Package 'tpwb'

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Type Package

Title The Three Parameter Weibull Distribution

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Description Density, distribution function, the quantile function, random generation function, and maximum likelihood estimation.

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cdfplot *Distribution function plot of the three-parameter Weibull distribution*

Description

Distribution function plot of the three-parameter Weibull distribution with specified `shape`, `scale` and `location`.

Usage

```
cdfplot(x, shape, scale, location)
```

Arguments

`x`	vector of quantiles
`shape`	shape parameter (β) of the three-parameter Weibull distribution, where $\beta > 0$.
`scale`	scale parameter (α) of the three-parameter Weibull distribution, where $\alpha > 0$.
`location`	location parameter (δ) of the three-parameter Weibull distribution, where $\delta \geq 0$.

Value

Distribution function plot of the three-parameter Weibull distribution.

References

Johnson, N. L., Kotz, S. and Balakrishnan, N. (1995) Continuous Univariate Distributions, volume 1, chapter 21. Wiley, New York.

Examples

```
x <- rtpwb(100,1.5,2,1)
cdfplot(x,1.5,2,1)
```

mlewb *Maximum likelihood estimation (MLE) for the three-parameter Weibull distribution.*

Description

This function for estimating parameter of the three-parameter Weibull distribution.

Usage

```
mlewb(x, shape, scale, location)
```

Arguments

x	vector of quantiles.
shape	shape parameter, where $\beta > 0$.
scale	scale parameter, where $\alpha > 0$.
location	location parameter, where $\delta \geq 0$.

Value

the estimated shape, scale and location values of the three-parameter Weibull distribution.

Note

the result of this function may produce a Warning message, but not effect to the estimated parameter.

References

Johnson, N. L., Kotz, S. and Balakrishnan, N. (1995) Continuous Univariate Distributions, volume 1, chapter 21. Wiley, New York.

Examples

```
x<- rtpwb(1000,2,3,1) #n=1000 large sample
mlewb(x,2,3,1)
x<- rtpwb(50,2,3,1) #n=50 medium sample
mlewb(x,2,3,1)
x<- rtpwb(10,2,3,1) #n=10 small sample
mlewb(x,2,3,1)
```

---

pdfplot *Probability density function plot of the three-parameter Weibull distribution*

Description

Probability density function plot of the three-parameter Weibull distribution with specified shape, scale and location.

Usage

```
pdfplot(x, shape, scale, location)
```

Arguments

x	vector of quantiles
shape	shape parameter (β) of the three-parameter Weibull distribution, where $\beta > 0$.
scale	scale parameter (α) of the three-parameter Weibull distribution, where $\alpha > 0$.
location	location parameter (δ) of the three-parameter Weibull distribution, where $\delta \geq 0$.

Value

Probability density function plot of the three-parameter Weibull distribution.

References

Johnson, N. L., Kotz, S. and Balakrishnan, N. (1995) Continuous Univariate Distributions, volume 1, chapter 21. Wiley, New York.

Examples

```
x <- rtpwb(100,1.5,2,1)
pdfplot(x,1.5,2,1)
```

---

tpwb *The three-parameter Weibull distribution(tpwb)*

Description

Density, distribution function, quantile function, and random generation function for the three-parameter Weibull distribution with shape, scale and location

Usage

```
dtpwb(x, shape, scale, location = 1, log = FALSE)

ptpwb(q, shape, scale, location = 1, lower.tail = TRUE, log.p = FALSE)

qtpwb(p, shape, scale, location = 1, lower.tail = TRUE, log.p = FALSE)

rtpwb(n, shape, scale, location = 1)
```

Arguments

x, q	vector of quantiles.
shape	shape parameter, where $\beta > 0$.
scale	scale parameter, where $\alpha > 0$.
location	location parameter, where $\delta \geq 0$.
log, log.p	logical; (default = FALSE), if TRUE, then probabilities are given as log(p).
lower.tail	logical; if TRUE (default), probabilities are $P[X \leq x]$, otherwise, $P[X > x]$.
p	vector of probabilities
n	number of observations. If length(n) > 1, the length is taken to be the number required.

Value

dtpwb gives the density, ptpwb gives the distribution function, qtpwb gives the quantile function, and rtpwb generates random samples.

Note

If location parameter, $\delta = 0$, it reduced to the two-parameter Weibull distribution.

References

Johnson, N. L., Kotz, S. and Balakrishnan, N. (1995) Continuous Univariate Distributions, volume 1, chapter 21. Wiley, New York.

Examples

```
x <- rtpwb(20,1.5,3,1)
dtpwb(x,1.5,3,1)
dtpwb(x,1.5,3,1,log=TRUE)

q <- rtpwb(20,1.5,3,1)
ptpwb(q,1.5,3,1 )
ptpwb(q,1.5,3,1, lower.tail = FALSE)

q <- rtpwb(20,1.5,3,1); q
p<- ptpwb(q,1.5,3,1 ); p
qtpwb(p,1.5,3,1)

rtpwb(5, 1.5, 3, 0) # the same as rweibull(5,1.5,3)
rtpwb(25,0.5, 2, 1)
```

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