ch6.R

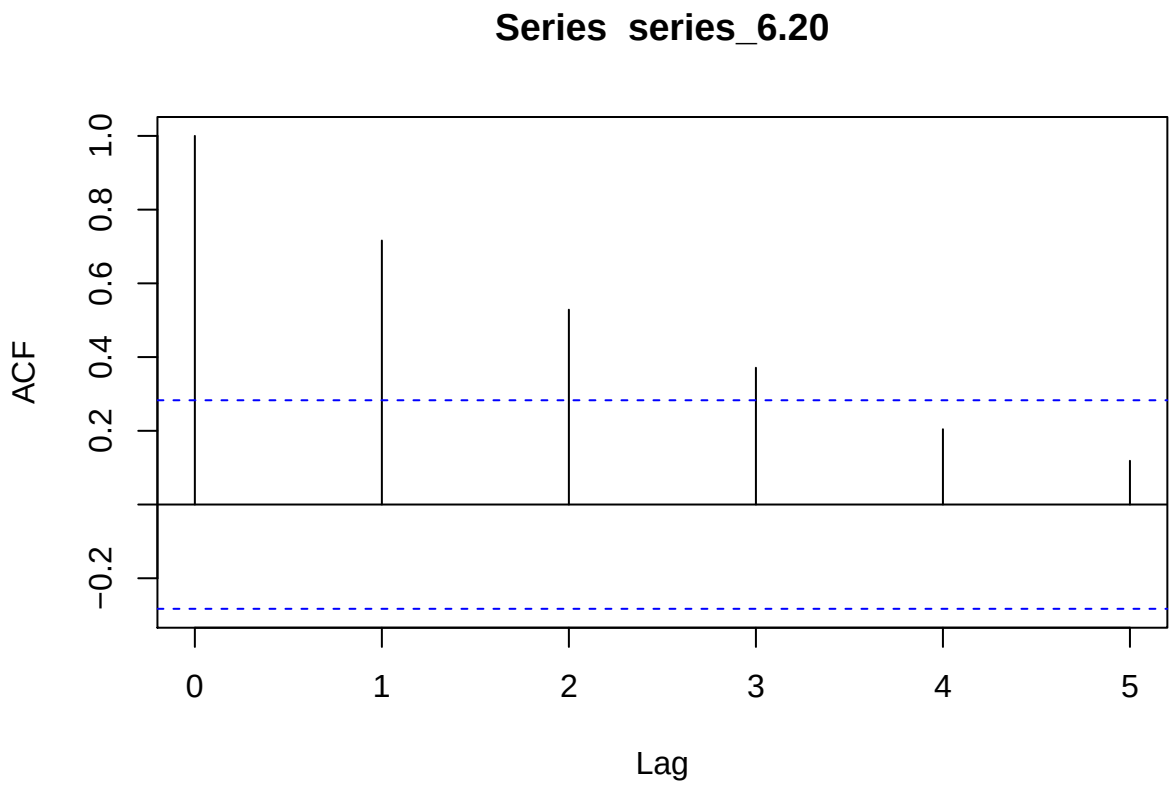
dell

Sun Oct 28 11:42:01 2018

```
## 6.20
set.seed(123)
series_6.20 = arima.sim(list(ar=0.7),n=48)
### (a)
ACF_6.20 = ARMAacf(ar = 0.7, lag.max = 5)[-1]; ACF_6.20[c(1,5)]
```

```
##       1       5
## 0.70000 0.16807
```

```
### (b)
SACF_6.20 = acf(series_6.20,lag.max=5)$acf[-1]; SACF_6.20[c(1,5)]
```



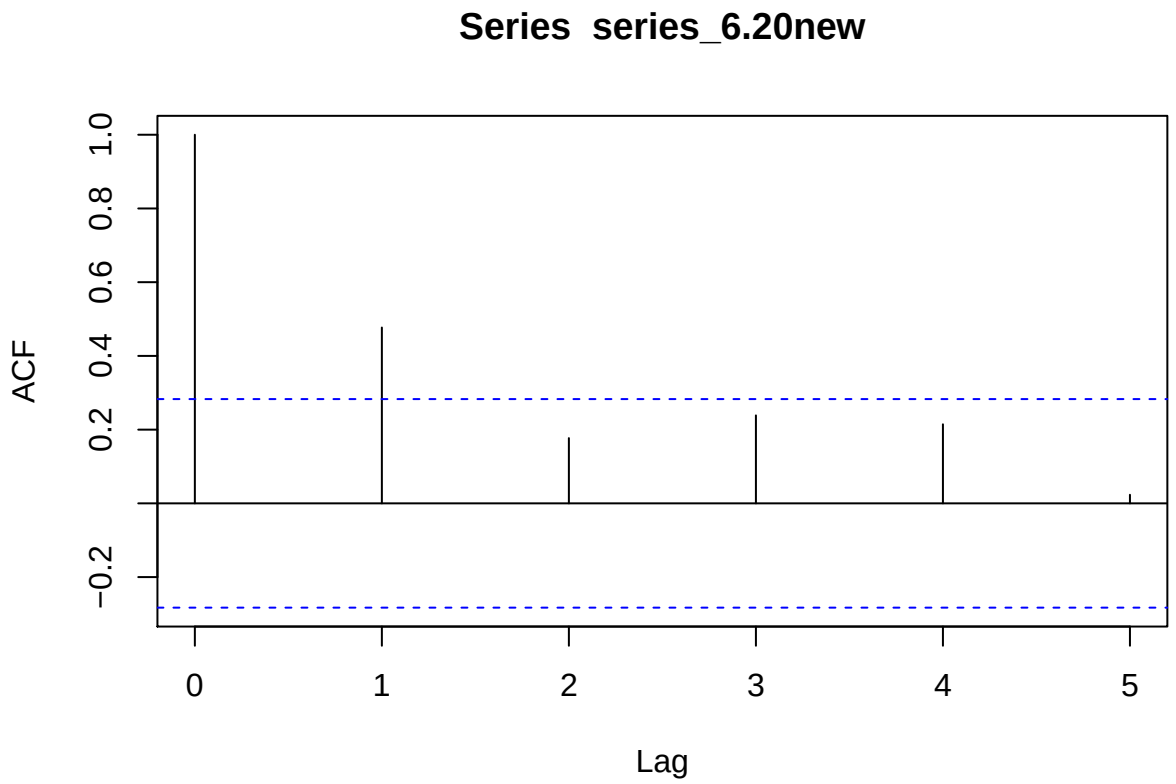

```
## [1] 0.7161295 0.1186186
```

```
ACF_6.20[c(1,5)] - SACF_6.20[c(1,5)]
```

```
##           1           5
## -0.01612949  0.04945138
```

```
### (c)
set.seed(8)
```

```r
series_6.20new = arima.sim(list(ar=0.7),n=48)
SACF_6.20new = acf(series_6.20new,lag.max=5)$acf[-1]; SACF_6.20new[c(1,5)]
```

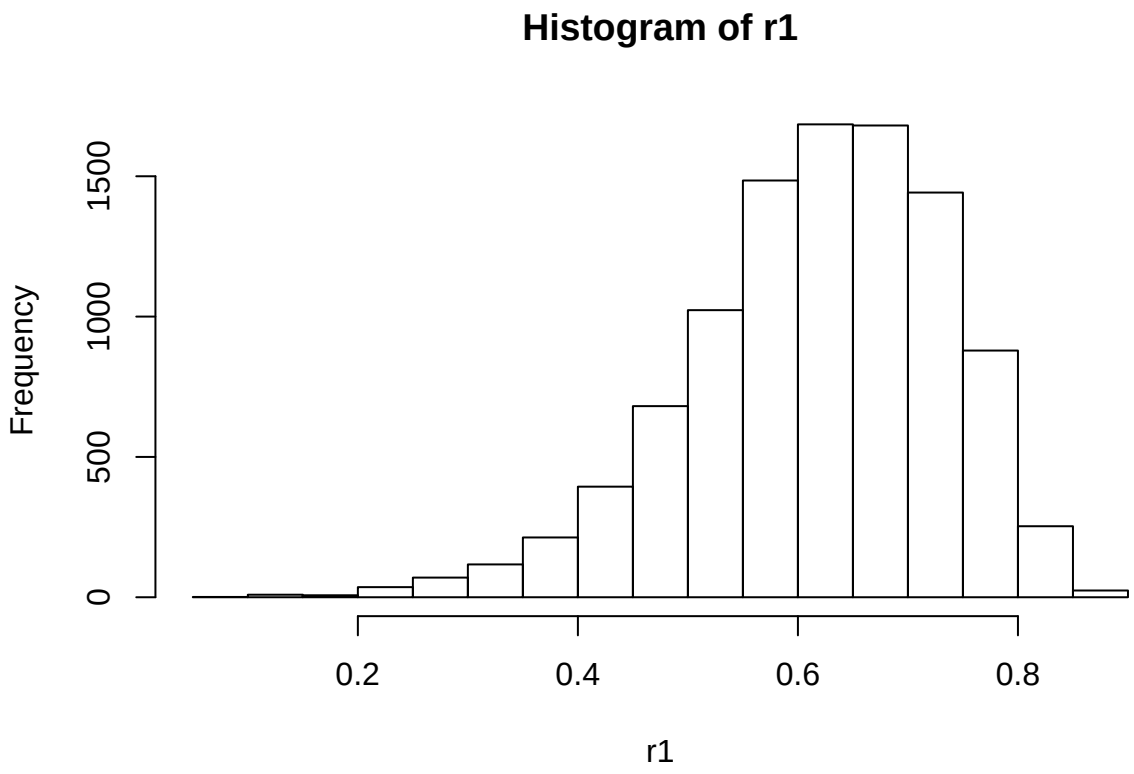



```
## [1] 0.47703300 0.02331097
```

```r
ACF_6.20[c(1,5)] - SACF_6.20new[c(1,5)]
```

```
##        1        5
## 0.222967 0.144759
```

```r
### (d)
r1 = r5 = rep(NA,10000)
for(k in 1:10000){
  series = arima.sim(list(ar=0.7),n=48)
  sacf = acf(series,lag.max=5,plot=FALSE)$acf[-1]
  r1[k] = sacf[1]
  r5[k] = sacf[5]
}
hist(r1); summary(r1)
```




```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.09291 0.54767 0.62901 0.61747 0.70298 0.88715
```

```
hist(r5); summary(r5)
```

```
##     Min.  1st Qu.   Median     Mean  3rd Qu.     Max.
## -0.55756 -0.09812  0.03032  0.03160  0.15766  0.61642
```

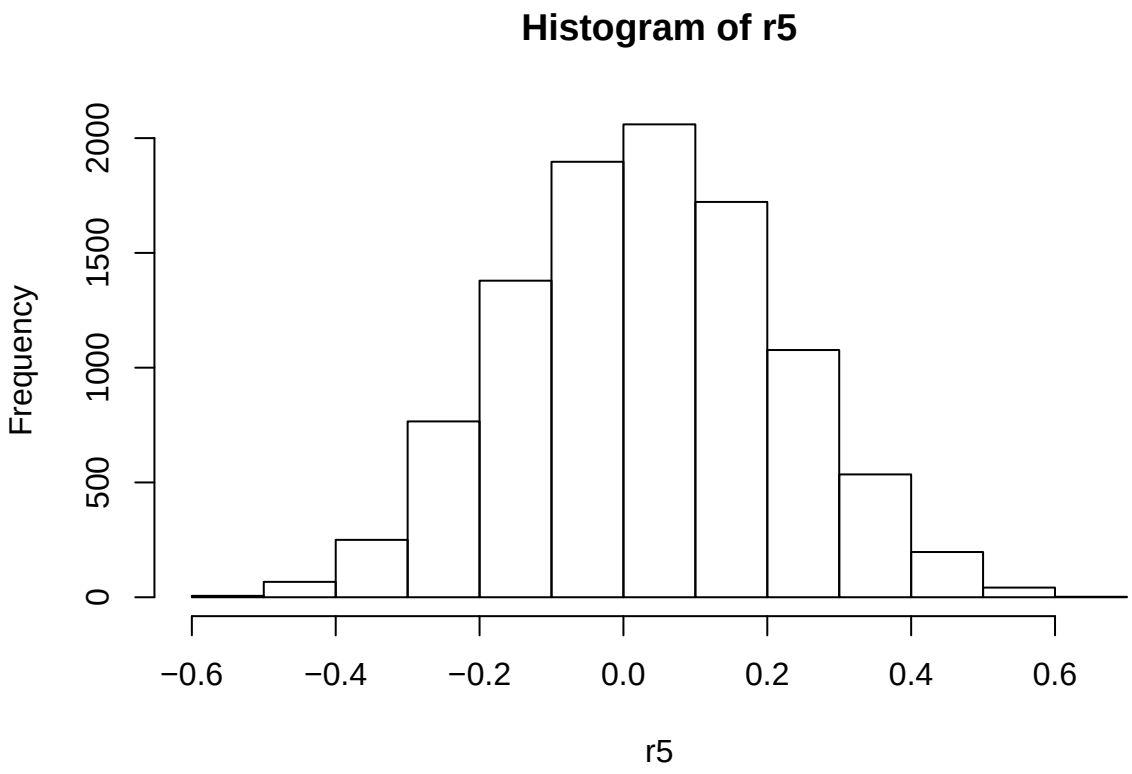
```
## 6.36
library(TSA)
```

```
## Warning: package 'TSA' was built under R version 3.5.1
```

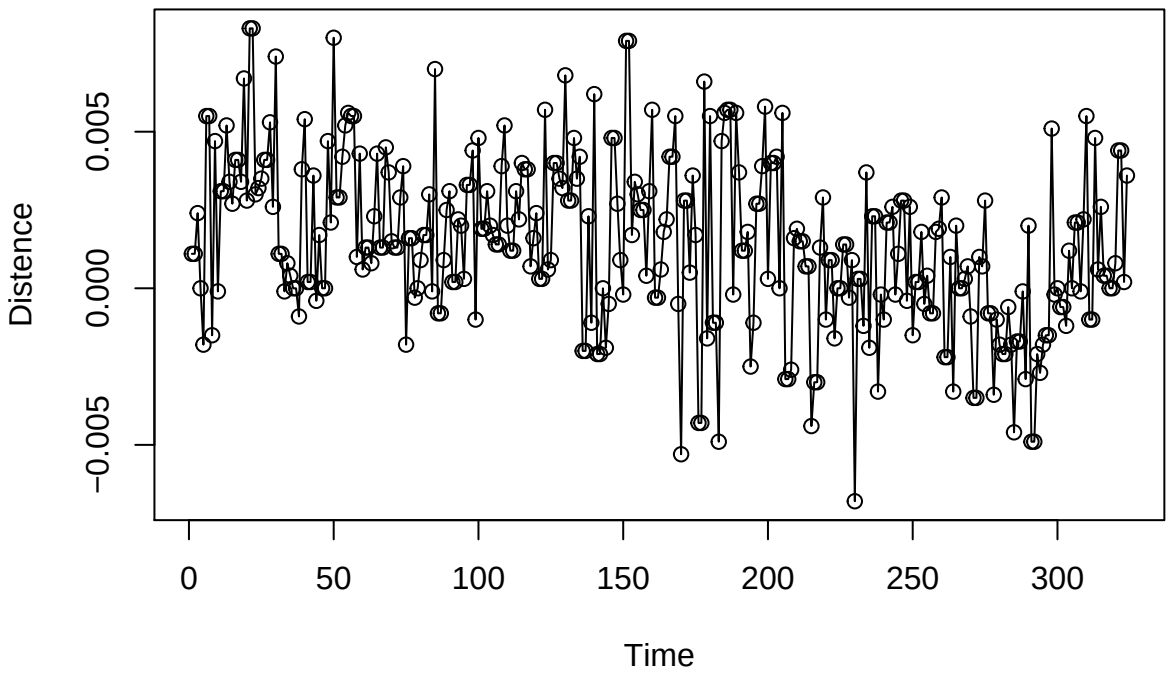
```
##
## Attaching package: 'TSA'
```

```
## The following objects are masked from 'package:stats':
##
##     acf, arima
```

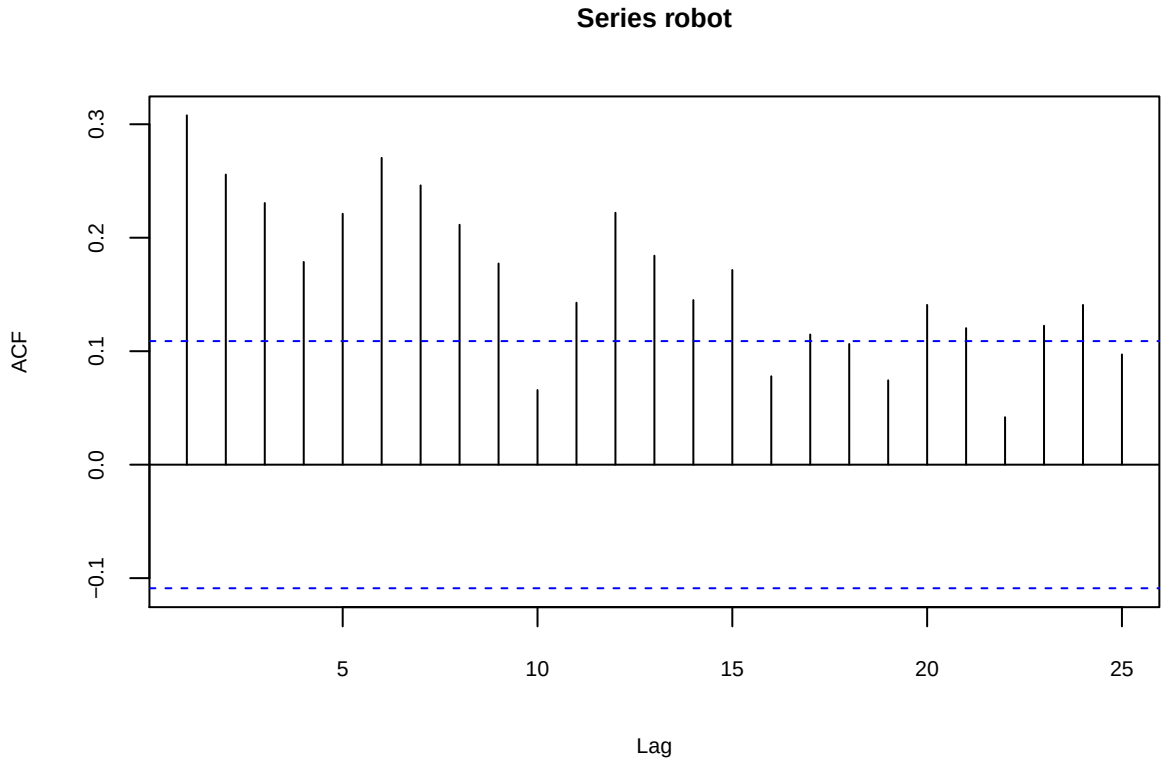
```
## The following object is masked from 'package:utils':
##
##     tar
```



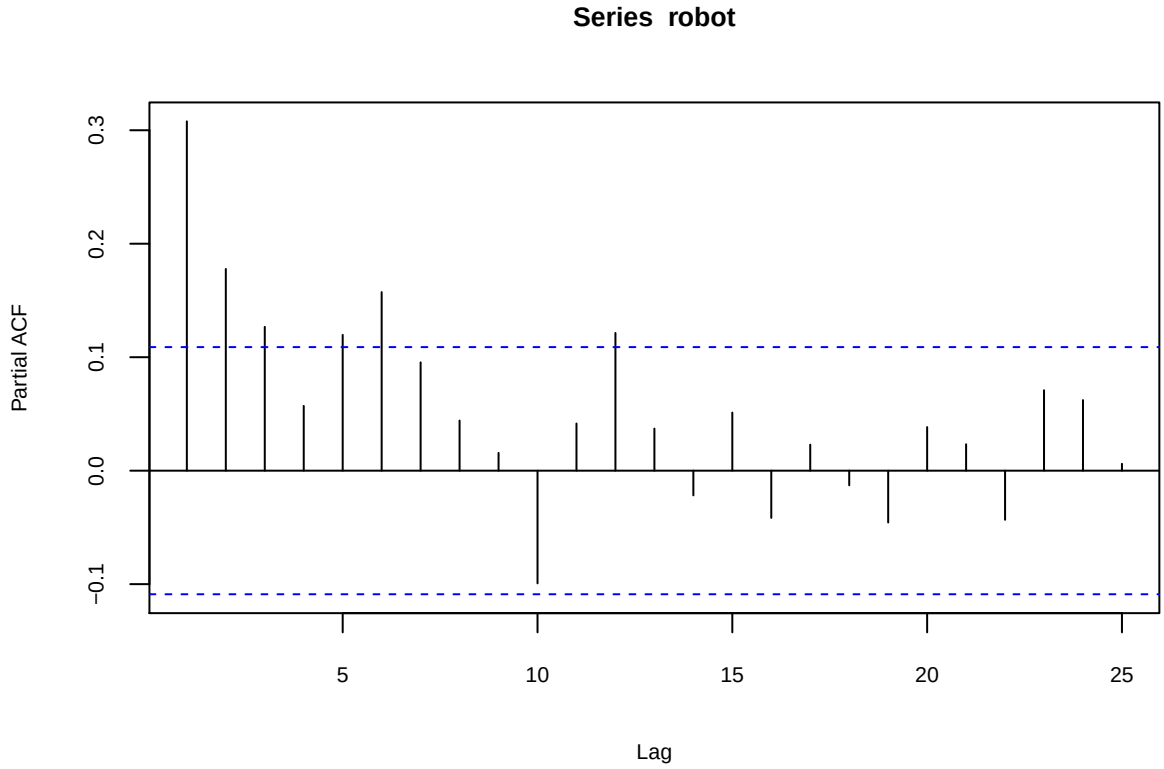

```r
data(robot)

### (a)
plot(robot, type="o", ylab="Distence")
```



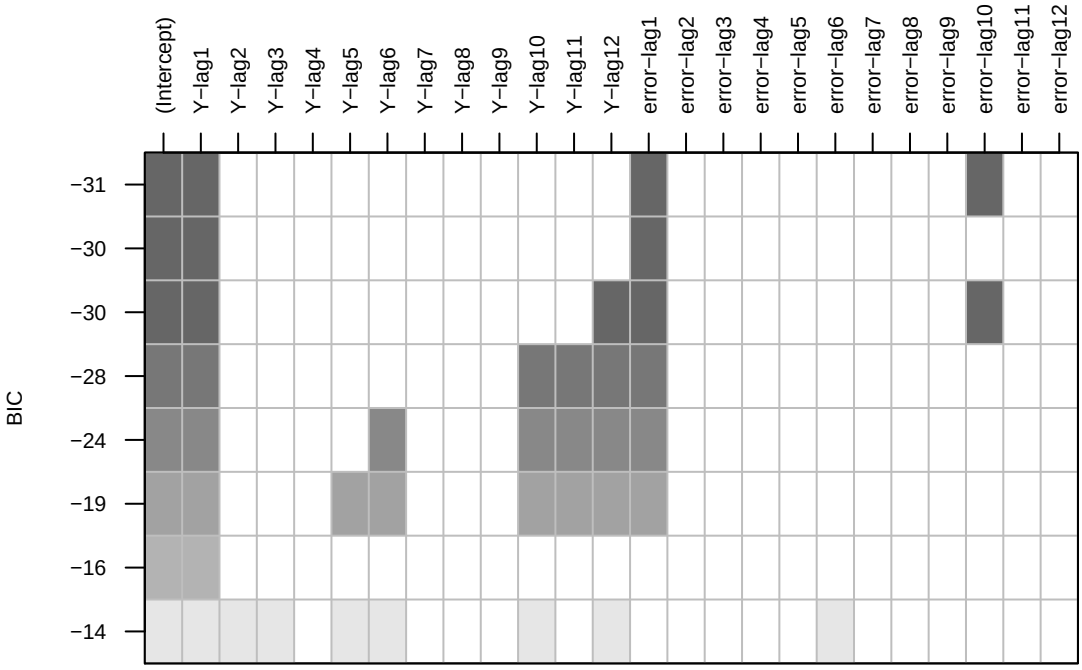

```
### (b)
win.graph(width = 3.25, height = 3, pointsize = 8)
acf(robot)
```




```
pacf(robot)
```




```
### (d)
plot(armasubsets(y=robot,nar=12,nma=12,ar.method="ols"))
```


(Intercept)
Y−lag1
Y−lag2
Y−lag3
Y−lag4
Y−lag5
Y−lag6
Y−lag7
Y−lag8
Y−lag9
Y−lag10
Y−lag11
Y−lag12
error−lag1
error−lag2
error−lag3
error−lag4
error−lag5
error−lag6
error−lag7
error−lag8
error−lag9
error−lag10
error−lag11
error−lag12
BIC
−31
−30
−30
−28
−24
−19
−16
−14