

R Session:

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R version 2.10.1 (2009-12-14)
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ISBN 3-900051-07-0
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R is free software and comes with ABSOLUTELY NO WARRANTY.
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Type 'license()' or 'licence()' for distribution details.
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Natural language support but running in an English locale
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R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.
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Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
```

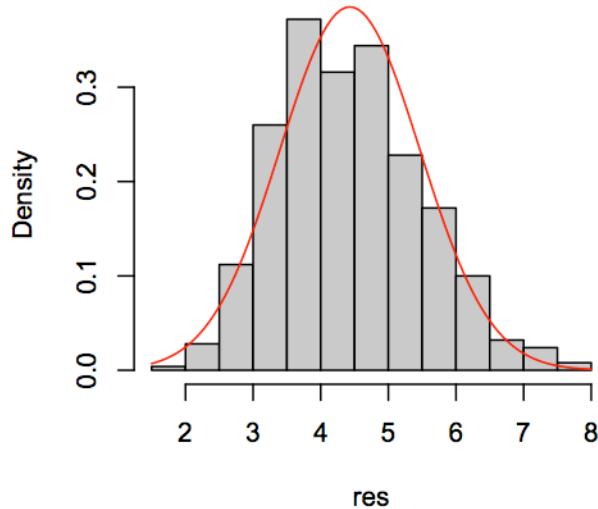
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[R.app GUI 1.31 (5538) powerpc-apple-darwin8.11.1]
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[Workspace restored from /Users/andrejstreibergs/.RData]
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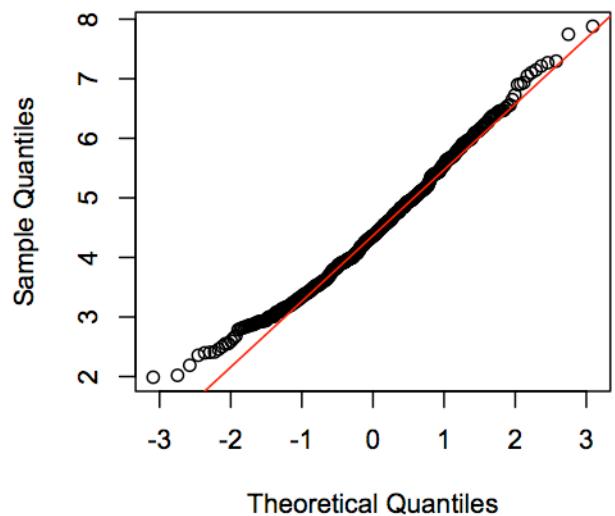
```
>
> ##### SIMULATION TO SEE SAMPLING DISTRIBUTION #####
>
> # Simulation is used to get the samplig distribution of the mean.
> # This is suggested by problem 5.3[44] of Devore 5th ed.
> # We generate 500 random samples of sizes n=5,10,15,20
> # from the Weibull Distribution with alpha=2 and beta=5.
> # For information on Weibull Distribution:
> help(Weibull)
starting httpd help server ... done
>
> m=500; alpha=2; beta=5
>
> # Get MEAN, SD and VAR for this beta distribution.
> mu=beta*gamma(1+1/alpha);mu
[1] 4.431135
> sigma2=beta^2*(gamma(1+2/alpha))-mu^2;sigma2
[1] 5.365046
>
> # Put four graphs on a page. The matrix entries give the order of graphs.
> layout(matrix(c(1,3,2,4),ncol=2))
>
> # loop through sample sizes. Then loop through 500 random samples
> # of size j taken from Weibull(alpha,beta), compute the mean of the sample
> # and record the mean in the vector res. For each 500 means, plot histogram and QQ plot.
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```
> # Superimpose the bell curve for given mean and sd.  
>  
> for (j in c(5,10,20,30)){  
+   res=c()  
+   for (i in 1:m){  
+     res[i]=mean(rweibull(j,alpha,beta))  
+   }  
+   hist(res,prob=TRUE,main=paste("Weibull(5,2) Samp. Dist. Xbar with n=",j),col="gray")  
+   curve(dnorm(x,mu,sqrt(sigma2/j)),add=TRUE,col=j/5+1)  
+   qqnorm(res)  
+1   qqline(res,col=j/5+1)  
+ }  
>
```

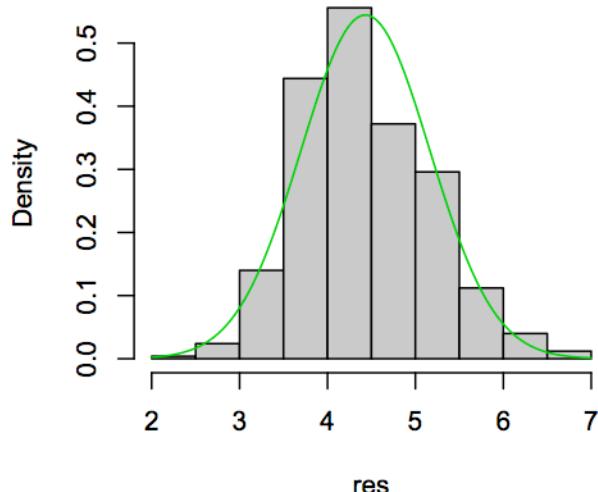
Weibull(5,2) Samp. Dist. Xbar with n= 5



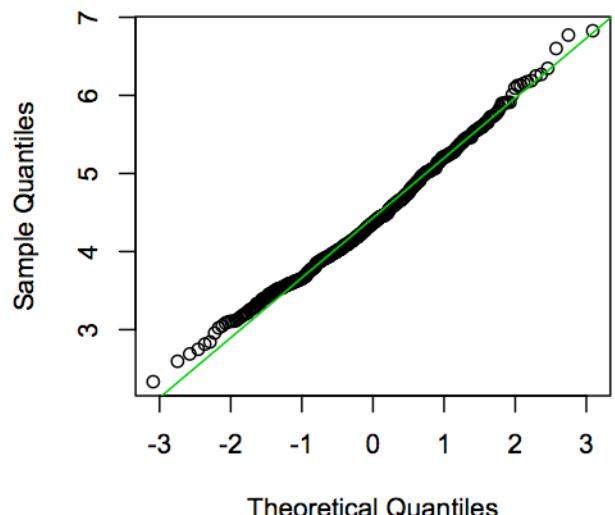
Normal Q-Q Plot



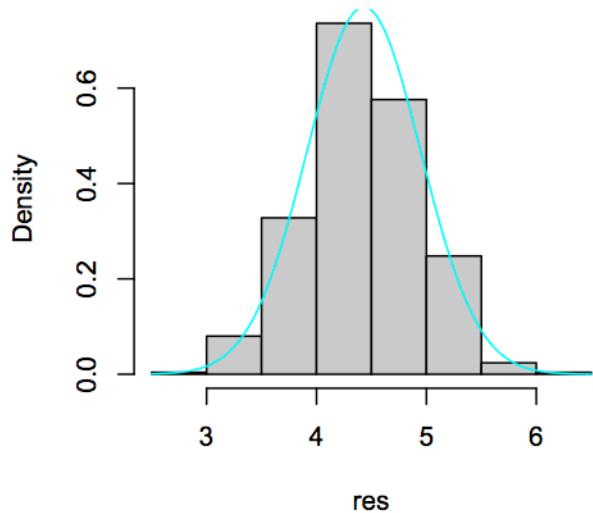
Weibull(5,2) Samp. Dist. Xbar with n= 10



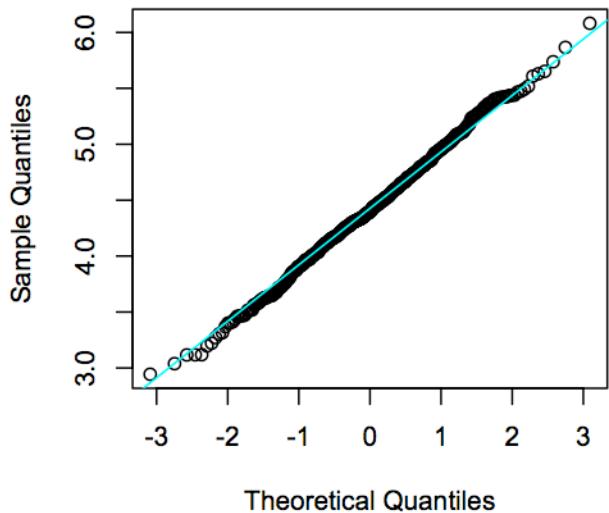
Normal Q-Q Plot



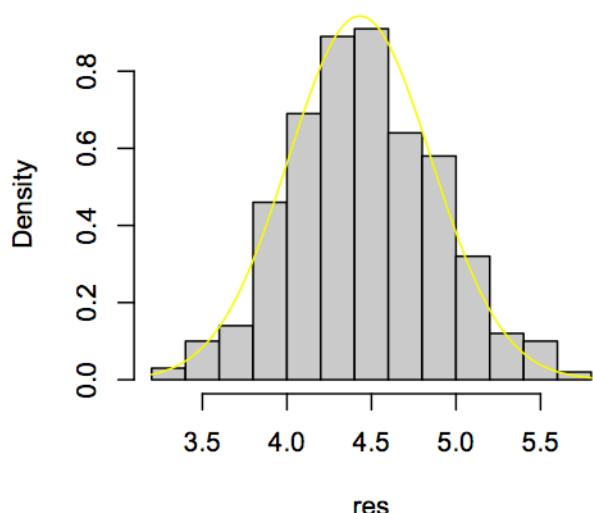
Weibull(5,2) Samp. Dist. Xbar with n= 20



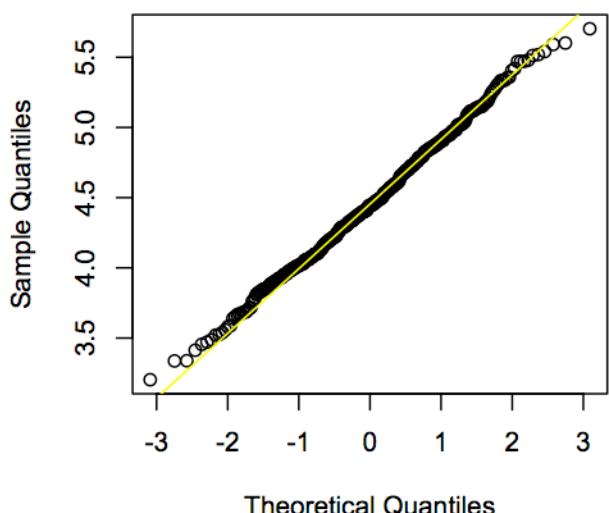
Normal Q-Q Plot



Weibull(5,2) Samp. Dist. Xbar with n= 30



Normal Q-Q Plot

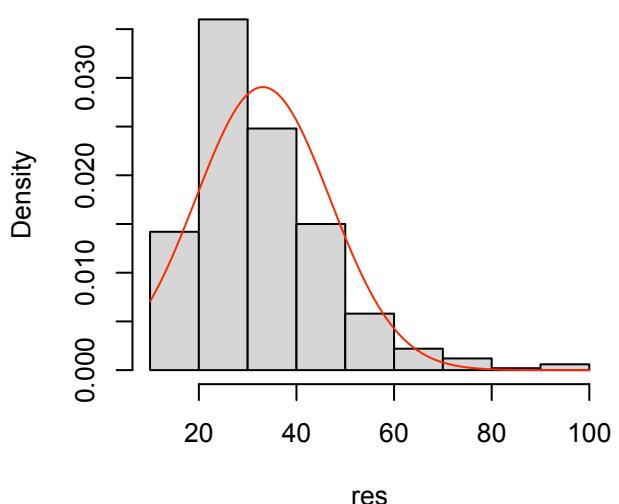


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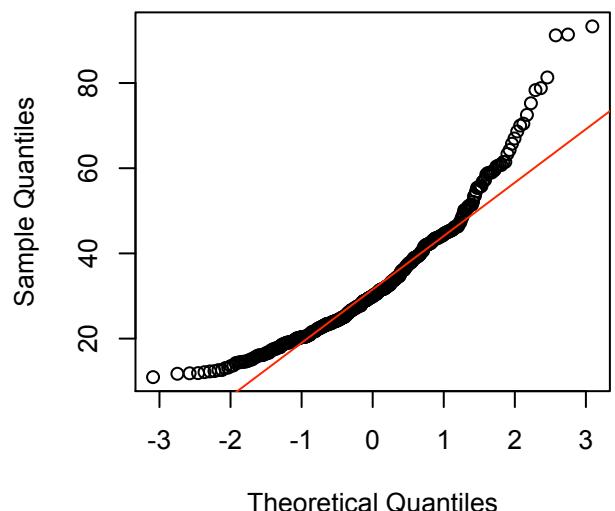
>
> ##### SIMULATION OF MEANS FROM LOGNORMAL DISTRIBUTION #####
>
> # Do prob 5.3[45] of Devore 5th ed.
> # Choose samples from lognormal with E(ln X)=3 and V(ln X)=1
> # Information about Lognormal Distribution
> help(dlnorm)
>
> # Find the mean and sd of this lognormal dist.
>
> mul=3; sigmal=1; sigma2l=sigmal^2
>
> mu=exp(mul+sigma2l/2);mu
[1] 33.11545
> sigma2=mu^2*(exp(sigma2l)-1);sigma2
[1] 1884.325
>
> # Loop through sample sizes. Then loop through 500 random samples
> # of size j taken from LogNormal(mul,sigmal), compute the mean of the sample
> # and record the mean in the vector res. For each 500 means, plot histogram and QQ plot.
>
> for (j in c(10,20,30,50)){
+   res=c()
+   for (i in 1:m){
+     res[i]=mean(rlnorm(j,mul,sigmal))
+   }
+   hist(res,prob=TRUE,main=paste("Lognormal(3,1) SampDist. Xbar, n=",j),col=gray(.8))
+   curve(dnorm(x,mu,sqrt(sigma2/j)),add=TRUE,col=j/10+1)
+   qqnorm(res)
+   qqline(res,col=j/10+1)
+ }
>

```

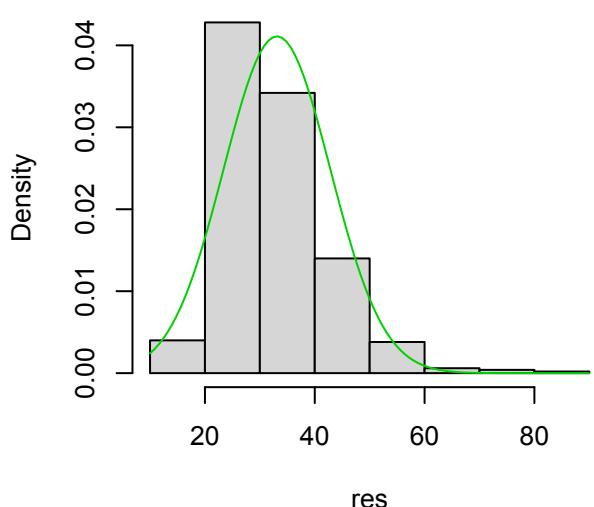
Lognormal(3,1) SampDist. Xbar, n= 10



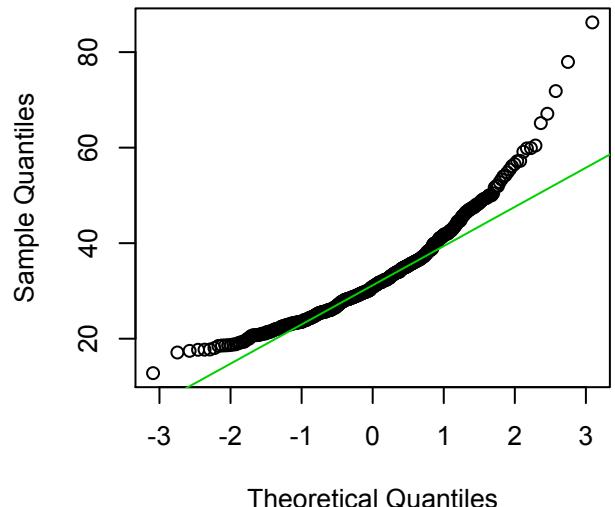
Normal Q-Q Plot



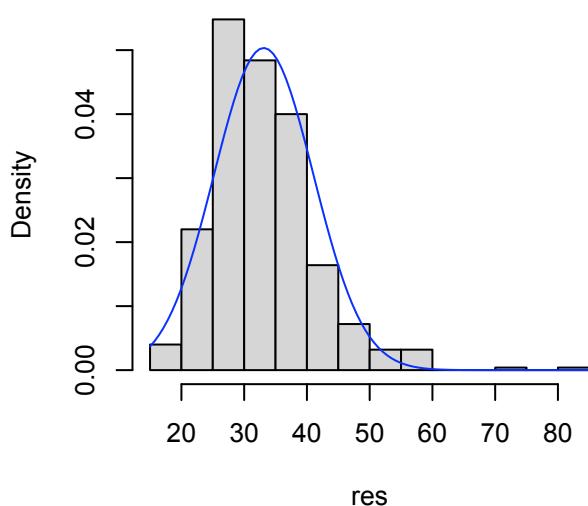
Lognormal(3,1) SampDist. Xbar, n= 20



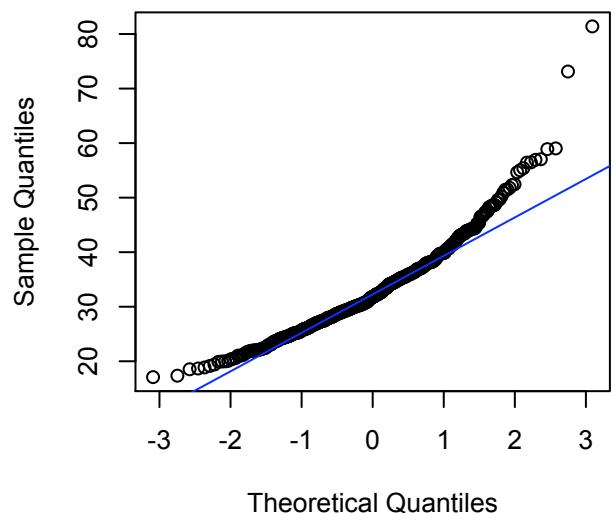
Normal Q-Q Plot



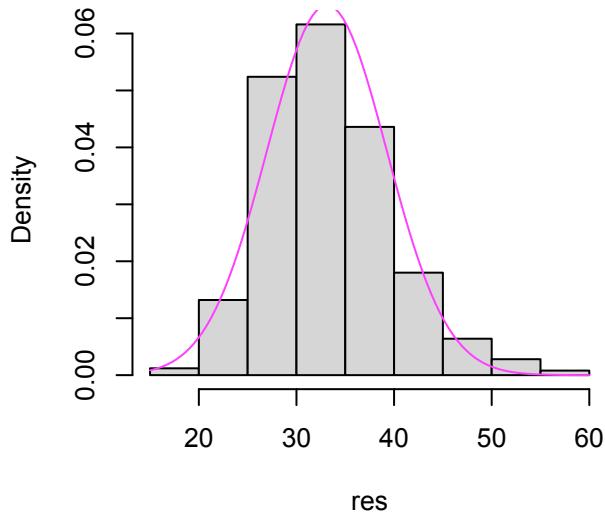
Lognormal(3,1) SampDist. Xbar, n= 30



Normal Q-Q Plot



Lognormal(3,1) SampDist. Xbar, n= 50



Normal Q-Q Plot

