# Package 'DnE'

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**Type** Package

**Title** Distribution and Equation

**Version** 2.1.0

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**Description** The DnE package involves functions to analyse the distribution of a set of given data. The basic idea of the analysis is chi-squared test. Functions which have the form as ``is.xxdistribution'' are used to analyse whether the data obeys the xxdistrbution. If you do not know which distribution to judge, use function is.dt().

**License** GPL (>= 2)

**NeedsCompilation** no

**Repository** CRAN

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## R topics documented:

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DnE-package                    *DnE-package*

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### Description

The DnE package involves functions to analyse the distribution of a set of given data. The basic idea of the analysis is chi-squared test. Functions which have the form as "is.xxdistribution" are used to analyse whether the data obeys the xxdistrbution. If you do not know which distribution to judge, use function is.dt().

### Details

| | |
|---|---|
| Package: | DnE |
| Type: | Package |
| Version: | 2.1.0 |
| Date: | 2014-12-01 |
| License: | GPL (>= 2) |

### Author(s)

JunYao Chen, CuiYi He, Boxian Wei

### References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

### See Also

[DnE-package](#) , [is.bern](#) , [is.beta](#) , [is.binom](#) , [is.chisq](#) , [is.degen](#) , [is.exp](#) , [is.f](#) , [is.gamma](#) , [is.geom](#) , [is.nbinom](#) , [is.norm](#) , [is.pois](#) , [is.t](#) , [is.unif](#)

### Examples

```
require(stats)
x=rnorm(100)
is.dt(x,10,0.05)
#@@@@   dis       pr
#@@@@4 norm 0.007222132
```

| is.bern | *is.bern* |
|---|---|

## Description

judge if the data obeys bernoulli distribution.

## Usage

```
is.bern(x)
```

## Arguments

x                    data

## Details

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of Bernoulli or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100.

## Value

if the data possibly obeys bernoulli distribution, return a value named qchisq which represents the possibility. The larger qchisq is, the larger the possibility will be; else return -1.

## Note

please pay attention to the definition of parameters in our functions.

## Author(s)

JunYao Chen, CuiYi He, BoXian Wei

## References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

## See Also

is.dt , DnE-package

## Examples

```
require(stats)
examplecheck<-rbinom(100,1,0.3)
is.bern(examplecheck)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

| is.beta | *is.beta* |
|---------|-----------|

## Description

judge if the data obeys beta distribution.

## Usage

```
is.beta(x, m, a, sita1 = NULL, sita2 = NULL)
```

## Arguments

| x | data |
|---|------|
| m | the number of intervals you want to divide the data in, default value is 10 |
| a | significance level |
| sita1 | first parameter |
| sita2 | second parameter |

## Details

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of beta distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100. The beta distribution mentioned in this function is the one with mean a/b and variance a/b^2, where a is the first parameter and b is the second parameter of beta distribution. The function will work better if the number of intervals you choose to divide the data in is between 10 and 20. This number cannot excess the number of given oberservations.

## Value

if the data possibly obeys beta distribution, return a value named qchisq which represents the possibility. the larger qchisq is, the larger the possibility will be; else return -1.

## Note

please pay attention to the definition of parameters in our functions.

## Author(s)

JunYao Chen, CuiYi He, BoXian Wei

## References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

## See Also

is.dt , DnE-package

## Examples

```
require(stats)
examplecheck<-rbeta(100,2,4)
is.beta(examplecheck,10,0.05)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

---

| is.binom | *is.binom* |
|----------|------------|

---

## Description

judge if the data obeys binomial distribution.

## Usage

```
is.binom(x, m, a, n = NULL, p0 = NULL)
```

## Arguments

| | |
|---|---|
| x | data |
| m | the number of intervals you want to divide the data in, default value is 10 |
| a | significance level |
| n | the number of experiments |
| p0 | the probability of success |

## Details

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of binomial or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100. The function will work better if the number of intervals you choose to divide the data in is between 10 and 20. This number cannot excess the number of given oberservations.

## Value

if data possibly obeys binomial distribution, return a value named qchisq which represents the possibility. the larger qchisq is, the larger the possibility will be; else return -1.

## Note

please pay attention to the definition of parameters in our functions.

## Author(s)

JunYao Chen, CuiYi He, BoXian Wei

## References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

## See Also

is.dt , DnE-package

## Examples

```
require(stats)
examplecheck<-rbinom(100,50,0.3)
is.binom(examplecheck,10,0.05)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

---

| is.chisq | *is.chisq* |
|----------|------------|

---

## Description

judge if the data obeys chi-square distribution.

## Usage

```
is.chisq(x, m, a, n0 = NULL)
```

## Arguments

| | |
|---|---|
| x | data |
| m | the number of intervals you want to devide the data in, default value is 10 |
| a | significance level |
| n0 | degree of freedom |

**Details**

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of chi-square distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100. The function will work better if the number of intervals you choose to divide the data in is between 10 and 20. This number cannot excess the number of given oberservations.

**Value**

if the data possibly obeys chi-square distribution, return a value named qchisq which represents the possibility. The larger qchisq is, the larger the possibility will be; else return -1.

**Note**

please pay attention to the definition of parameters in our functions.

**Author(s)**

JunYao Chen, CuiYi He, BoXian Wei

**References**

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

**See Also**

is.dt , DnE-package

**Examples**

```
require(stats)
examplecheck<-rchisq(100,10)
is.chisq(examplecheck,10,0.05)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

---

| is.degen | *is.degen* |
|----------|------------|

---

**Description**

judge if the data obeys degenerate distribution.

**Usage**

```
is.degen(x)
```

## Arguments

x                    data

## Details

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of Degenerate distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100.

## Value

if the data possibly obeys degenerate distribution, return a value named qchisq which represents the possibility. the larger qchisq is, the larger the possibility will be; else return -1.

## Note

please pay attention to the definition of parameters in our functions.

## Author(s)

JunYao Chen, CuiYi He, BoXian Wei

## References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

## See Also

`is.dt` , `DnE-package`

## Examples

```
require(stats)
examplecheck<-c(1,1,1,1,1)
is.degen(examplecheck)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

---

| is.dt | *is.dt* |
|-------|---------|

---

## Description

judge the distribution of the data.

## Usage

```
is.dt(x, m, a)
```

## Arguments

| | |
|---|---|
| x | data |
| m | the number of intervals you want to divide the data in, default value is 10 |
| a | significance level |

## Details

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of normal distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100. The function will work better if the number of intervals you choose to divide the data in is between 10 and 20. This number cannot excess the number of given oberservation.

## Value

the distribution of the data

## Author(s)

JunYao Chen, CuiYi He, BoXian Wei

## References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

## See Also

DnE-package , is.bern , is.beta , is.binom , is.chisq , is.degen , is.exp , is.f , is.gamma , is.geom , is.nbinom , is.norm , is.pois , is.t , is.unif

## Examples

```
require(stats)
x=rnorm(100)
is.dt(x,10,0.05)
#@@@@   dis       pr
#@@@@4 norm 0.007222132
```

| is.exp | *is.exp* |
|--------|----------|

### Description

judge if the data obeys exp exponential distribution.

### Usage

```
is.exp(x, m, a, lambda = NULL)
```

### Arguments

| | |
|--------|--------------------------------------------------------------------------------|
| x | data |
| m | the number of intervals you want to divide the data in, default value is 10 |
| a | significance level |
| lambda | the parameter lambda |

### Details

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of Exponential distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100. The Exponential distribution mentioned in this function is the one with mean 1/lambda and variance 1/lambda^2. The function will work better if the number of intervals you choose to divide the data in is between 10 and 20. This number cannot excess the number of given oberservations.

### Value

if data possibly obeys exponential distribution, return a value named qchisq which represents the possibility. The larger qchisq is, the larger the possibility will be; else return -1.

### Note

please pay attention to the definition of parameters in our functions.

### Author(s)

JunYao Chen, CuiYi He, BoXian Wei

### References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

### See Also

is.dt , DnE-package

## Examples

```
require(stats)
examplecheck<-rexp(100,10)
is.exp(examplecheck,10,0.05)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

---

is.f                              *is.f*

---

## Description

judge if the data obeys f-distribution.

## Usage

```
is.f(x, m, a, k1 = NULL, k2 = NULL)
```

## Arguments

| | |
|---|---|
| x | data |
| m | the number of intervals you want to divide the data in, default value is 10 |
| a | significance level |
| k1 | the first degree of feedom |
| k2 | the second degree of freedom |

## Details

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of f distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100. The function will work better if the number of intervals you choose to divide the data in is between 10 and 20. This number cannot excess the number of given oberservation.

## Value

if the data possibly obeys f-distribution, return a value named qchisq which represents the possibility. The larger qchisq is, the larger the possibility will be; else return -1.

## Note

please pay attention to the definition of parameters in our functions.

## Author(s)

JunYao Chen, CuiYi He, BoXian Wei

**References**

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

**See Also**

`is.dt` , `DnE-package`

**Examples**

```
require(stats)
examplecheck<-rf(100,10,20)
is.f(examplecheck,10,0.05)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

---

is.gamma                         *is.gamma*

---

**Description**

judge if the data obeys gamma distribution.

**Usage**

```
is.gamma(x, m, a, a0 = NULL, b0 = NULL)
```

**Arguments**

| | |
|---|---|
| x | data |
| m | the number of intervals you want to divide the data in, defualt value is 10 |
| a | confidence level |
| a0 | represent the first parmeter in gamma distribution |
| b0 | represent the second parmeter in gamma distribution |

**Details**

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of gamma distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100. The gamma distribution mentioned in this function is the one with mean a/b and variance a/b^2, where a is the first parameter and b is the second parameter in gamma distribution. The function will work better if the number of intervals you choose to divide the data in is between 10 and 20. This number cannot excess the number of given oberservations.

## Value

if the data possibly obeys the distribution, return a value named qchisq which represents the possibility. The larger qchisq is, the larger the possibility will be; else return -1.

## Note

please play attention to the definition of parameters in our functions.

## Author(s)

JunYao Chen, CuiYi He, BoXian Wei

## References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

## See Also

`is.dt` , `DnE-package`

## Examples

```
require(stats)
examplecheck<-rgamma(100,2,4)
is.gamma(examplecheck,10,0.05)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

---

| is.geom | *is.geom* |
|---------|-----------|

---

## Description

judge if the data obeys geometric distribution.

## Usage

```
is.geom(x, a, p0 = NULL)
```

## Arguments

| | |
|---|---|
| x | data |
| a | significance level |
| p0 | the pobability of success |

**Details**

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of Geometric distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100. The Geometric distribution mentioned in this function is defined as the repetition of Bernoulli when the first success occurs. The observations of geometric distribution must be positive integer.

**Value**

if the data possibly obeys geometric distribution, return a value named qchisq which represents the possibility. The larger qchisq is, the larger the possibility will be; else return -1.

**Note**

please play attention to the definition of parameters in our functions.

**Author(s)**

JunYao Chen, CuiYi He, BoXian Wei

**References**

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

**See Also**

`is.dt` , `DnE-package`

**Examples**

```
require(stats)
examplecheck<-rgeom(100,0.4)+1
is.geom(examplecheck,0.05)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

---

is.nbinom                           *is.nbinom*

---

**Description**

judge if the data obeys negative binomial distribution

**Usage**

```
is.nbinom(x, m, a, p0 = NULL, r0 = NULL)
```

## Arguments

| | |
|---|---|
| x | data |
| m | the number of intervals you want to divide the data in, default value is 10 |
| a | significance level |
| p0 | the pobability of success in each experiment |
| r0 | the number of successful events you want to wait for |

## Details

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of negative binomial distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100. The function will work better if the number of intervals you choose to divide the data in is between 10 and 20. This number cannot excess the number of given oberservations.

## Value

if the data possibly obeys negative binomial distribution, return a value named qchisq which represents the possibility. The larger qchisq is, the larger the possibility will be; else return -1.

## Note

please pay attention to the definition of parameters in our functions.

## Author(s)

JunYao Chen, CuiYi He, BoXian Wei

## References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

## See Also

is.dt , DnE-package

## Examples

```
require(stats)
examplecheck<-rnbinom(100,10,0.1)
is.nbinom(examplecheck,10,0.05)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

---

is.norm                                     *is.norm*

---

### Description

judge if the data obeys normal distribution.

### Usage

```
is.norm(x, m, a)
```

### Arguments

| | |
|---|---|
| x | data |
| m | the number of intervals you want to divide the data in, default value is 10 |
| a | significance level |

### Details

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of normal distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100. The function will work better if the number of intervals you choose to divide the data in is between 10 and 20. This number cannot excess the number of given oberservations.

### Value

if the data possibly obeys normal distribution, return a value named qchisq which represents the possibility. The larger qchisq is, the larger the possibility will be; else return -1.

### Note

please pay attention to the definition of parameters in our functions.

### Author(s)

JunYao Chen, CuiYi He, BoXian Wei

### References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

### See Also

is.dt , DnE-package

## Examples

```
require(stats)
examplecheck<-rnorm(100,0,1)
is.norm(examplecheck,10,0.05)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

---

| is.pois | *is.pois* |
|---------|-----------|

---

## Description

judge if the data obeys poisson distribution

## Usage

```
is.pois(x, a, lambda = NULL)
```

## Arguments

| | |
|--------|-----------------------------------------------------------|
| x      | x                                                         |
| a      | significance level                                        |
| lambda | parameter, the number of successful events in unit time.  |

## Details

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of possion distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100.

## Value

if the data possibly obeys poisson distribution, return a value named qchisq which represents the possibility. The larger qchisq is, the larger the possibility will be; else return -1.

## Note

please pay attention to the definition of parameters in our functions.

## Author(s)

JunYao Chen, CuiYi He, BoXian Wei

## References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

## See Also

is.dt, DnE-package

## Examples

```
require(stats)
examplecheck<-rpois(100,10)
is.pois(examplecheck,0.05)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

---

| is.t | *is.t* |
|------|--------|

---

## Description

judge if the data obeys t-distribution.

## Usage

```
is.t(x, m, a, n0 = NULL)
```

## Arguments

| | |
|---|---|
| x | data |
| m | the number of intervals you want to divide the data in, default value is 10 |
| a | significance level |
| n0 | the degree of freedom |

## Details

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of t distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100. The function will work better if the number of intervals you choose to divide the data in is between 10 and 20. This number cannot excess the number of given oberservations.

## Value

if the data possibly obeys t-distribution, return a value named qchisq which represents the possibility. The larger qchisq is, the larger the possibility will be; else return -1.

## Note

please pay attention to the definition of parameters in our functions.

## Author(s)

JunYao Chen, CuiYi He, BoXian Wei

## References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

## See Also

is.dt , DnE-package

## Examples

```
require(stats)
examplecheck<-rt(100,10)
is.t(examplecheck,10,0.05)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

---

| is.unif | *is.unif* |
|---------|-----------|

---

## Description

judge if the data obeys uniform distribution

## Usage

```
is.unif(x, m, a, sita1 = NULL, sita2 = NULL)
```

## Arguments

| | |
|-------|---|
| x | data |
| m | the number of intervals you want to divide the data in, default value is 10 |
| a | significance level |
| sita1 | distribution parameter, the lower limit of the data |
| sita2 | distribution parameter, the upper limit of the data |

## Details

Given a set of observations from a certain distribution, this function is used to test whether the observations are from a distribution of Uniform distribution or not. Usually, to ensure the function works well, the sample size needs to be large enough, i.e. the result will be stable if the sample size is larger than 100. The function will work better if the number of intervals you choose to divide the data in is between 10 and 20. This number cannot excess the number of given oberservations.

## Value

if the data possibly obeys uniform distribution, return a value named qchisq which represents the possibility. The larger qchisq is, the larger the possibility will be; else return -1.

## Note

please pay attention to the definition of parameters in our functions.

## Author(s)

JunYao Chen, CuiYi He, BoXian Wei

## References

ROBERT V. HOGG/ALLEN T. CRAIG (Fifth Edition) Introduction Mathematical Statistics.

## See Also

`is.dt` , `DnE-package`

## Examples

```
require(stats)
examplecheck<-runif(100,10,50)
is.unif(examplecheck,10,0.05)
##---- Should be DIRECTLY executable !! ----
##-- ==>  Define data, use random,
##--or do  help(data=index)  for the standard data sets.
```

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