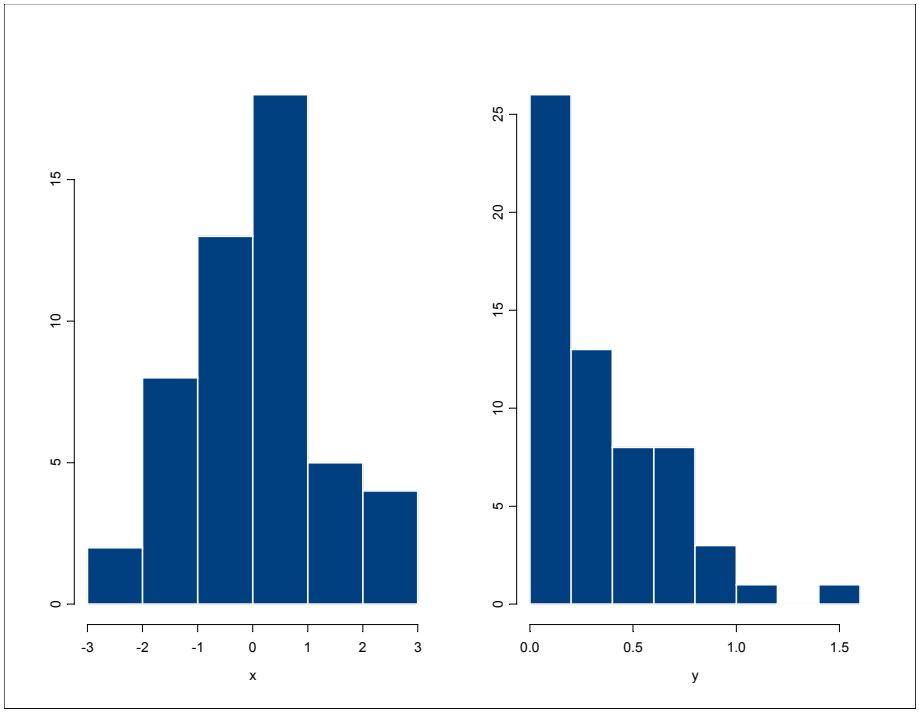
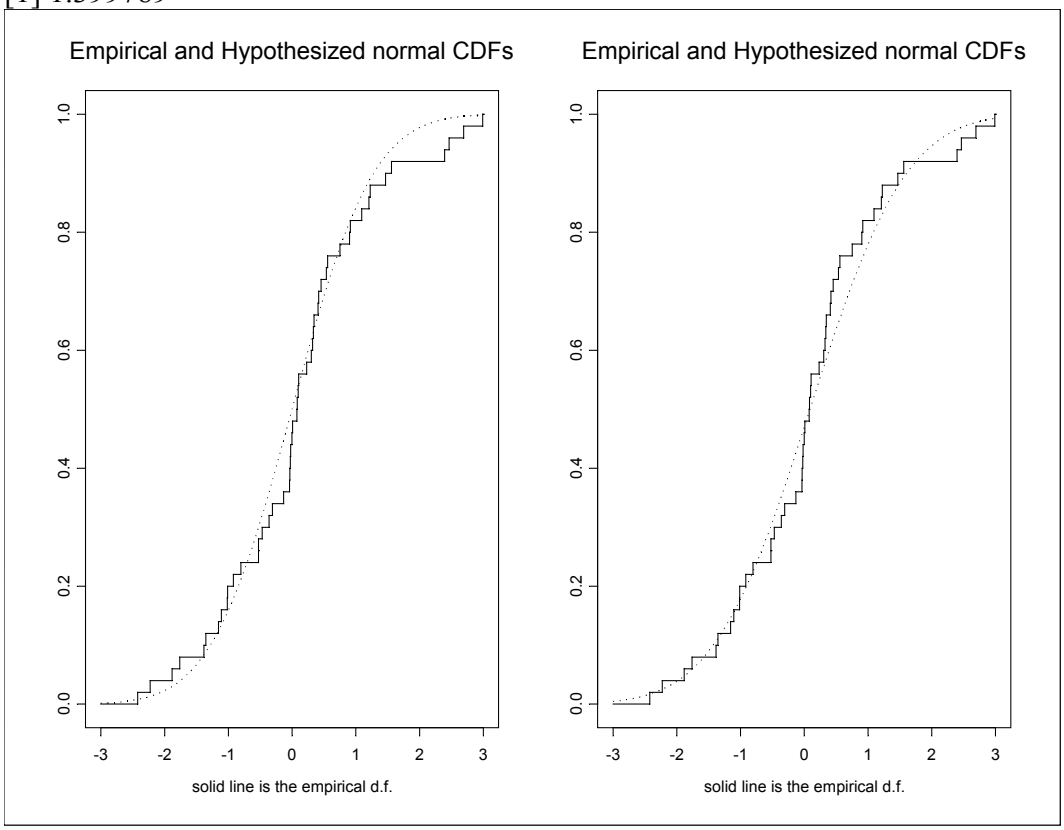
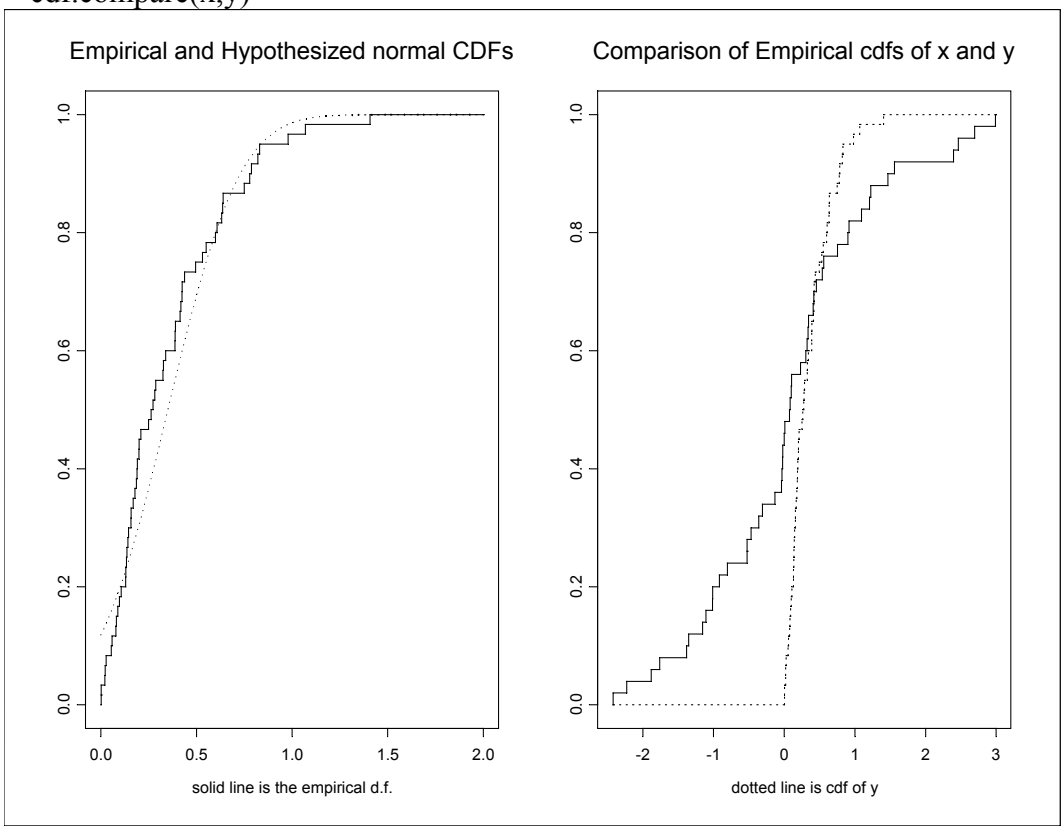
```
> x_rnorm(50)
> x
 [1]  0.0086292430 -0.0382391091 -1.0168024543 -0.1324462528
 [5] -0.3603491998 -0.0337469778 -1.8831606111  0.3368386818
 [9] -0.0003541437  1.2066770747 -0.0204049459 -1.0119328923
[13]  0.9163081264 -1.3829848791 -0.4695526978 -0.8035892599
[17]  0.9026407992 -1.1558698525  0.1049802819  0.2302154933
[21]  2.3956811151  0.0824999817 -0.0248816697  0.7525617816
[25] -1.1078423455 -2.2280610717  1.2261521170  1.5603970547
[29] -0.5243234682  0.4177975871 -0.3074476752  0.5591869894
[33]  2.6933075898  1.0934567835  0.0987373914 -0.9177648502
[37] -1.7615280020  0.3037019699 -0.5248668910  1.4674553423
[41]  0.4536315211  0.4077796870  0.5362220951  0.0759568982
[45]  0.3239556330 -1.3531664829 -2.4226150272  0.3441299492
[49]  2.4645695645  2.9906259415
> y_rexp(60,3)
> y
 [1] 0.636899462 0.287190280 0.273594055 0.130281015 0.133955849
 [6] 0.531851535 0.130019104 0.778307033 0.209533192 0.027963027
[11] 0.199677184 0.022297730 0.786978567 0.157394132 0.388265023
[16] 0.437807588 0.200365315 0.191263022 0.002073478 0.496305118
[21] 0.822037016 0.001894900 0.749717967 0.142169896 0.327725607
[26] 0.632270194 0.339784365 0.080983472 0.145393780 0.423911471
[31] 0.097207036 0.414501017 0.250126314 0.089206835 0.185528030
[36] 0.388504214 0.189575470 0.021706525 0.136279020 0.607467643
[41] 0.551173074 0.390094662 0.178376855 1.407227141 0.106135323
[46] 0.059056715 0.054996647 0.325107914 0.639025104 0.282070548
[51] 0.425034949 0.158227910 0.830403440 0.979584521 1.069471921
[56] 0.169807476 0.263267848 0.078382576 0.600083844 0.418606142
> summary(y)
    Min. 1st Qu. Median   Mean 3rd Qu.  Max.
 0.001895  0.1357 0.2684 0.3509  0.5052 1.407
> par(mfrow=c(1,2))
> hist(x)
> hist(y)
```



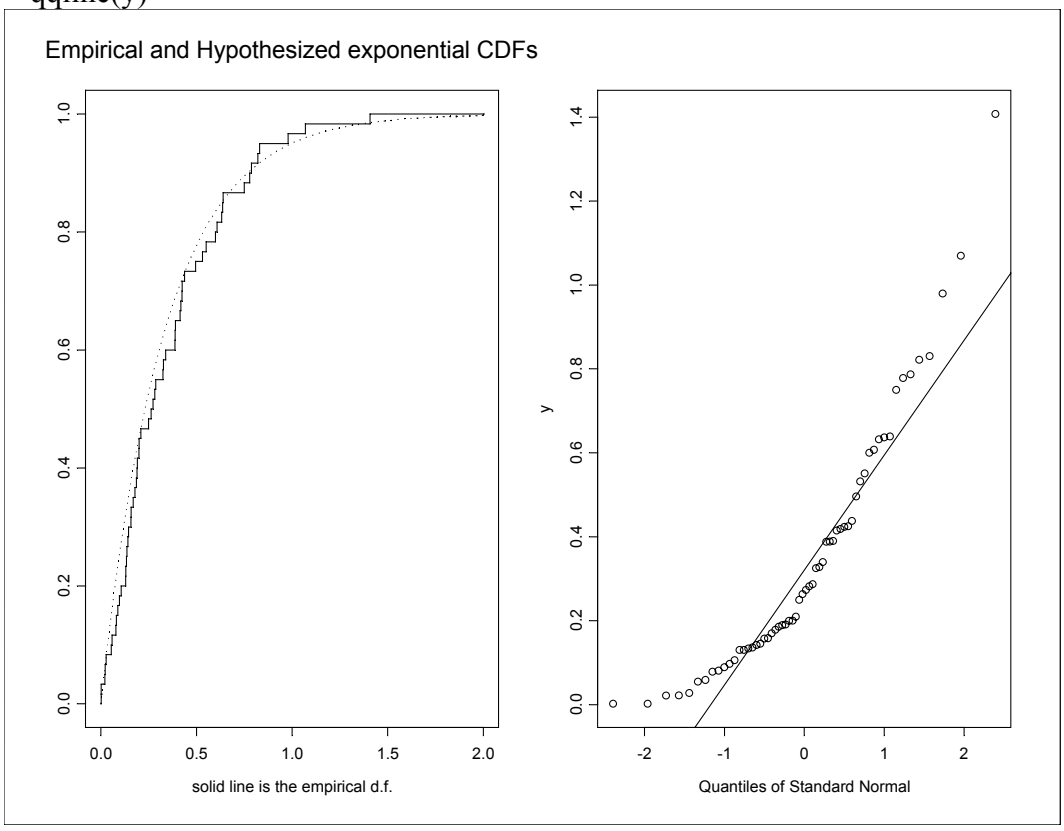

```
> cdf.compare(x,distr="norm")
> cdf.compare(x,distr="norm",mean=mean(x),sd=sqrt(var(x)))
> mean(x)
[1] 0.08944332
> var(x)
[1] 1.399789
```



```
> cdf.compare(y,distr="norm",mean=mean(y),sd=sqrt(var(y)))
> cdf.compare(x,y)
```




```
> cdf.compare(y,distr="exp",rate=3)
> qqnorm(y)
> qqline(y)
```



```
> chisq.gof(x,dist="norm")

        Chi-square Goodness of Fit Test

data:  x
Chi-square = 4.4, df = 9, p-value = 0.8832
alternative hypothesis:
  True cdf does not equal the normal Distn. for at least one sample poin
t.

> cut1_(-3:3)
> cut1
[1] -3 -2 -1  0  1  2  3
> x.chi1_chisq.gof(x,cut.points=cut1,dist="norm")
Warning messages:
  Expected counts < 5. Chi-squared approximation may not
                    be appropriate. in: chisq.gof(x, cut.points = cu
t1, dist = "norm")
> x.chi1$c
[1]  2  8 13 18  5  4
> x.chi1$e
[1]  1.070012  6.795256 17.067237 17.067237  6.795256  1.070012
> x.chi1

        Chi-square Goodness of Fit Test

data:  x
Chi-square = 10.5395, df = 5, p-value = 0.0613
alternative hypothesis:
  True cdf does not equal the normal Distn. for at least one sample poin
t.
> cut2_(-2:2)
> cut2
[1] -2 -1  0  1  2
> x.chi2_chisq.gof(x,cut.points=cut2,dist="norm")
Warning messages:
  6 observations do not fall within within the given cutpoints.
        There are removed. in: chisq.gof(x, cut.points = cut2, dist
= "norm")
> x.chi2$c
[1]  8 13 18  5
> x.chi2$e
[1]  6.795256 17.067237 17.067237  6.795256
> x.chi2

        Chi-square Goodness of Fit Test

data:  x
Chi-square = 1.7081, df = 3, p-value = 0.6351
alternative hypothesis:
```

```
  True cdf does not equal the normal Distn. for at least one sample poin
t.
> cut3_c(min(x)-0.1,seq(-1.5,1.5,by=.5),max(x)+0.1)
> cut3
[1] -2.522615 -1.500000 -1.000000 -0.500000  0.000000  0.500000
[7]  1.000000  1.500000  3.090626
> x.chi3_chisq.gof(x,cut.points=cut3,dist="norm")
Warning messages:
  Expected counts < 5. Chi-squared approximation may not
                    be appropriate. in: chisq.gof(x, cut.points = cu
t3, dist = "norm")
> x.chi3$c
[1]  4  6  4  9 13  5  4  5
> x.chi3$e
[1] 3.049145 4.592403 7.494114 9.573123 9.573123 7.494114 4.592403
[8] 3.290426
> x.chi3

        Chi-square Goodness of Fit Test

data:  x
Chi-square = 5.4128, df = 7, p-value = 0.6097
alternative hypothesis:
  True cdf does not equal the normal Distn. for at least one sample poin
t.
> y.chin_chisq.gof(y,dist="norm",mean=1/3,sd=1/3)
> y.chin$c
 [1]  0  5  9 14  5  3  8  2  4  4  6
> y.chin$e
 [1] 5.454545 5.454545 5.454545 5.454545 5.454545 5.454545 5.454545
 [8] 5.454545 5.454545 5.454545 5.454545
> y.chin

        Chi-square Goodness of Fit Test

data:  y
Chi-square = 26.5333, df = 10, p-value = 0.0031
alternative hypothesis:
  True cdf does not equal the normal Distn. for at least one sample poin
t.
> ks.gof(x,dist="norm")

        One sample Kolmogorov-Smirnov Test of Composite Normality

data:  x
ks = 0.1057, p-value = 0.5
alternative hypothesis:
  True cdf is not the normal distn. with estimated parameters
sample estimates:
  mean of x standard deviation of x
```

```
 0.08944332              1.183127

Warning messages:
  The Dallal-Wilkinson approximation, used to calculate
     the p-value in testing composite normality,
     is most accurate for p-values <= 0.10 .
   The calculated p-value is 0.168 and so is set to 0.5 . in: dall.wilk(
test, nx)
> ks.gof(x,dist="norm",mean=0,sd=1)

          One-sample Kolmogorov-Smirnov Test
          Hypothesized distribution = normal

data:  x
ks = 0.1247, p-value = 0.386
alternative hypothesis:
  True cdf is not the normal distn. with the specified parameters
```