

# Package ‘mvrtn’

February 20, 2015

**Type** Package

**Title** Mean and Variance of Truncated Normal Distribution

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**Author** Matthew McLeod

**Maintainer** Matthew McLeod <mkmmcleod@gmail.com>

**Description** Mean, variance, and random variates for left/right truncated normal distributions.

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**NeedsCompilation** yes

**Repository** CRAN

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| mvtn | <i>Mean and Variance of Truncated Normal Distribution</i> |
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### Description

Computes the mean and variance in a univariate censored normal distribution with parameters `zmu` and `zsig` and censor point `c`.

### Usage

```
mvtn(zmu, zsig, c, side = c("left", "right"))
```

### Arguments

|      |   |
|------|---|
| zmu  | Mean Paramter                                   |
| zsig | Standard Deviation Paramter                     |
| c    | Censor Point                                    |
| side | Left or right truncation of normal distribution |

### Details

The derivation of the method used is described in the vignette that accompanies this package (Mohammad, McLeod, and McLeod, 2014). See documentation for the accompanying function `rtn()` for empirical validation.

### Value

a list with two components:

|          |                              |
|----------|------------------------------|
| mean     | mean of the distribution     |
| variance | variance of the distribution |

### Author(s)

Matthew McLeod

### References

N. Mohammad, M. McLeod and I. McLeod, Mean and Variance of the Truncated Normal Distribution. Vignette for mvtn package.

### See Also

[rtn](#)

### Examples

```
mvtn(100,15,80,"left")
mvtn(100,15,80,"right")
#simulation check on the answer
## Not run:
#Simulate truncated left truncated normal and compute
# empirical means and variances and their sds

## End(Not run)
```

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rtn *random variates from truncated normal distribution*

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### Description

Random variates from the left or right truncated normal distribution are generated. An efficient algorithm based on the inverse CDF method is used. This algorithm can be used to verify empirically the correctness of the mean and variance computation done by the other function in this package, `mvtn`.

### Usage

```
rtn(n, zmu = 0, zsig = 1, c = 1.96, side = c("left", "right"))
```

### Arguments

|      |  |
|------|--|
| n    | number of random variables             |
| zmu  | mean parameter for normal distribution |
| zsig | standard deviation parameter           |
| c    | truncation point                       |
| side | either left or right                   |

### Details

The inverse cdf method is used in the case of the right truncated normal distribution. In the left truncated case, the negative of the corresponding right truncated distribution is used.

### Value

the random variates, vector of length n

### Author(s)

A. I. McLeod

### References

For further details see the vignette.

### See Also

[mvtn](#)

**Examples**

```
#Empirical validation
z<-rtn(10^4, 100, 15, c=120, side="left")
c(mean(z), var(z))
mvtn(100, 15, c=120, side="left")
```

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