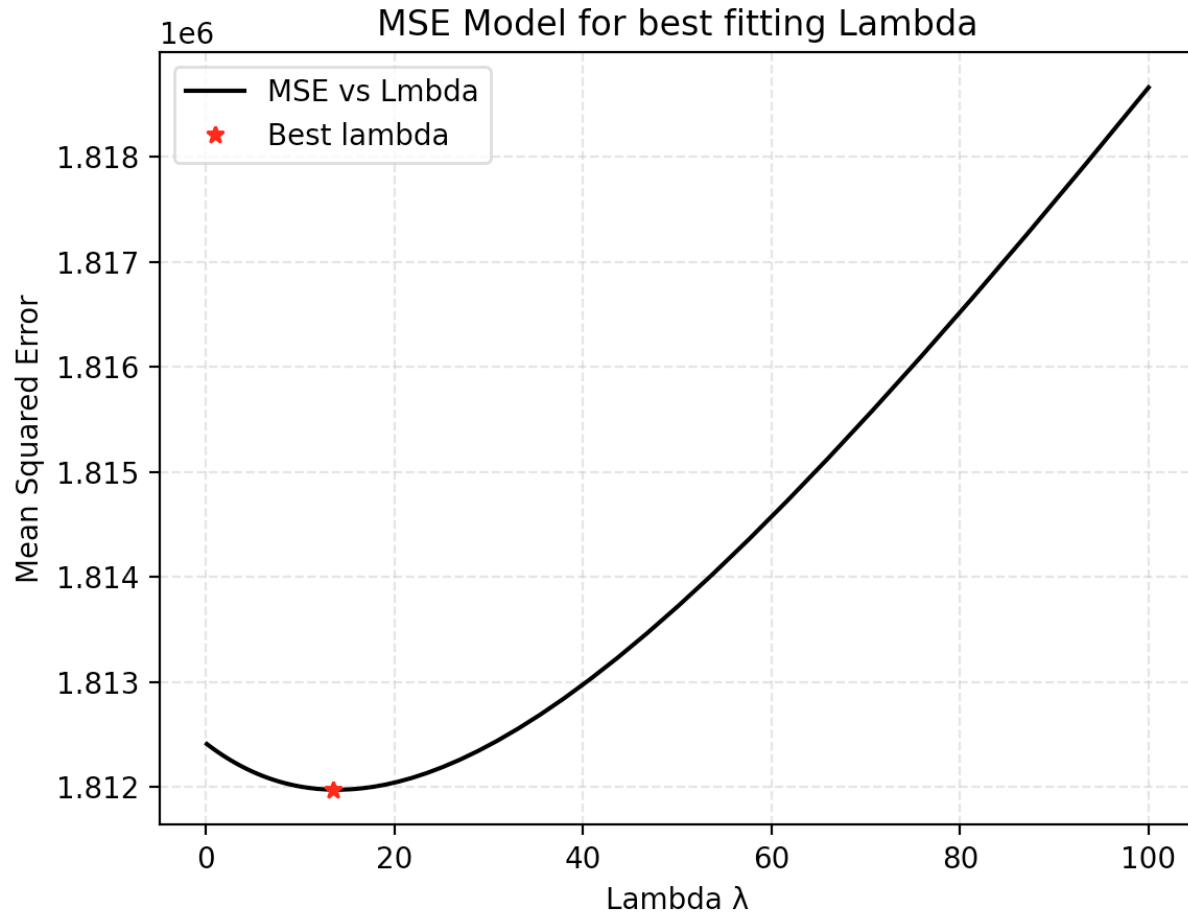


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 Problem 2 Writeup

## 1 Finding Best Lambda



Based on the lambda values tested, the best lambda value is **13.489628825916533** which yields a MSE of **1811976.5702684438** as shown in the plot above.

### 1.1 Equation of best fitted model:

$$\hat{y}(x) = 5115.65x_1 - 201.498x_2 - 207.155x_3 - 1338.29x_4 + 219.186x_5 - 66.3641x_6 + 500.910x_7 + 74.3062x_8 - 459.072x_9 + 3928.08 \quad (1)$$

The predicted price  $\hat{y}$  for a 0.25 carat, 3 cut, 3 color, 5 clarity, 60 depth, 55 table, 4x, 3y, 2z diamond is \$ **437.282** which was determined by normalizing the x values provided (sorted based on the order the model was created) and predicting the value using the model that fits best from the trained data.