1. r is the rate/ratio of buses. The mean rate.
2. the random variables become exponentially less as the wait time continues since it is exponential (exponential is heavily skewed!).
3. a. pexp(15, rate=1)

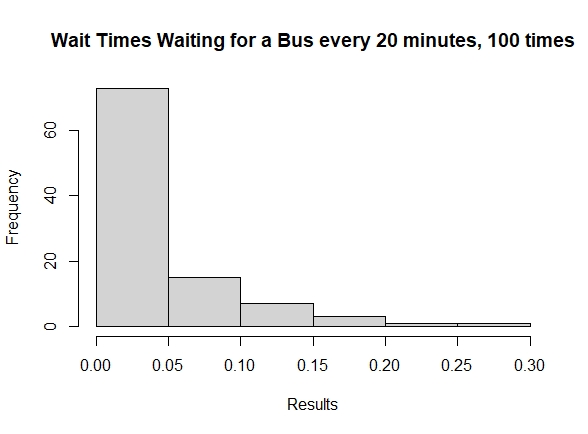
[1] 0.9999997

b. pexp(25, rate=1)

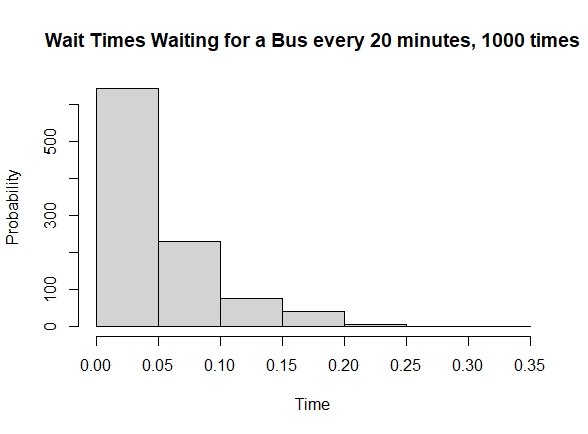
[1] 1

c. pexp(20, rate=1)-pexp(10, rate=1)

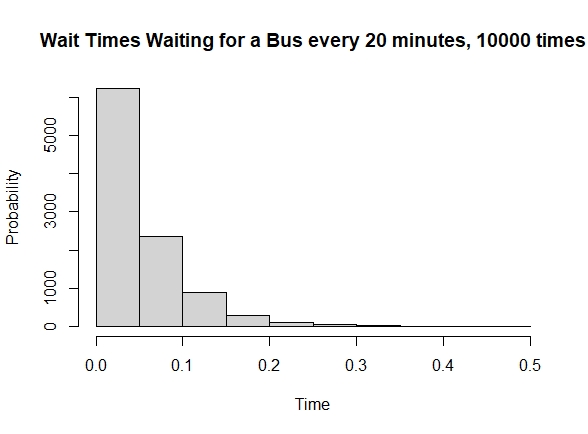
1. a. hist(rexp(100, 20), main = "Wait Times Waiting for a Bus every 20 minutes, 100 times", xlab = "Time", ylab = "Probability")



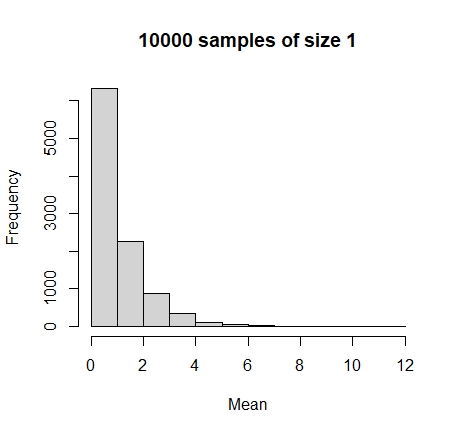
b. hist(rexp(1000, 20), main = "Wait Times Waiting for a Bus every 20 minutes, 1000 times", xlab = "Time", ylab = "Probability")



c. hist(rexp(10000, 20), main = "Wait Times Waiting for a Bus every 20 minutes, 10000 times", xlab = "Time", ylab = "Probability")



the results look exponential because of the radical dip over time. And with more time calculated the more accurate it gets.

1. a. 

b. Chart, histogram

Description automatically generated

c. Chart, histogram

Description automatically generated

d. Chart, histogram

Description automatically generated

e. Chart, histogram

Description automatically generated

1. qqnorm(rnorm(ratGroupA$Wt))

qqnorm(rnorm(ratGroupB$Wt))

qqnorm(rnorm(ratGroupJ$Wt))

qqnorm(rnorm(ratGroupI$Wt))

I think the qq plot for I looks the most normal excluding the first and last plots. Otherwise, pretty consistent.