Homework-2 - Code/Plots for Problem 5

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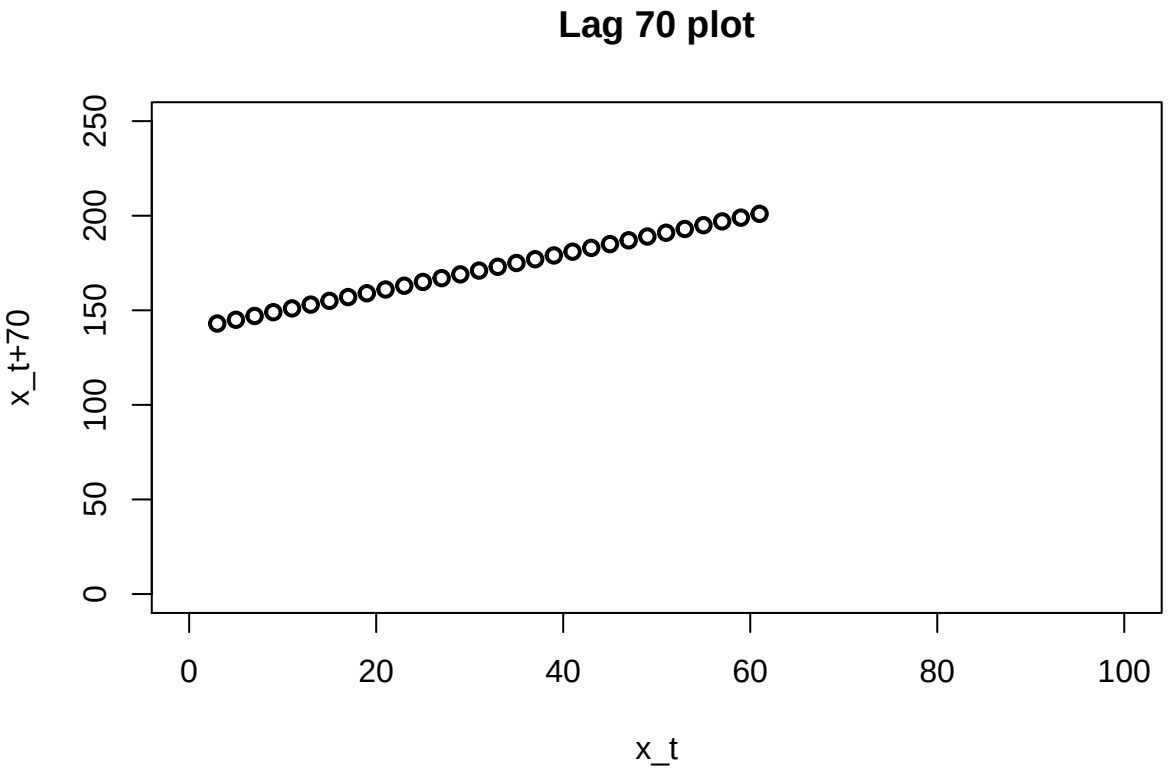
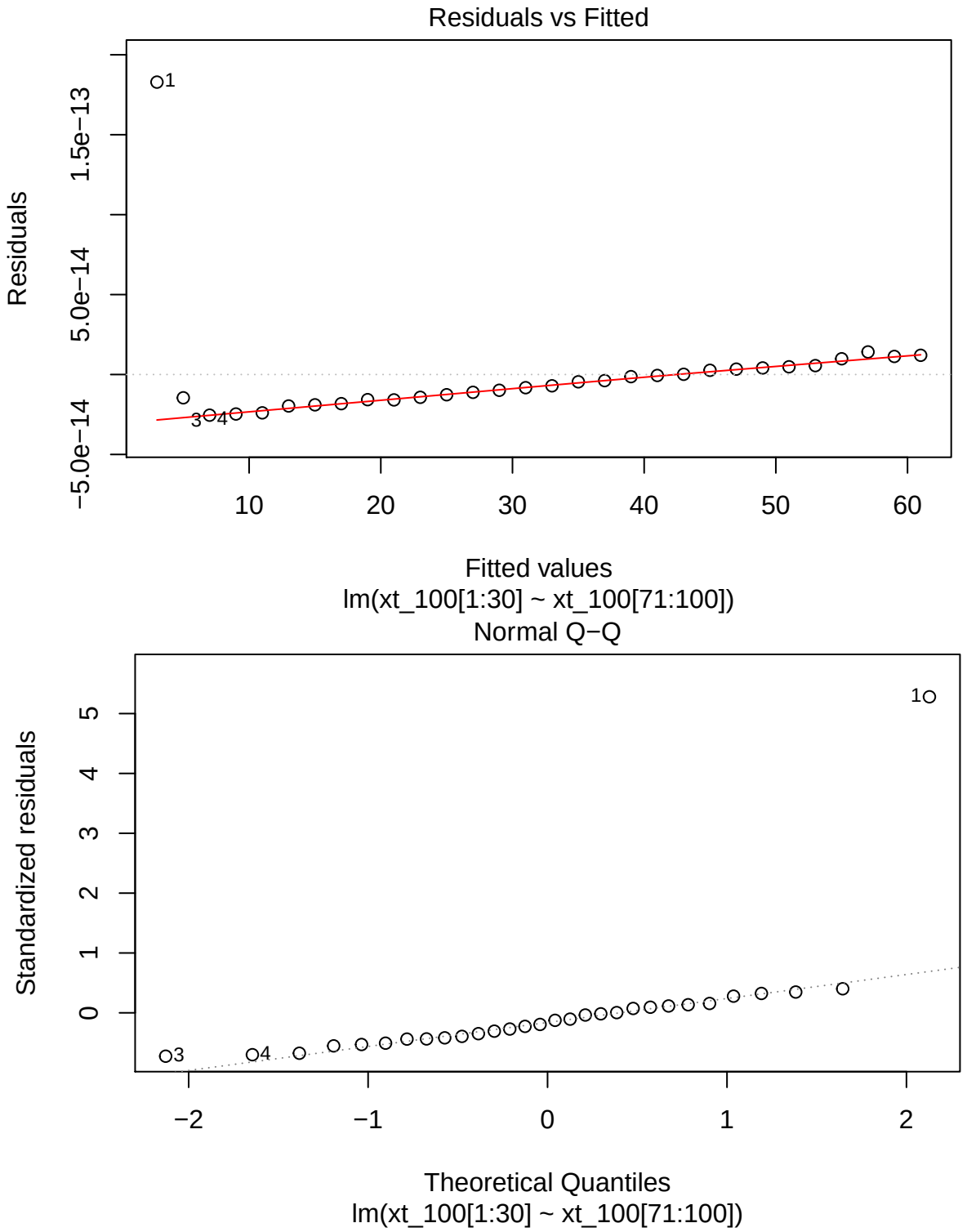
Solution for 5(a)

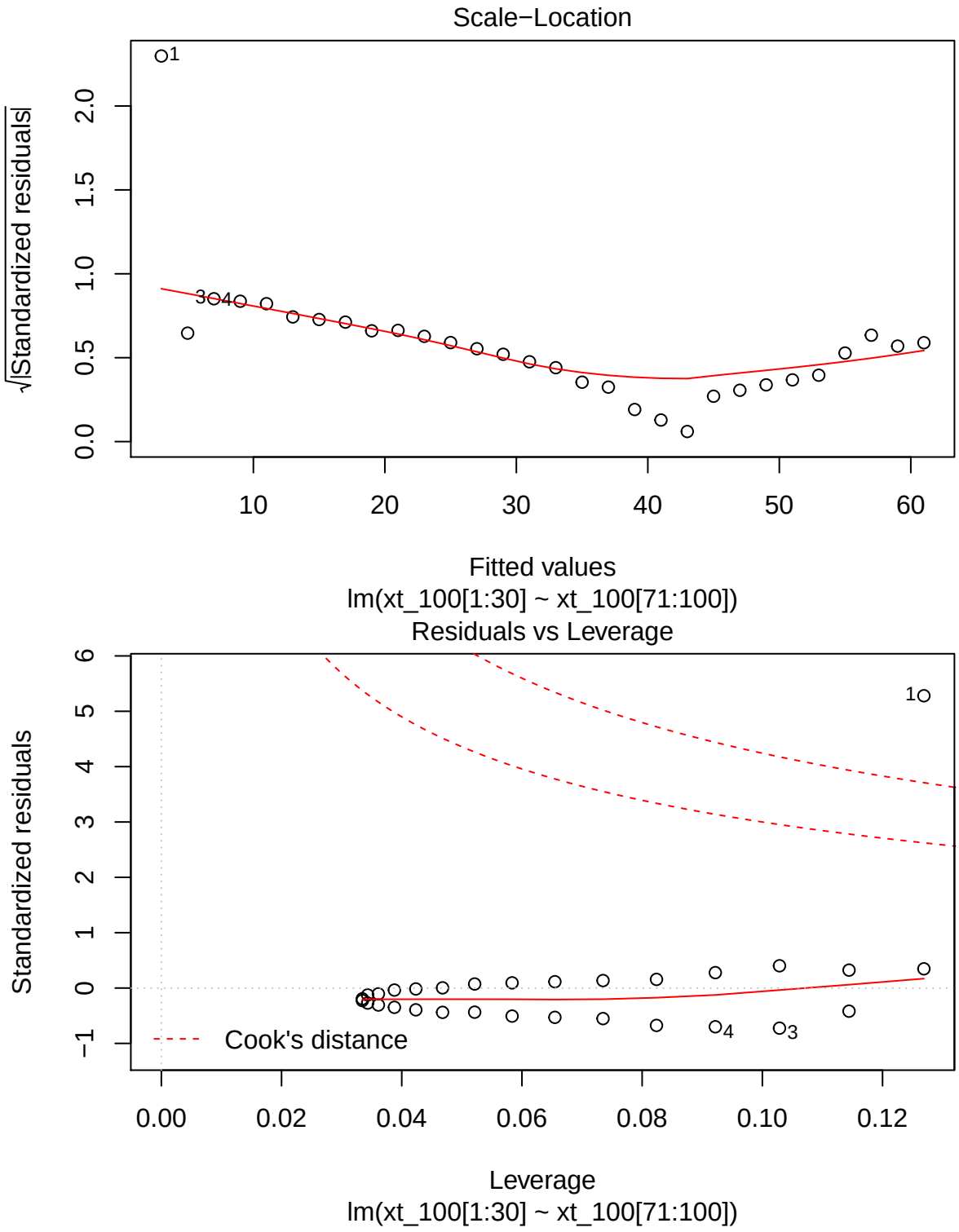
Our theoretical expression is of the form x_t+h = beta* h + alpha*x_t , with h=70,



Verification by plotting residuals

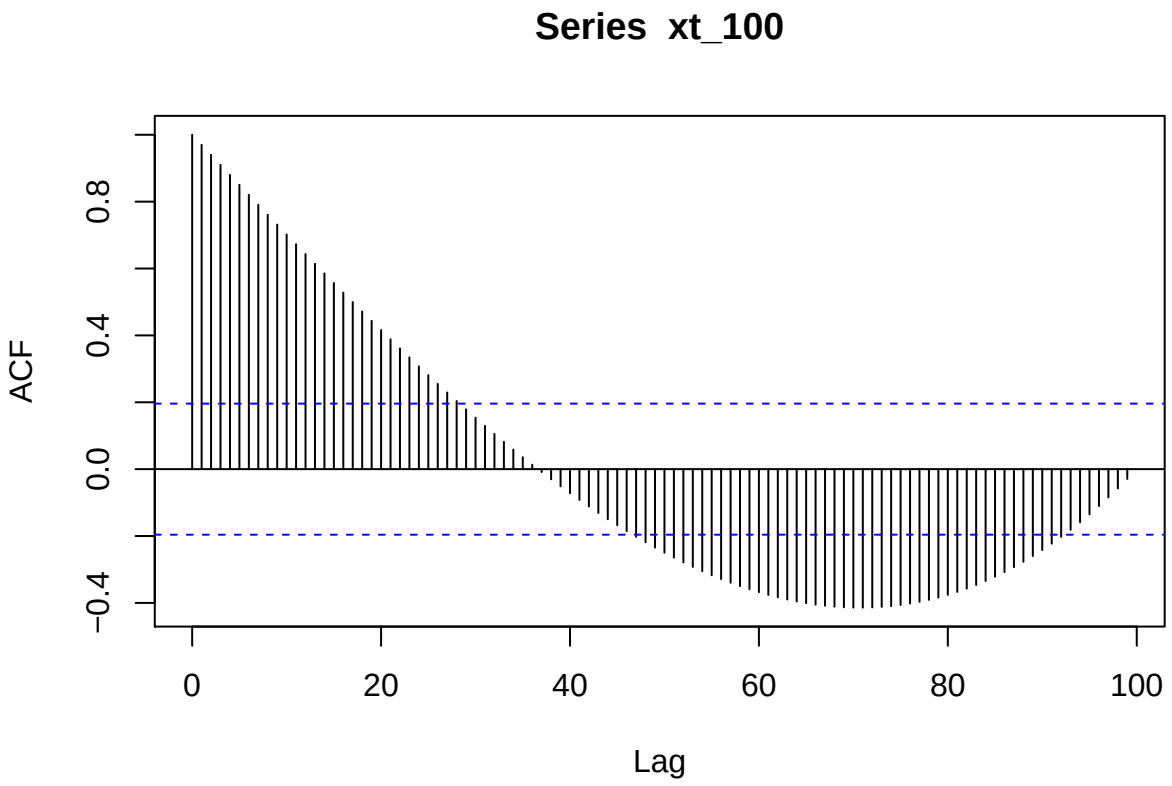
Furthermore, Our linear expression from the plot is x_t+70 = 1 * x_t + 140, slope = 1, and intercept is 140. Slope = alpha = 1, Intercept = beta * h. thus matching the theoretical expression.




Scale−Location
√|Standardized residuals|
0.0
0.5
1.0
1.5
2.0
10
20
30
40
50
60
Fitted values
lm(xt_100[1:30] ~ xt_100[71:100])
Residuals vs Leverage
Standardized residuals
−1
0
1
2
3
4
5
6
0.00
0.02
0.04
0.06
0.08
0.10
0.12
Cook's distance
1
0.5
Leverage
lm(xt_100[1:30] ~ xt_100[71:100])

Solution for 5(b)

Plotting using the acf



Solution for 5(c)

The approximations do matchup with the plot in part c