Untitled

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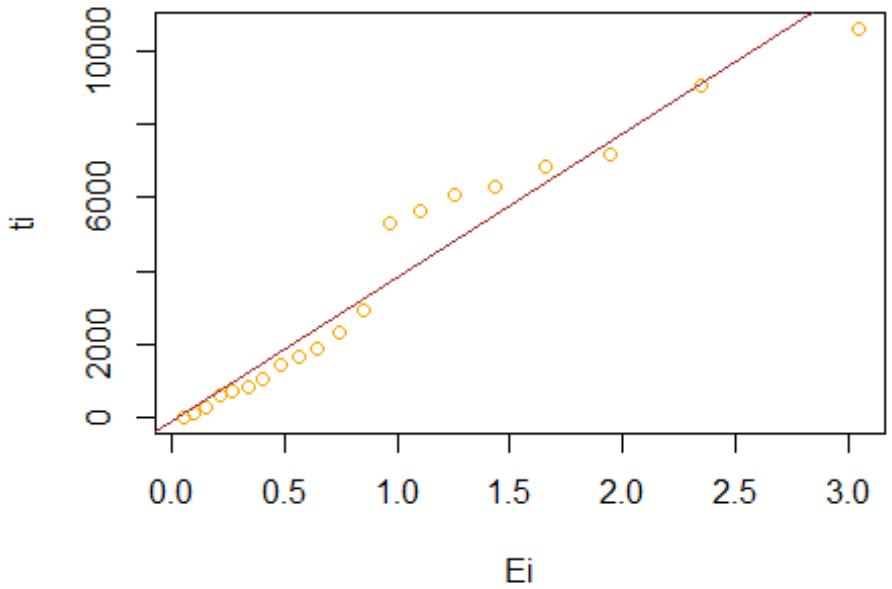
```
library(CircStats)
```

```
## Warning: package 'CircStats' was built under R version 4.0.5
```

```
## Loading required package: MASS
```

```
## Loading required package: boot
```

```
#example 1.8:
t<-
c(711.5,1051,6303.9,1883.6,6054.3,6853.7,7201.9,279.8,2311.1,7.5,5296.6,848.2
,9068.5,10609.7,592.1,1657.2,5637.9,2951.2,1425.5,121.5)
#q-qplot first method:
sample.quantiles.exp<-sort(t)
i<-1:length(t)
E<--log(1-(i/(length(t)+1)))
theoretical.quantiles.exp=E
fit<-lm(sort(t)~E)
plot(E,sort(t),col="Orange",xlab = "Ei",ylab="ti")
abline(fit,col="Brown")
```



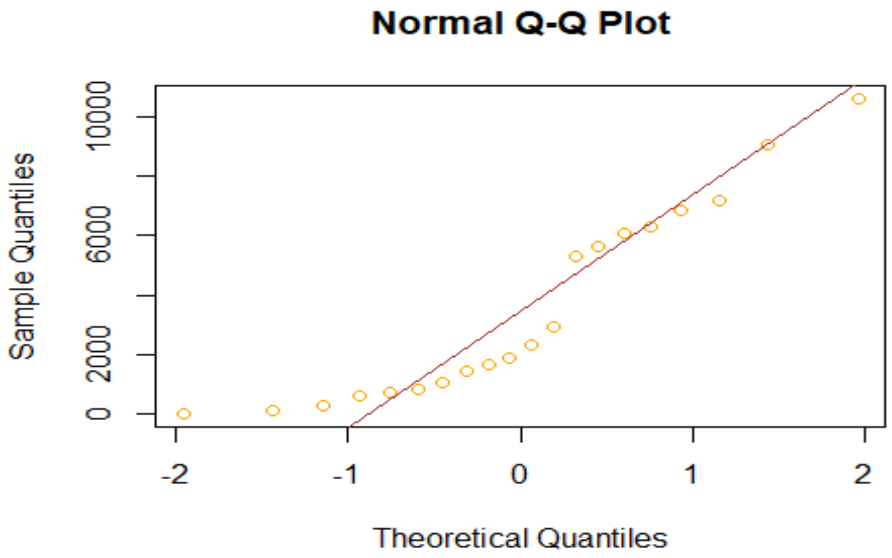

```
fit$coefficients
```

```
## (Intercept)           E
```

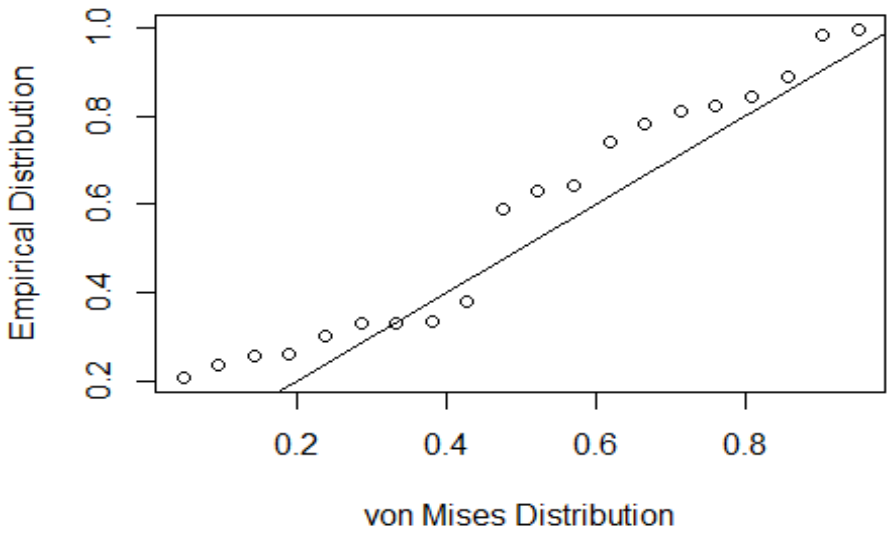
```r
lamba.hat=1/fit$coefficients[2];theta.hat=fit$coefficients[1]
print(paste("theta.hat is equal to ",theta.hat,
            "the lambda.hat is equal to",lamba.hat))
```

```
## [1] "theta.hat is equal to  -103.080151605163 the lambda.hat is equal to
0.000254425669078671"
```

```r
# q-qplot second method:
qqnorm(t,col="Orange")
qqline(t,col="brown")
```

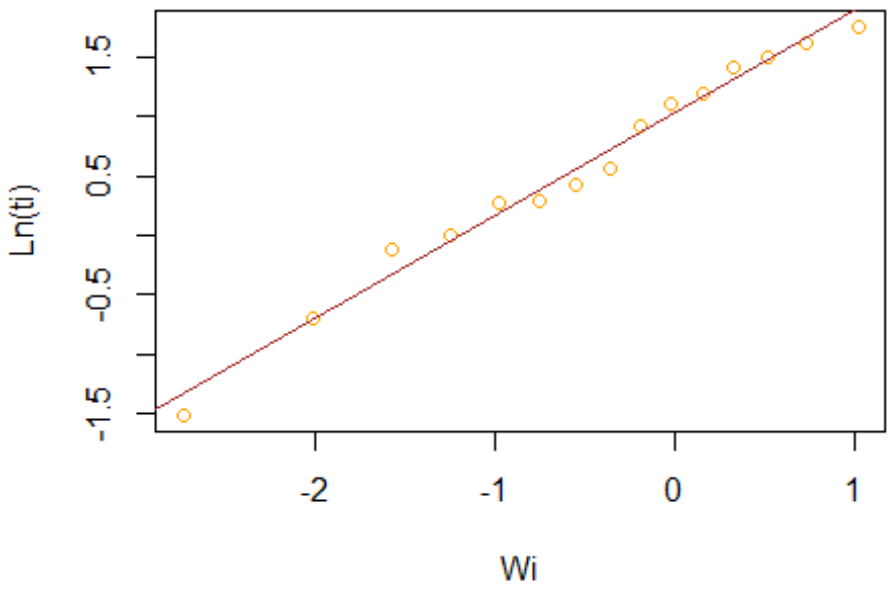



```r
# p-pplot :
pp.plot(t,ref.line = TRUE)
```



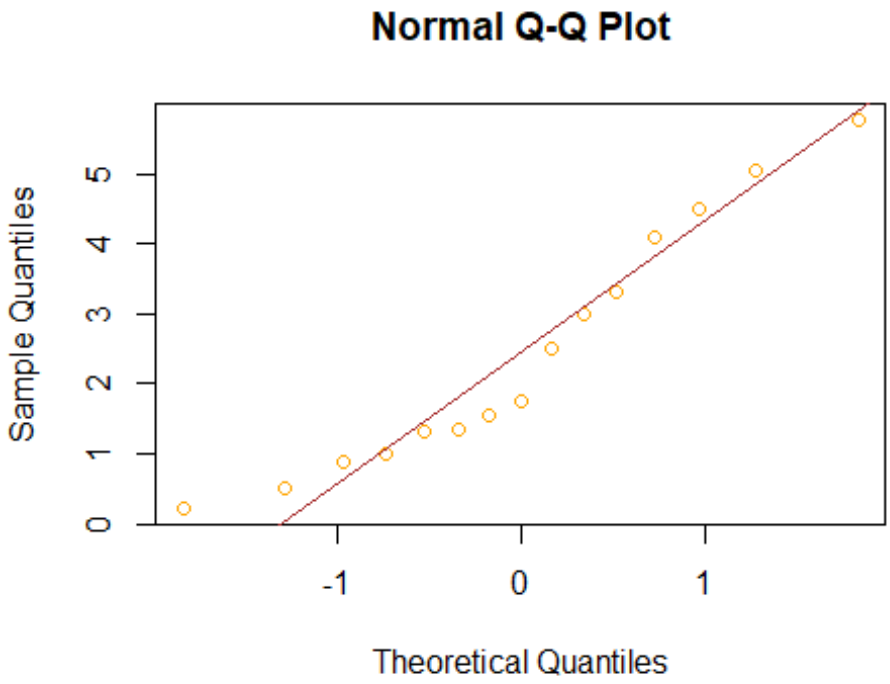

```
##          mu    kappa
## 1.1.688506 0.186204
```

```r
#example 2.8:
library("fitdistrplus","qualityTools")

## Warning: package 'fitdistrplus' was built under R version 4.0.4

## Loading required package: survival

##
## Attaching package: 'survival'

## The following object is masked from 'package:boot':
##
##     aml

x<-(c(5.77,5.03,4.5,4.1,3.3,3.0,2.5,1.76,1.54,1.33,1.32,1,0.88,0.5,0.22))
#q-qplot first method:
i<-1:length(x)
W<-log(-log(1-(i/(length(x)+1))))
plot(W,log(sort(x)),col="Orange",xlab="Wi",ylab="Ln(ti)")
fit1<-lm(log(sort(x))~W)
abline(fit1,col="Brown")
```

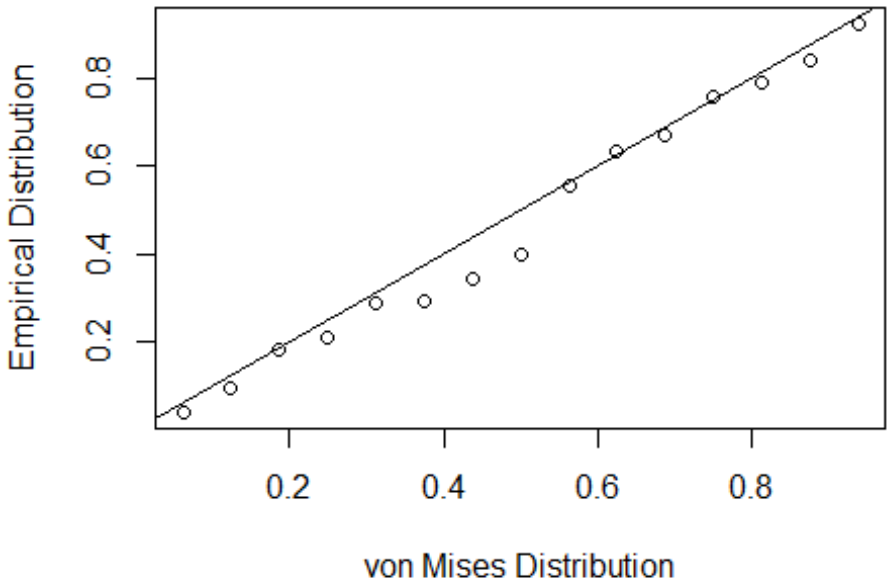



```r
fit1$coefficients

## (Intercept)           W
##   1.0233689   0.8623622

lamba=exp(-fit1$coefficients[1]);Betha.hat=1/fit1$coefficients[1]
print(paste("betha.hat is equal to ",Betha.hat,
            "the lambda is equal to",lamba))

## [1] "betha.hat is equal to  0.977164714202085 the lambda is equal to
0.359382168030245"
```

```r
# q-qplot second method:
qqnorm(x,col="Orange")
qqline(x,col="brown")
```

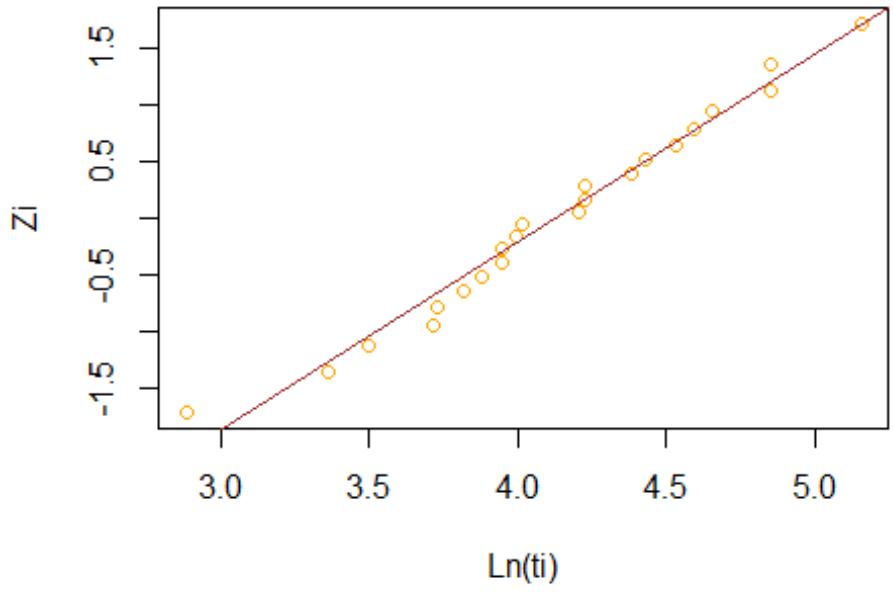



```r
# p-pplot:
pp.plot(x,ref.line = TRUE)
```




```
##          mu    kappa
## 1 1.303468 0.510308
```

```r
#example 3.8:
t<-
c(17.88,28.92,33.00,41.52,41.12,45.60,48.40,51.84,51.95,54.12,55.56,67,80,68.
64,68.64,84.12,93.12,98.64,105.12,127.92,128.04,173.40)
#q-qplot first method:
i<-1:length(t)
Zi<-qnorm(i/(length(t)+1))
plot(log(sort(t)),Zi,xlab = "Ln(ti)",ylab= "Zi",col="Orange")
fit<-lm(Zi~log(sort(t)))
abline(fit,col="brown")
```



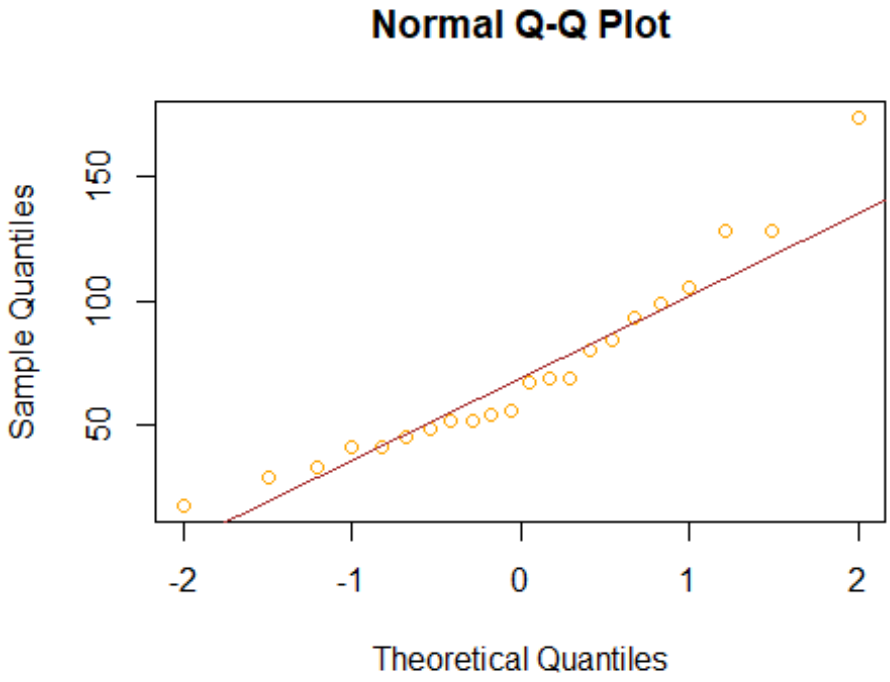

```r
fit$coefficients
```

```
##  (Intercept) log(sort(t))
##    -6.842195     1.655786
```

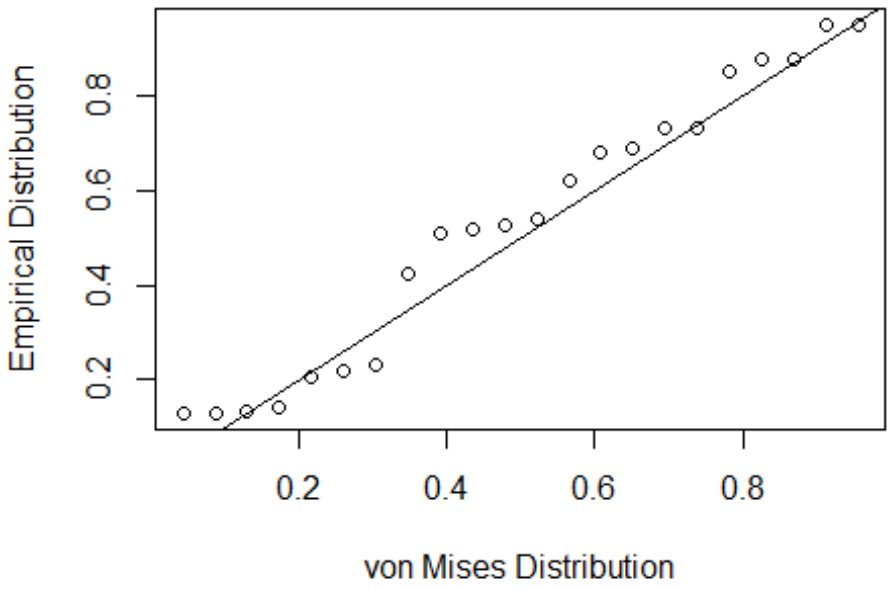
```r
mu.hat<-fit$coefficients[1];sigma.hat<-fit$coefficients[2]
print(paste("the mu.hat is equal to",mu.hat,
            "the sigma.hat is equal to",sigma.hat))
```

```
## [1] "the mu.hat is equal to -6.84219457592908 the sigma.hat is equal to
1.65578644318971"
```

```r
# q-qplot second method:
qqnorm(t,col="Orange")
qqline(t,col="brown")
```




```
#p-pplot :
pp.plot(t,ref.line = TRUE)
```




```
##         mu     kappa
## 1 3.971496 0.6268875
```

End.