Package 'skewt'

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Title The Skewed Student-t Distribution

Description Density, distribution function, quantile function and random generation for the skewed t distribution of Fernandez and Steel.

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NeedsCompilation no

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`SkTDist` *The Skewed Student t Distribution*

Description

Density, distribution function, quantile function and random generation for the skewed t distribution, as introduced by Fernandez and Steel, with `df` degrees of freedom.

Usage

```
dskt(x, df, gamma = 1)
pskt(x, df, gamma = 1)
qskt(p, df, gamma)
rskt(n, df, gamma)
```

Arguments

x	vector of quantiles.
p	vector of probabilities.
n	number of observations. If `length(n) > 1`, the length is taken to be the number required.
df	degrees of freedom (> 0, maybe non-integer).
gamma	skewing parameter, γ

Details

The Skewed t distribution with `df` $= \nu$ degrees of freedom has the following density, where $f(x)$ is the density of the t distribution, with $= \nu$ degrees of freedom :

$$f(x) = \frac{2}{\gamma + \frac{1}{\gamma}} f(\gamma x) \quad for \quad x < 0$$

and

$$f(x) = \frac{2}{\gamma + \frac{1}{\gamma}} f(\frac{x}{\gamma}) \quad for \quad x \geq 0$$

Value

`dskt` gives the density, `pskt` gives the distribution function, `qskt` gives the quantile function, and `rskt` generates random deviates.

References

Fernandez, C. and Steel, M. F. J. (1998). On Bayesian modeling of fat tails and skewness, *J. Am. Statist. Assoc.* **93**, 359–371.

Rohr, P. and Hoeschele, I. (2002). Bayesian QTL mapping using skewed Student-t distributions, *Genet. Sel. Evol.* **34**, 1–21.

See Also

`df` for the F distribution.

Examples

```
dskt(0.5,2)
dskt(0.01,2,2)
pskt(1.25,2,2)
pskt(c(0.5,1.25),3)
qskt(c(0,0.025,0.25,0.5,0.75,0.975,1),2,2)
rskt(100,2,2)
plot(function(x)dskt(x,2,2),-3,3,n=301)
```

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