PS9 Zago

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Question 6 - Lasso

$\alpha = 1$, $\hat{\lambda} = 0.00958$, in-sample RMSE = 0.1590944, out-of-sample RMSE = 0.1862298.

Question 7 - Ridge

$\alpha = 0$, $\hat{\lambda} = 0.108$, in-sample RMSE = 0.1581990, out-of-sample RMSE = 0.1837894.

Question 8 - Elastic Net

$\hat{\lambda} = 0.114$, $\hat{\alpha} = 0.0295$, in-sample RMSE = 0.1618053, out-of-sample RMSE = 0.1826963.

The optimal value of α lead us to think that the Ridge method is the best strategy for optimization for ts task.

Question 9

1. Because there is no regularization in OLS.
2. The in-sample RMSE vale of the Ridge model is the lowest among the three. Thus, by having the lowest variance, we can say that it finds a better way (among those

estimated) not to overfit the model and have a good prediction power, as we can see for the out-of-sample RMSE, that is similar across every specification. Therefore, the Ridge one presents the best balance in the trade-off of variance-bias.