

```

#Solution 1.a
scores = scan("https://www.isibang.ac.in/~athreya/Teaching/PaSwR/Scores")
sum_tab = summary(scores)
print(sum_tab)

#Solution 1.b
mu = mean(scores)
sigma = sd(scores)
prob1 = sum(scores>(mu-sigma) & scores<(mu+sigma))/length(scores)
print(prob1)
prob2 = sum(scores>(mu-2*sigma) & scores<(mu+2*sigma))/length(scores)
print(prob2)
prob3 = sum(scores>(mu-3*sigma) & scores<(mu+3*sigma))/length(scores)
print(prob3)

#Solution 1.c
hist(scores, probability = T, xlab = "Scores", ylab = "Probability")
#histogram
boxplot(scores, notch = T, varwidth = F, main = "Boxplot for Scores dataset")
#boxplot
qqnorm(scores, pch = 20) #Q-Q Plot

#Solution 1.d
library(moments)
kurt_scores = kurtosis(scores)
print(kurt_scores)
skew_scores = skewness(scores)
print(skew_scores)

#Solution 2.a
attach(ToothGrowth)
attach(faithful)
head(faithful)

#The eruptions variable in the dataset gives the duration of each eruption
from
#the geyser in the park.

mean(faithful$eruptions)

#The average duration of each eruption is found out to be approximately 3.5
seconds.

head(ToothGrowth)
#The len variable tells us the length of the tooth of each guinea pig.
mean(ToothGrowth$len)
#The average value is found out to be 18.8 units.

hist(faithful$eruptions, probability = T, xlab = "Duration of eruption", ylab
= "Probability",
      xlim = c(1.5, 5.5))

#By looking at the histogram we can say this data doesnt follow a normal
distribution.

```

#It also doesnt follow a poisson distribution since the histogram is not forming a bell shape.

#Solution 3.a

```
a = 10
b = 10
x1 = rbeta(1000, a, b)
print(mean(x1))
print(sd(x1))
print(kurtosis(x1))
print(skewness(x1))
hist(x1, probability = T, main=paste("Histogram of Beta(10,10)"))
```

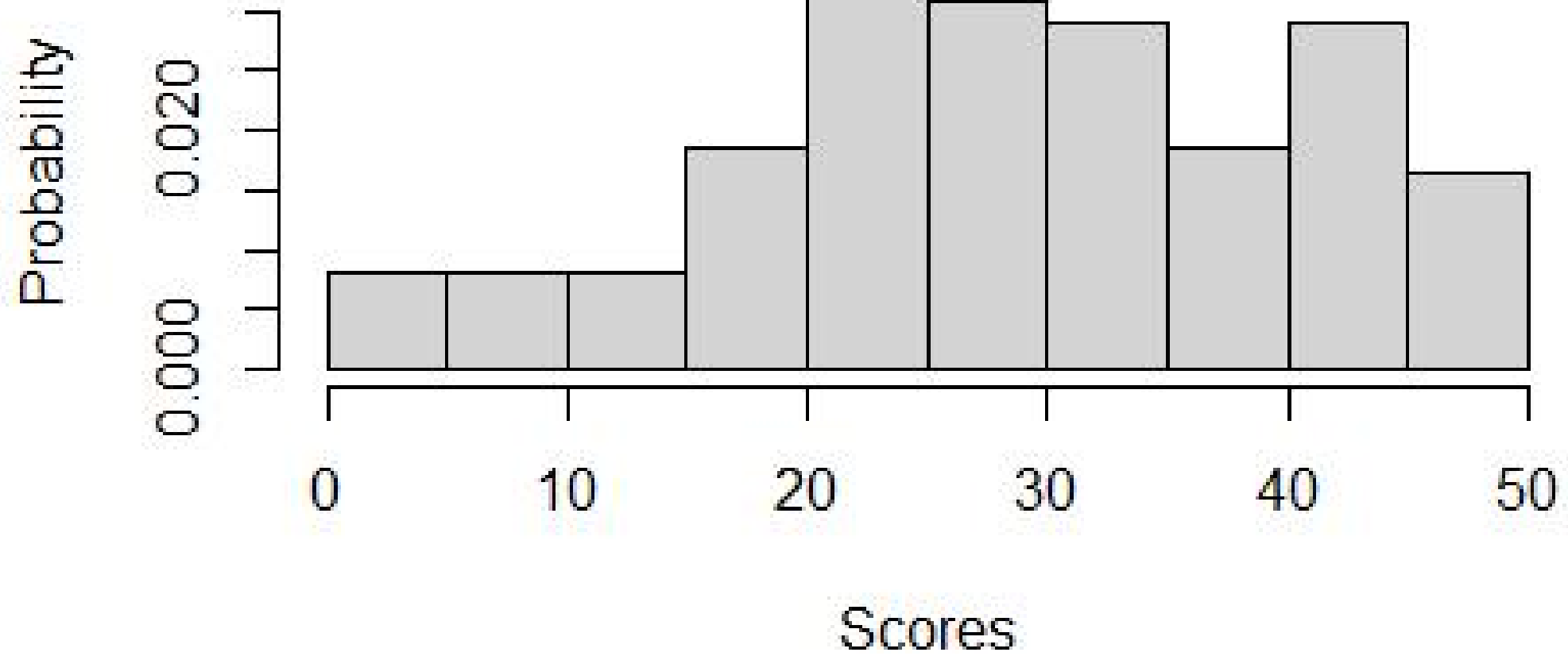
#Solution 3.b

```
a = 10
b = 2
x1 = rbeta(1000, a, b)
print(mean(x1))
print(sd(x1))
print(kurtosis(x1))
print(skewness(x1))
hist(x1, probability = T, main=paste("Histogram of Beta(10,2)"))
```

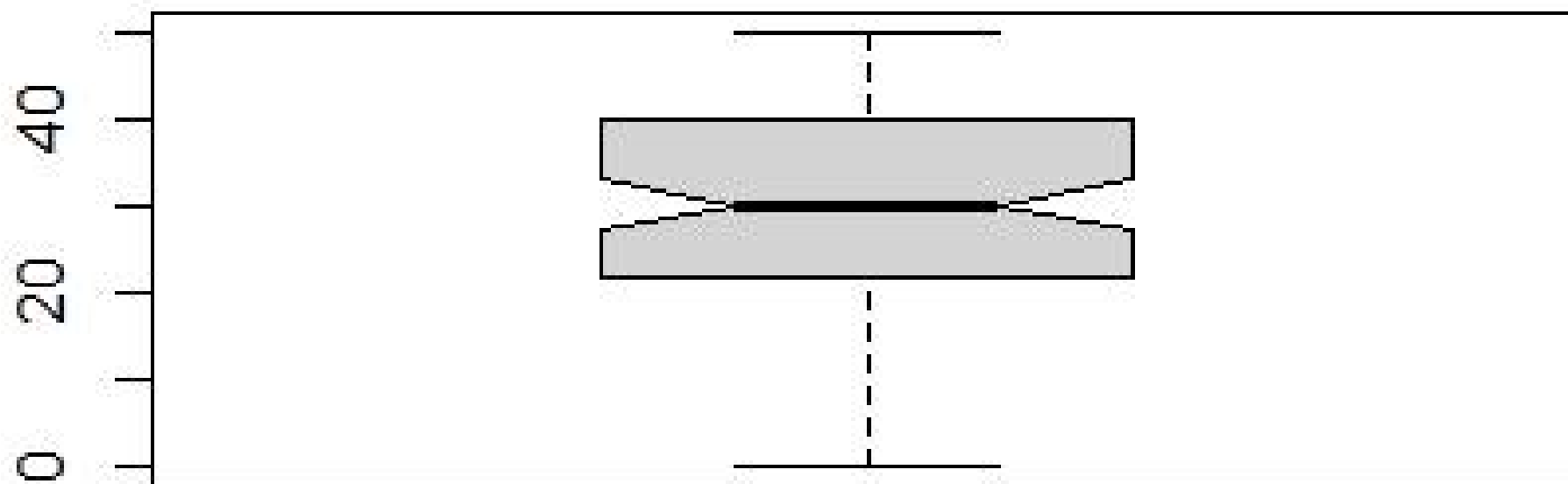
#Solution 3.c

```
a = 2
b = 10
x1 = rbeta(1000, a, b)
print(mean(x1))
print(sd(x1))
print(kurtosis(x1))
print(skewness(x1))
hist(x1, probability = T, main=paste("Histogram of Beta(2,10)"))
```

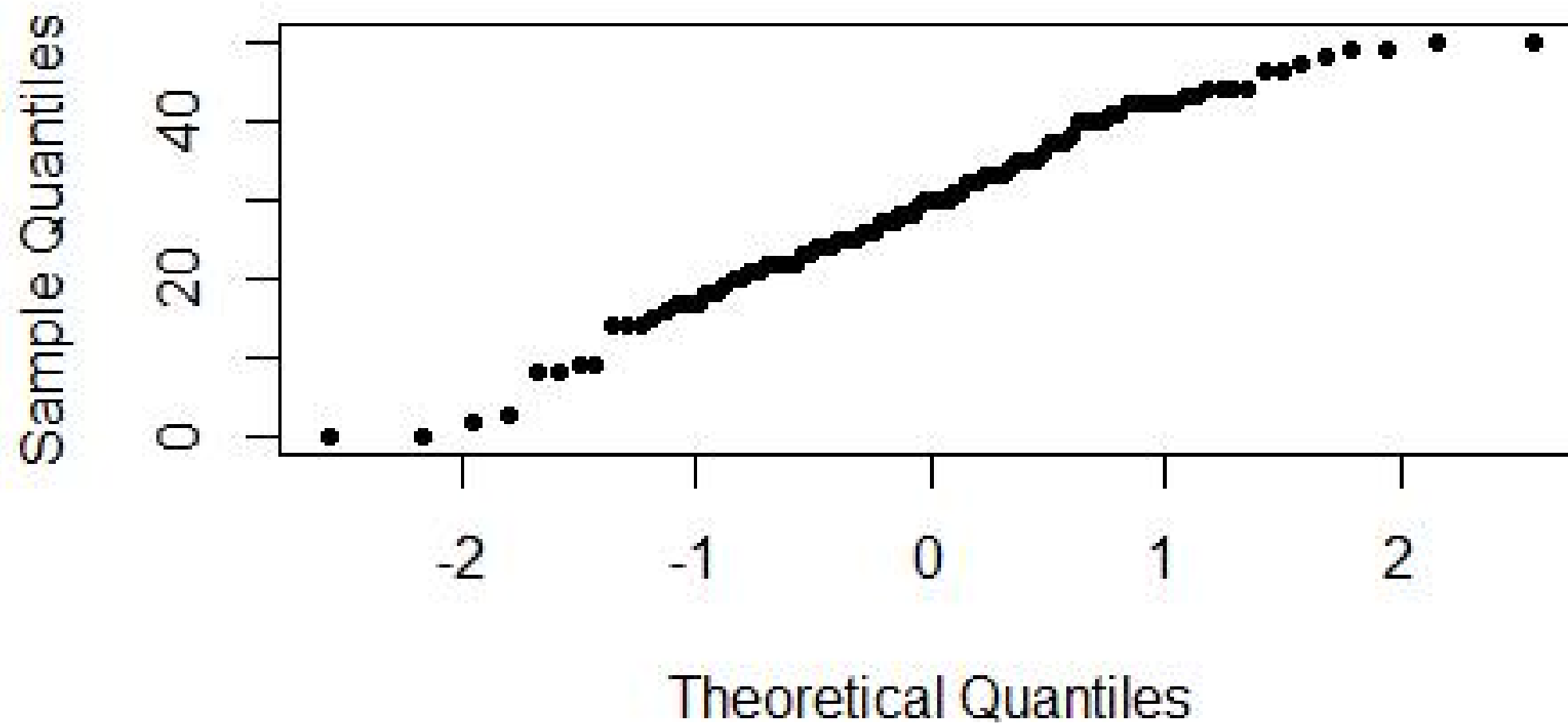
Histogram of scores



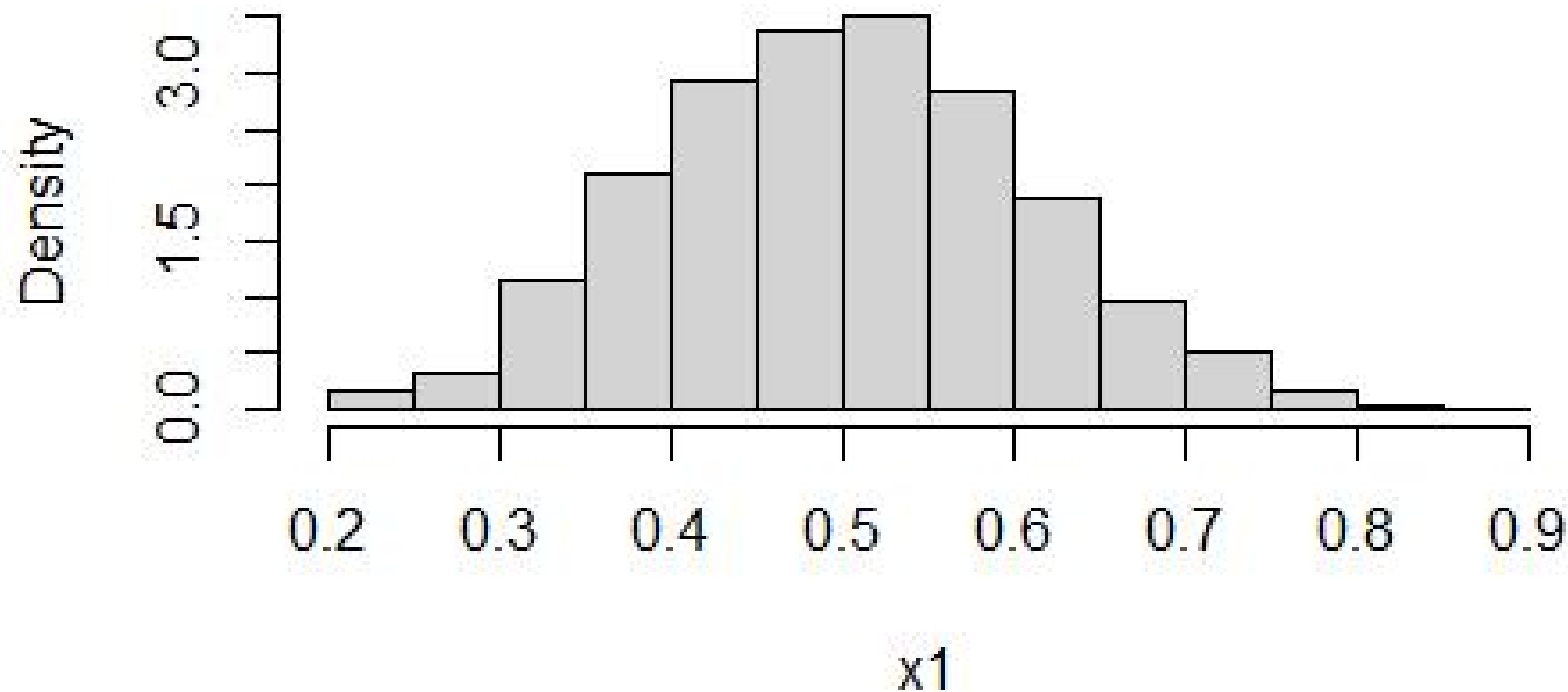
Boxplot for Scores dataset



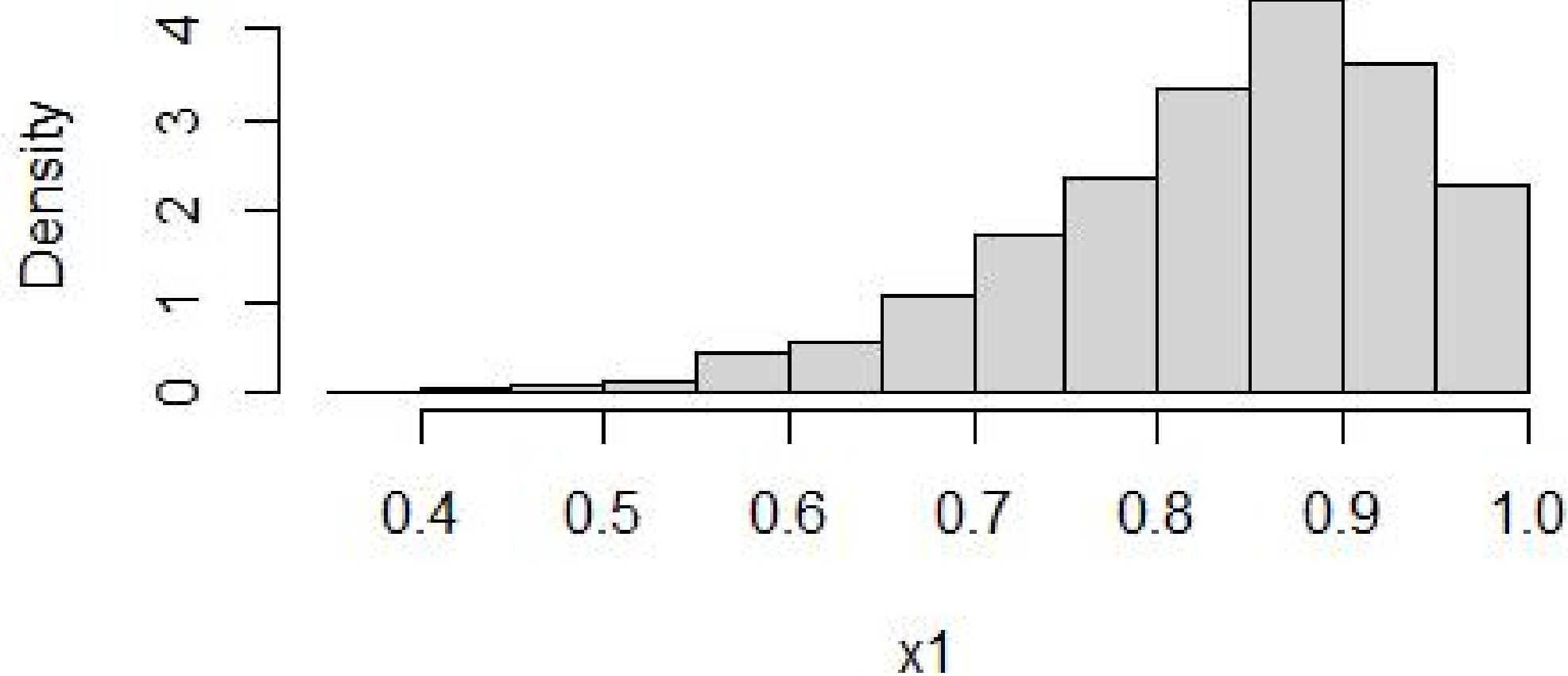
Normal Q-Q Plot



Histogram of Beta(10,10)



Histogram of Beta(10,2)



Histogram of Beta(2,10)

