gumbel II integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Gumbel II distribution

Usage

```
ifrechet(x, t = 1, a = 1, b = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`a`	the value of a parameter, must be positive
`b`	the value of b parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ifrechet(x)
```

ifw *Flexible Weibull integrated hazard rate function*

Description

Computes the integrated hazard rate function of the flexible Weibull distribution

Usage

```
ifw(x, t = 1, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ifw(x)
```

`igamma` *Gamma integrated hazard rate function*

Description

Computes the integrated hazard rate function of the gamma distribution

Usage

```
igamma(x, t = 1, alpha = 1, lambda = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive
`lambda`	the value of lambda parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=igamma(x)
```

`igenF` *Generalized F integrated hazard rate function*

Description

Computes the integrated hazard rate function of the generalized F distribution

Usage

```
igenF(x, t = 1, beta = 0, sigma = 1, m1 = 1, m2 = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`beta`	the value of beta parameter, must be positive
`sigma`	the value of sigma parameter, must be positive
`m1`	the value of m1 parameter, must be positive
`m2`	the value of m2 parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output. This function uses the `R` contributed package `flexsurv`.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=igenF(x)
```

`igengamma` *Generalized gamma integrated hazard rate function*

Description

Computes the integrated hazard rate function of the generalized gamma distribution

Usage

```
igengamma(x, t = 1, b = 1, d = 1, k = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`b`	the value of b parameter, must be positive
`d`	the value of d parameter, must be positive
`k`	the value of k parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=igengamma(x)
```

igompertz *Gompertz integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Gompertz distribution

Usage

```
igompertz(x, t = 1, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=igompertz(x)
```

igpw *Generalized power Weibull integrated hazard rate function*

Description

Computes the integrated hazard rate function of the generalized power Weibull distribution

Usage

```
igpw(x, t = 1, alpha = 1, theta = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
theta	the value of theta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=igpw(x)
```

`igumbel` *Gumbel integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Gumbel distribution

Usage

```
igumbel(x, t = 1, mu = 1, sigma = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`mu`	the value of mu parameter, can be any real
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output. This function uses the `R` contributed package `reliaR`.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=igumbel(x)
```

ihjorth *Hjorth integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Hjorth distribution

Usage

```
ihjorth(x, t = 1, delta = 1, theta = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
delta	the value of delta parameter, must be positive
theta	the value of theta parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ihjorth(x)
```

iige *Inverse exponentiated exponential integrated hazard rate function*

Description

Computes the integrated hazard rate function of the inverse exponentiated exponential distribution

Usage

```
iige(x, t = 1, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=iige(x)
```

`iinvgauss` *Inverse Gaussian integrated hazard rate function*

Description

Computes the integrated hazard rate function of the inverse Gaussian distribution

Usage

```
iinvgauss(x, t = 1, alpha = 1, sigma = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output. This function uses the `R` contributed package `SuppDists`.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=iinvgauss(x)
```

`ijshape` *J-shaped integrated hazard rate function*

Description

Computes the integrated hazard rate function of the J-shaped distribution

Usage

```
ijshape(x, t = 1, b = 1, nu = 1)
```

Arguments

`x`	scale or vector of values at which the integrated hazard rate function needs to be computed, values are positive and bounded below by b
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`b`	the value of b parameter, must be positive
`nu`	the value of nu parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ijshape(x)
```

ikum *Kumaraswamy integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Kumaraswamy distribution

Usage

```
ikum(x, t = 1, a = 0, b = 1)
```

Arguments

x	scale or vector of values at which the integrated hazard rate function needs to be computed, values must be between zero and one
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
a	the value of a parameter, must be positive
b	the value of b parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ikum(x)
```

`ilai` *Lai integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Lai distribution

Usage

```
ilai(x, t = 1, lambda = 1, beta = 1, nu = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`lambda`	the value of lambda parameter, must be positive
`beta`	the value of beta parameter, must be non-negative but both beta and nu cannot be zero
`nu`	the value of nu parameter, must be non-negative but both beta and nu cannot be zero

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output. This function uses the `R` contributed package `hypergeo`.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ilai(x)
```

`ile` *Logistic exponential integrated hazard rate function*

Description

Computes the integrated hazard rate function of the logistic exponential distribution

Usage

```
ile(x, t = 1, alpha = 1, lambda = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive
`lambda`	the value of lambda parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output. This function uses the `R` contributed package `reliaR`.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ile(x)
```

`ilgamma` *Log gamma integrated hazard rate function*

Description

Computes the integrated hazard rate function of the log gamma distribution

Usage

```
ilgamma(x, t = 1, alpha = 1, lambda = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive
`lambda`	the value of lambda parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output. This function uses the `R` contributed package `actuar`.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ilgamma(x)
```

`ilinear` *Linear failure rate integrated hazard rate function*

Description

Computes the integrated hazard rate function of the linear failure rate distribution

Usage

```
ilinear(x, t = 1, a = 1, b = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`a`	the value of a parameter, must be non-negative but both a and b cannot be zero
`b`	the value of b parameter, must be non-negative but both a and b cannot be zero

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=ilinear(x)
```

ill *Loglog integrated hazard rate function*

Description

Computes the integrated hazard rate function of the loglog distribution

Usage

```
ill(x, t = 1, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ill(x)
```

`ilogistic` *Logistic integrated hazard rate function*

Description

Computes the integrated hazard rate function of the logistic distribution

Usage

```
ilogistic(x, t = 1, alpha = 1, sigma = 1)
```

Arguments

`x`	scale or vector of any real values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, can be any real
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=ilogistic(x)
```

`iloglogistic` *Log-logistic integrated hazard rate function*

Description

Computes the integrated hazard rate function of the log-logistic distribution

Usage

```
iloglogistic(x, t = 1, alpha = 1, sigma = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=iloglogistic(x)
```

`ilognormal` *Lognormal integrated hazard rate function*

Description

Computes the integrated hazard rate function of the lognormal distribution

Usage

```
ilognormal(x, t = 1, alpha = 1, sigma = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, can be any real
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=ilognormal(x)
```

ilr *Logistic Rayleigh integrated hazard rate function*

Description

Computes the integrated hazard rate function of the logistic Rayleigh distribution

Usage

```
ilr(x, t = 1, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ilr(x)
```

imakeham *Makeham integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Makeham distribution

Usage

```
imakeham(x, t = 1, alpha = 1, beta = 1, epsilon = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
epsilon	the value of epsilon parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=imakeham(x)
```

imakehambeard *Makeham-Beard integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Makeham-Beard distribution

Usage

```
imakehambeard(x, t = 1, alpha = 1, beta = 1, rho = 1, epsilon = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
epsilon	the value of epsilon parameter, must be positive
beta	the value of beta parameter, must be positive
rho	the value of rho parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=imakehambeard(x)
```

`imakehamperks` *Makeham-Perks integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Makeham-Perks distribution

Usage

```
imakehamperks(x, t = 1, alpha = 1, beta = 1, epsilon = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive
`epsilon`	the value of epsilon parameter, must be positive
`beta`	the value of beta parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=imakehamperks(x)
```

imoe *Marshall-Olkin exponential integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Marshall-Olkin exponential distribution

Usage

```
imoe(x, t = 1, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=imoe(x)
```

imow *Marshall-Olkin Weibull integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Marshall-Olkin Weibull distribution

Usage

```
imow(x, t = 1, alpha = 1, beta = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=imow(x)
```

`inormal` *Normal integrated hazard rate function*

Description

Computes the integrated hazard rate function of the normal distribution

Usage

```
inormal(x, t = 1, alpha = 1, sigma = 1)
```

Arguments

`x`	scale or vector of any real values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, can be any real
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=inormal(x)
```

`ipareto` *Pareto integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Pareto distribution

Usage

```
ipareto(x, t = 1, alpha = 1, m = 1)
```

Arguments

`x`	scale or vector of values at which the integrated hazard rate function needs to be computed, values must be greater than m
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive
`m`	the value of m parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=ipareto(x)
```

iperks *Perks integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Perks distribution

Usage

```
iperks(x, t = 1, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=iperks(x)
```

ischabe *Schabe integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Schabe distribution

Usage

```
ischabe(x, t = 1, theta = 1, gamma = 0.5)
```

Arguments

x	scale or vector of values at which the integrated hazard rate function needs to be computed, must be positive and less than theta
t	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
theta	the value of theta parameter, must be positive
gamma	the value of gamma parameter, must be between zero and one

Value

An object of the same length as x, giving the hazard rate function values computed at x and t

Note

If incorrect values or inconsistent lengths are input for x, t or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ischabe(x)
```

`iuniform` *Uniform integrated hazard rate function*

Description

Computes the integrated hazard rate function of the uniform distribution

Usage

```
iuniform(x, t = 1, a = 0, b = 1)
```

Arguments

`x`	scale or vector of values at which the integrated hazard rate function needs to be computed, values must be between a and b
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`a`	the value of a parameter, must be positive
`b`	the value of b parameter, must be greater than a

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=iuniform(x)
```

`iweibull` *Weibull integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Weibull distribution

Usage

```
iweibull(x, t = 1, alpha = 1, sigma = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=iweibull(x)
```

`ixie` *Xie integrated hazard rate function*

Description

Computes the integrated hazard rate function of the Xie distribution

Usage

```
ixie(x, t = 1, lambda = 1, alpha = 1, beta = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`t`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive
`beta`	the value of beta parameter, must be positive
`lambda`	the value of lambda parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `t`

Note

If incorrect values or inconsistent lengths are input for `x`, `t` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=ixie(x)
```

qaddweibull *Additive Weibull integrated hazard rate function*

Description

Computes the integrated hazard rate function of the additive Weibull distribution

Usage

```
qaddweibull(x, u = 0.5, a = 1, b = 1, c = 1, d = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
a	the value of a parameter, must be positive
b	the value of b parameter, must be positive
c	the value of c parameter, must be positive
d	the value of d parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qaddweibull(x)
```

qbeard *Beard quantile function*

Description

Computes the quantile function of the Beard distribution

Usage

```
qbeard(x, u = 0.5, alpha = 1, beta = 1, rho = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive
rho	the value of rho parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qbeard(x)
```

qbetad *Beta quantile function*

Description

Computes the quantile function of the beta distribution

Usage

```
qbetad(x, u = 0.5, a = 1, b = 1)
```

Arguments

x	scale or vector of values at which the integrated hazard rate function needs to be computed, values must be in the unit interval
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
a	the value of b parameter, must be positive
b	the value of nu parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qbetad(x)
```

qburrx *BurrX quantile function*

Description

Computes the quantile function of the BurrX distribution

Usage

```
qburrx(x, u = 0.5, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qburrx(x)
```

qchen *Chen quantile function*

Description

Computes the quantile function of the Chen distribution

Usage

```
qchen(x, u = 0.5, beta = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
beta	the value of beta parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qchen(x)
```

qee *Exponentiated exponential quantile function*

Description

Computes the quantile function of the exponentiated exponential distribution

Usage

```
qee(x, u = 0.5, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qee(x)
```

qel *Exponentiated logistic quantile function*

Description

Computes the quantile function of the exponentiated logistic distribution

Usage

```
qel(x, u = 0.5, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qel(x)
```

qew *Exponentiated Weibull quantile function*

Description

Computes the quantile function of the exponentiated Weibull distribution

Usage

```
qew(x, u = 0.5, alpha = 1, c = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive
c	the value of c parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qew(x)
```

qexpext *Exponential extension quantile function*

Description

Computes the quantile function of the exponential extension distribution

Usage

```
qexpext(x, u = 0.5, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qexpext(x)
```

`qexponential` *Exponential quantile function*

Description

Computes the quantile function of the exponential distribution

Usage

```
qexponential(x, u = 0.5, alpha = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`u`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `u`

Note

If incorrect values or inconsistent lengths are input for `x`, `u` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qexponential(x)
```

`qfrechet` *Gumbel II quantile function*

Description

Computes the quantile function of the Gumbel II distribution

Usage

```
qfrechet(x, u = 0.5, a = 1, b = 1)
```

Arguments

`x`	scale or vector of positive values at which the integrated hazard rate function needs to be computed
`u`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`a`	the value of a parameter, must be positive
`b`	the value of b parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `u`

Note

If incorrect values or inconsistent lengths are input for `x`, `u` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qfrechet(x)
```

qfw *Flexible Weibull quantile function*

Description

Computes the quantile function of the flexible Weibull distribution

Usage

```
qfw(x, u = 0.5, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qfw(x)
```

qgammad *Gamma quantile function*

Description

Computes the quantile function of the gamma distribution

Usage

```
qgammad(x, u = 0.5, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=qgammad(x)
```

qgenF *Generalized F quantile function*

Description

Computes the quantile function of the generalized F distribution

Usage

```
qgenF(x, u = 0.5, beta = 0, sigma = 1, m1 = 1, m2 = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
beta	the value of beta parameter, must be positive
sigma	the value of sigma parameter, must be positive
m1	the value of m1 parameter, must be positive
m2	the value of m2 parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output. This function uses the R contributed package flexsurv.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qgenF(x)
```

qgengammad *Generalized gamma quantile function*

Description

Computes the quantile function of the generalized gamma distribution

Usage

```
qgengammad(x, u = 0.5, b = 1, d = 1, k = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
b	the value of b parameter, must be positive
d	the value of d parameter, must be positive
k	the value of k parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=qgengammad(x)
```

qgompertz *Gompertz quantile function*

Description

Computes the quantile function of the Gompertz distribution

Usage

```
qgompertz(x, u = 0.5, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qgompertz(x)
```

qgpw *Generalized power Weibull quantile function*

Description

Computes the quantile function of the generalized power Weibull distribution

Usage

```
qgpw(x, u = 0.5, alpha = 1, theta = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
theta	the value of theta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qgpw(x)
```

qgumbeld *Gumbel quantile function*

Description

Computes the quantile function of the Gumbel distribution

Usage

```
qgumbeld(x, u = 0.5, mu = 1, sigma = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
mu	the value of mu parameter, can be any real
sigma	the value of sigma parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qgumbeld(x)
```

qhjorth *Hjorth quantile function*

Description

Computes the quantile function of the Hjorth distribution

Usage

```
qhjorth(x, u = 0.5, delta = 1, theta = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
delta	the value of delta parameter, must be positive
theta	the value of theta parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qhjorth(x)
```

qige *Inverse exponentiated exponential quantile function*

Description

Computes the quantile function of the inverse exponentiated exponential distribution

Usage

```
qige(x, u = 0.5, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qige(x)
```

qinversegaussian *Inverse Gaussian quantile function*

Description

Computes the quantile function of the inverse Gaussian distribution

Usage

```
qinversegaussian(x, u = 0.5, alpha = 1, sigma = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
sigma	the value of sigma parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output. This function uses the R contributed package SuppDists.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=qinversegaussian(x)
```

qjshape *J-shaped quantile function*

Description

Computes the quantile function of the J-shaped distribution

Usage

```
qjshape(x, u = 0.5, b = 1, nu = 1)
```

Arguments

x	scale or vector of values at which the integrated hazard rate function needs to be computed, values are positive and bounded below by b
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
b	the value of b parameter, must be positive
nu	the value of nu parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qjshape(x)
```

qkum *Kumaraswamy quantile function*

Description

Computes the quantile function of the Kumaraswamy distribution

Usage

```
qkum(x, u = 0.5, a = 1, b = 1)
```

Arguments

x	scale or vector of values at which the integrated hazard rate function needs to be computed, values must be between zero and one
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
a	the value of a parameter, must be positive
b	the value of b parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qkum(x)
```

qlai *Lai quantile function*

Description

Computes the quantile function of the Lai distribution

Usage

```
qlai(x, u = 0.5, lambda = 1, beta = 1, nu = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
lambda	the value of lambda parameter, must be positive
beta	the value of beta parameter, must be non-negative but both beta and nu cannot be zero
nu	the value of nu parameter, must be non-negative but both beta and nu cannot be zero

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output. This function uses the R contributed package hypergeo.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qlai(x)
```

qle *Logistic exponential quantile function*

Description

Computes the quantile function of the logistic exponential distribution

Usage

```
qle(x, u = 0.5, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qle(x)
```

qlgammad *Log gamma quantile function*

Description

Computes the quantile function of the log gamma distribution

Usage

```
qlgammad(x, u = 0.5, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output. This function uses the R contributed package actuar.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qlgammad(x)
```

qlinear *Linear failure rate quantile function*

Description

Computes the quantile function of the linear failure rate distribution

Usage

```
qlinear(x, u = 0.5, a = 1, b = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
a	the value of a parameter, must be non-negative but both a and b cannot be zero
b	the value of b parameter, must be non-negative but both a and b cannot be zero

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=qlinear(x)
```

qll *Loglog quantile function*

Description

Computes the quantile function of the loglog distribution

Usage

```
qll(x, u = 0.5, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qll(x)
```

`qlogistic` *Logistic quantile function*

Description

Computes the quantile function of the logistic distribution

Usage

```
qlogistic(x, u = 0.5, alpha = 1, sigma = 1)
```

Arguments

`x`	scale or vector of any real values at which the integrated hazard rate function needs to be computed
`u`	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as `x`
`alpha`	the value of alpha parameter, can be any real
`sigma`	the value of sigma parameter, must be positive

Value

An object of the same length as `x`, giving the hazard rate function values computed at `x` and `u`

Note

If incorrect values or inconsistent lengths are input for `x`, `u` or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=qlogis(x)
```

qloglogis *Log-logistic quantile function*

Description

Computes the quantile function of the log-logistic distribution

Usage

```
qloglogis(x, u = 0.5, alpha = 1, sigma = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
sigma	the value of sigma parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=qloglogis(x)
```

qlognormal *Lognormal quantile function*

Description

Computes the quantile function of the lognormal distribution

Usage

```
qlognormal(x, u = 0.5, alpha = 1, sigma = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, can be any real
sigma	the value of sigma parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=qlognormal(x)
```

qlr *Logistic Rayleigh quantile function*

Description

Computes the quantile function of the logistic Rayleigh distribution

Usage

```
qlr(x, u = 0.5, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output. This function uses the R contributed package reliaR.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qlr(x)
```

qmoe *Marshall-Olkin exponential quantile function*

Description

Computes the quantile function of the Marshall-Olkin exponential distribution

Usage

```
qmoe(x, u = 0.5, alpha = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qmoe(x)
```

qmow *Marshall-Olkin Weibull quantile function*

Description

Computes the quantile function of the Marshall-Olkin Weibull distribution

Usage

```
qmow(x, u = 0.5, alpha = 1, beta = 1, lambda = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qmow(x)
```

qnormal *Normal quantile function*

Description

Computes the quantile function of the normal distribution

Usage

```
qnormal(x, u = 0.5, alpha = 1, sigma = 1)
```

Arguments

x	scale or vector of any real values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, can be any real
sigma	the value of sigma parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=qnormal(x)
```

qpareto *Pareto quantile function*

Description

Computes the quantile function of the Pareto distribution

Usage

```
qpareto(x, u = 0.5, alpha = 1, m = 1)
```

Arguments

x	scale or vector of values at which the integrated hazard rate function needs to be computed, values must be greater than m
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
m	the value of m parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=qpareto(x)
```

qperks *Perks quantile function*

Description

Computes the quantile function of the Perks distribution

Usage

```
qperks(x, u = 0.5, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qperks(x)
```

qschabe *Schabe quantile function*

Description

Computes the quantile function of the Schabe distribution

Usage

```
qschabe(x, u = 0.5, theta = 1, gamma = 0.5)
```

Arguments

x	scale or vector of values at which the integrated hazard rate function needs to be computed, must be positive and less than theta
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
theta	the value of theta parameter, must be positive
gamma	the value of gamma parameter, must be between zero and one

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qschabe(x)
```

quniform *Uniform quantile function*

Description

Computes the quantile function of the uniform distribution

Usage

```
quniform(x, u = 0.5, a = 1, b = 2)
```

Arguments

x	scale or vector of values at which the integrated hazard rate function needs to be computed, values must be between a and b
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
a	the value of a parameter, must be positive
b	the value of b parameter, must be greater than a

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=quniform(x)
```

qweibull *Weibull quantile function*

Description

Computes the quantile function of the Weibull distribution

Usage

```
qweibull(x, u = 0.5, alpha = 1, sigma = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
sigma	the value of sigma parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=2,max=3)
y=qweibull(x)
```

qxie *Xie quantile function*

Description

Computes the quantile function of the Xie distribution

Usage

```
qxie(x, u = 0.5, lambda = 1, alpha = 1, beta = 1)
```

Arguments

x	scale or vector of positive values at which the integrated hazard rate function needs to be computed
u	scale or vector of positive values at which the integrated hazard rate function needs to be computed, must be of the same length as x
alpha	the value of alpha parameter, must be positive
beta	the value of beta parameter, must be positive
lambda	the value of lambda parameter, must be positive

Value

An object of the same length as x, giving the hazard rate function values computed at x and u

Note

If incorrect values or inconsistent lengths are input for x, u or the model parameters then NaNs will be returned as the output.

Author(s)

Saralees Nadarajah

References

S. Nadarajah, S. A. A. Bakar, Tabulations of survival models for actuarial use, submitted

Examples

```
x=runif(10,min=0,max=1)
y=qxie(x)
```

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