**Assignment 8.3**

Percentage of college students using Wikipedia as a source in their exams = 44.7%. This can be interpreted as the other 55.3% are non-users. Hence we can construct a binomial probability distribution model for answering the problem. We have two possibilities, USER and NON-USER, where the probability of success(USER) is given as 0.447.

We are also given the number of trials, (the sample size of students) as 31. We are assuming that the sample is drawn out of college students, since the probability is given for percentage of college students using Wikipedia.

So we have n = 31, then for various ‘ks’ we can calculate the probability. The p is also given as 0.447, therefore 1-p = 0.553. Using the Binomial probability distribution functions we can arrive at the answers for the questions.

# Probability that X is equal to 17 =

> dbinom(17,31,0.447)

[1] 0.07532248

# Probability that X is at most 13 =

> pbinom(13,31,0.447)

[1] 0.451357

# Probability that X is bigger than 11 =

> 1 - pbinom(11,31,0.447)

[1] 0.8020339

# Probability that X is atleast 15 =

> 1-pbinom(14,31,0.447)

[1] 0.406024

# Probability that X is between 16 and 19 both inclusive =

> pbinom(19,31,0.447) - pbinom(16,31,0.447)

[1] 0.1488671

> a<- pbinom(19,31,0.447)

> b <- pbinom(16,31,0.447)

> a

[1] 0.9791043

> b

[1] 0.8302372

> a-b

[1] 0.1488671