Exercises, Chapter 5

Exercise 5.1

Using the *minimum number of keystrokes,* write a single R command that constructs the matrix A given below.

$A =$

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    5    6    7    8    9
## [2,]   12   12   12   12   12
## [3,]   81   64   49   36   25
## [4,]    2    8    4    7    3
```

Exercise 5.2

Write R commands that create a 2 x 4 matrix named x that contains the inteegers 11, 12, ..., 18 arranged in a column-wise fashion. Then use subscripts that extact the elements that exclude the first row and include the first and fourth columns.

```
##      [,1] [,2] [,3] [,4]
## [1,]   11   13   15   17
## [2,]   12   14   16   18
```

to get

```
## [1] 12 18
```

Exercise 5.3

Let A and B be the following 3 x 2 matrices:

A=

```
##      [,1] [,2]
## [1,]    1    4
## [2,]    2    5
## [3,]    3    6
```

B=

```
##      [,1] [,2]
## [1,]    7   10
## [2,]    8   11
## [3,]    9   12
```

Write R commands to create the matrices A and B using the `matrix` function, then combine A and B to create two new matrices with the `rbind` and `cbind` functions.

Exercise 5.4

A *one-step transition matrix* has elements that are between 0 and 1, row sums that equal 1, and the same number of rows and columns. Write an R command to create the 2 x 2 one-step transition matrix A with elements given by

```
##      [,1] [,2]
## [1,]  0.8  0.2
## [2,]  0.3  0.7
```

Exercise 5.5

Write a single R command that creates a sequence of one 1, two 2s, three 3s, and four 4s, and places them in a 2 x 5 matrix named `b` in a row-wise fashion. This command should use as few keystrokes as possible.