CO496 CW3

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1 Bayesian Linear Regression

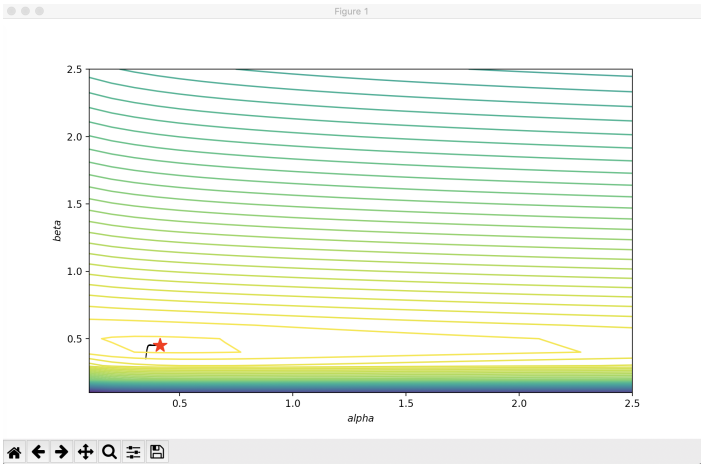
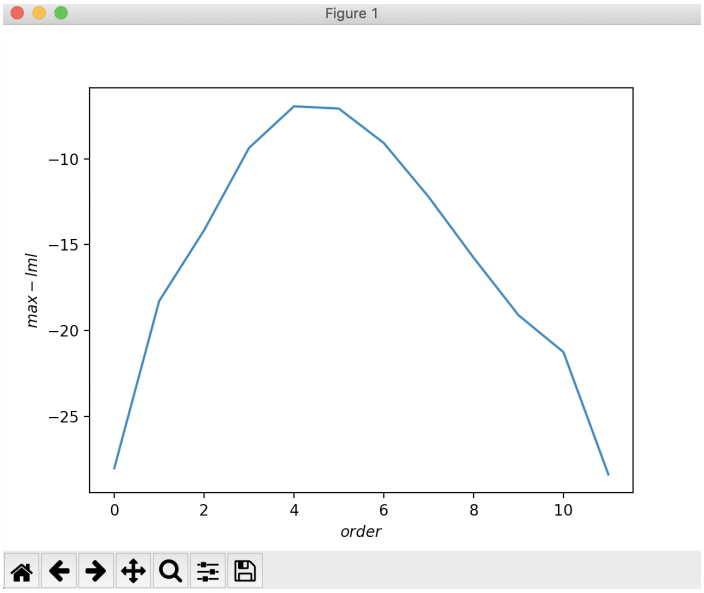


Figure 1: Answer to the question 1 (b)

b) Used alpha and beta values of (0.35, 0.35) for the starting point and step size of 1e-3.

c) Starting point: (0.35, 0.35), Step size: 1e-5, Number of iteration: 1e5.
When choosing a model with Bayesian approach, we only need to iterate the data-set once so it is computationally fast. However, the model selection requires the function when calculating the log-marginal-likelihood so it is not appropriate when function is not known in advance (or cannot be guessed easily).The cross-validated approach requires N iterations for N-sized data-set, it is slower than Bayesian approach but is more accurate. Furthermore, this model selection process does not need the representative function (i.e. no need to know the function) so no probabilistic approach is required.



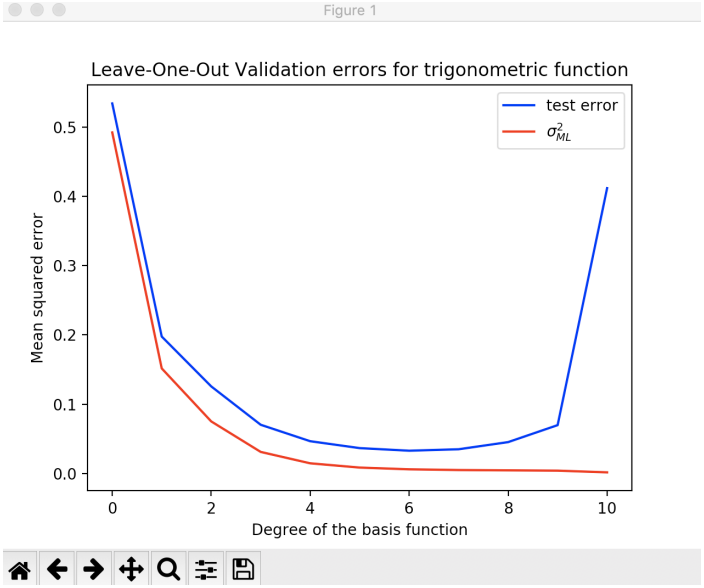


Figure 2: Answer to the question 1 (c)