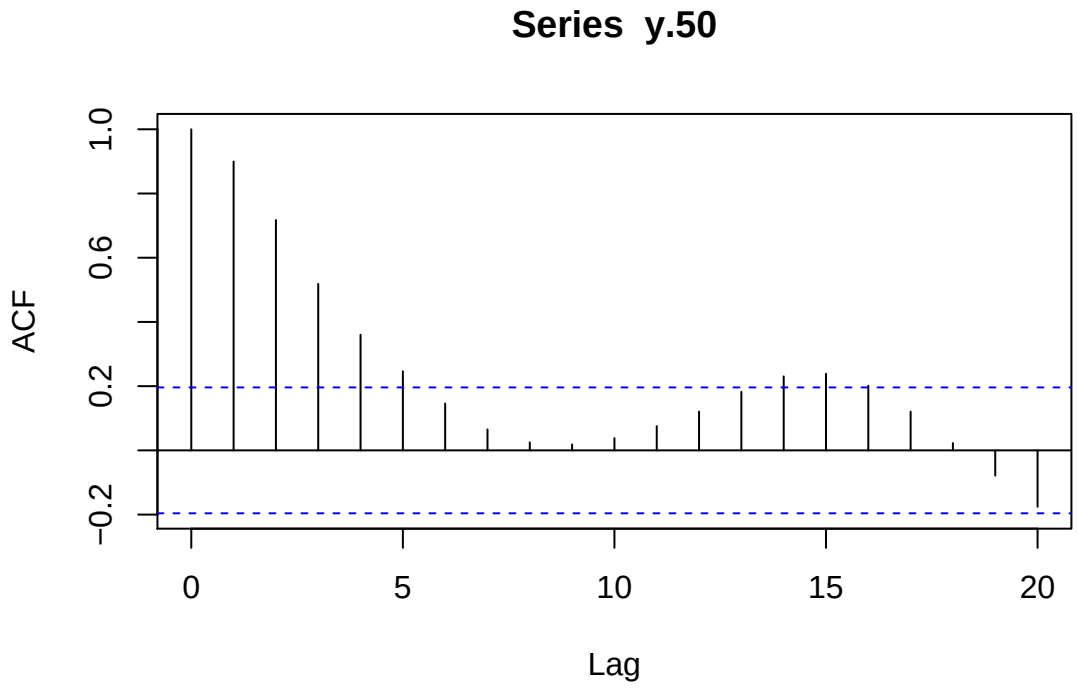
Homework 3 R Problem

```
set.seed(2)
```

c) ACF

```
# a) AR(2) series with phi = 1.3 and -0.4
y.50 <-  arima.sim(model = list(ar = c(1.3, -0.4)), n = 100)

# plot ACF of AR(1) series with phi = 0.5
acf(y.50)
```




```
y_acf_values <- acf(y.50, plot = FALSE)

y_acf_values$acf
```

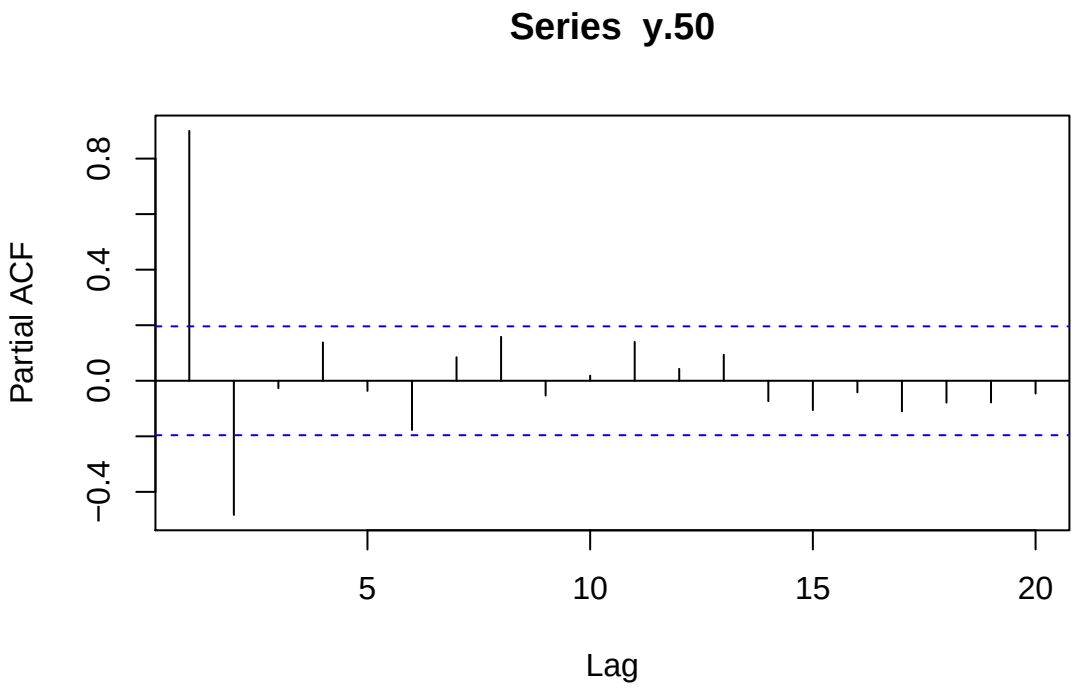
```
## , , 1
##
##              [,1]
##  [1,]  1.00000000
```

```
##  [2,]  0.89963780
##  [3,]  0.71724360
##  [4,]  0.51847955
##  [5,]  0.36031065
##  [6,]  0.24646518
##  [7,]  0.14590218
##  [8,]  0.06536639
##  [9,]  0.02490484
## [10,]  0.01839147
## [11,]  0.03805606
## [12,]  0.07552015
## [13,]  0.12085413
## [14,]  0.18232793
## [15,]  0.23044847
## [16,]  0.23862920
## [17,]  0.20136681
## [18,]  0.12080433
## [19,]  0.02285979
## [20,] -0.07870130
## [21,] -0.17564779
```

Comparing the ACF from Exercise 3.1 c, both have similar values.

PACF

```
acf(y.50, type = "partial")
```



```r
y_pacf_values <- acf(y.50, plot = FALSE, type = "partial")

y_pacf_values$acf
```

```
## , , 1
##
##              [,1]
##  [1,]  0.89963780
##  [2,] -0.48310356
##  [3,] -0.02660741
##  [4,]  0.13808629
##  [5,] -0.03641560
##  [6,] -0.17737290
##  [7,]  0.08481731
##  [8,]  0.15810706
##  [9,] -0.05310202
## [10,]  0.01855544
## [11,]  0.13997932
## [12,]  0.04282067
## [13,]  0.09389627
## [14,] -0.07337585
## [15,] -0.10545581
## [16,] -0.04178433
## [17,] -0.11013877
## [18,] -0.07872245
## [19,] -0.07836374
## [20,] -0.04587079
```

Values of PACF are slightly more or less than 0 when k $>$ 2, which is still relatively similar to answer from Exercise 3.1 c.