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Quiz 03 (Part 1)

1.) (1 pt.) **True or False:** In penalized regression, the α tuning parameter tends to have a greater impact on model accuracy than the λ tuning parameter.

False

2.) (1 pt.) Name the eminent Stanford statistics professor typically credited with inventing the elastic net technique.

Hastie/Trevor Hastie

3. (1 pt.) State the three common names for the type of regularization used in the elastic net technique to reduce the impact of multicollinearity on model parameter stability.

L2, Ridge, Tikhonov (1/3 pt. each)

4. (1 pt.) State the two common names for the type of regularization used in the elastic net technique for variable selection.

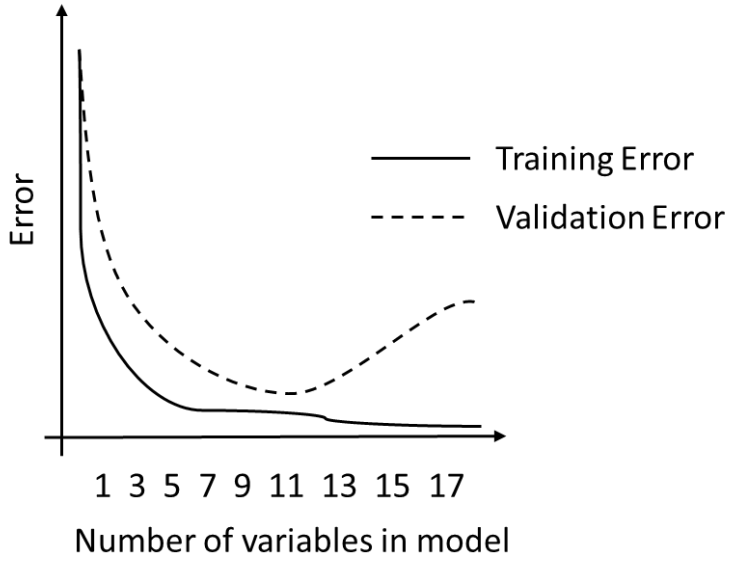
L1, LASSO (1/2 pt. each)

5.) (3 pts.) In the figure below, two partitions of data are used to fit and asses a predictive model.

At what number of variables does the model display the best generalization abilities, i.e. the best tradeoff between error due to bias and variance? 11

At what number of variables does the model display the highest level of error due to bias? 1

At what number of variables does the model display the highest level of error due to variance? 17



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6. (3 pts.) A traditional linear regression analysis was conducted to determine the relationship between a dependent variable and two independent variables.

Variable	Value	Std error	t-statistic	p-value
Intercept	128.8128	16.3083	7.8986	0.0000
X1	–143.1620	19.8332	–7.2183	0.0000
X2	61.9603	6.0084	10.3122	0.0000

The model formula was specified as: Y ~ Intercept + X1 + X2. State the exact interpretation of the coefficient for X2.

Holding all else constant (1pt.), a one unit change in the value of X2 results in a decrease of 143.162 in Y (1 pt.) on average (1 pt.).