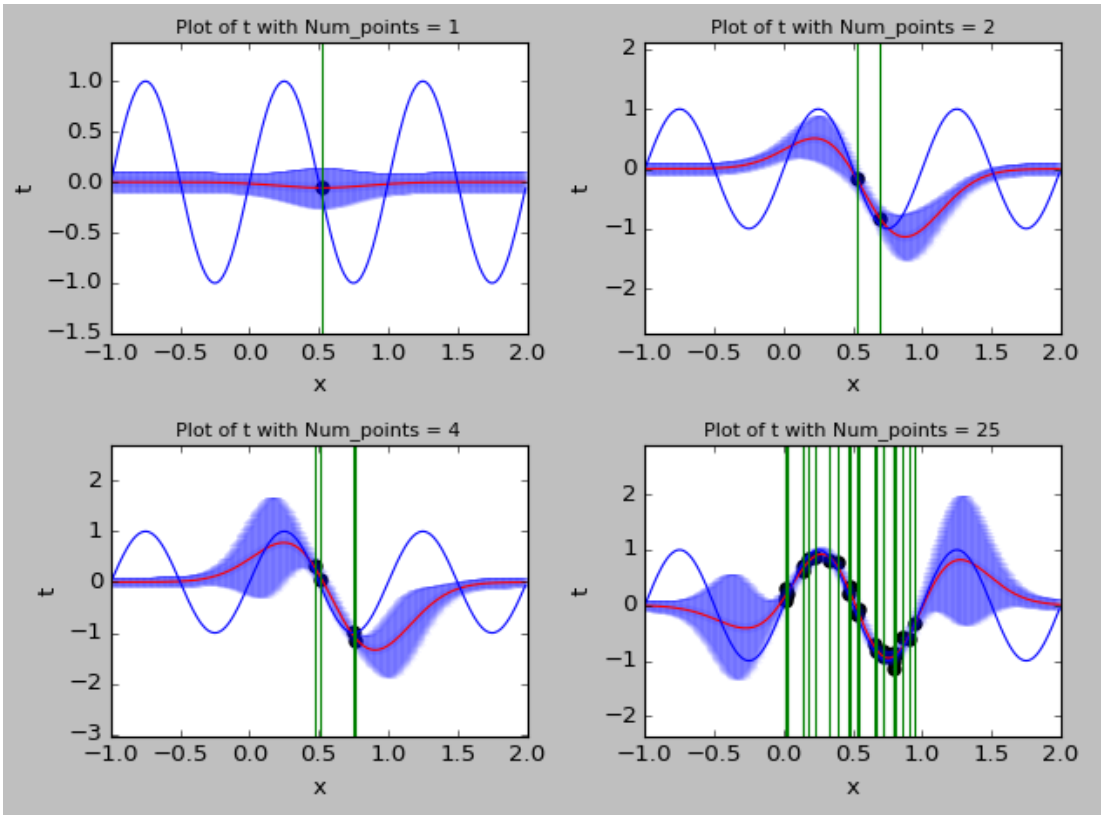
In Class Assignment

Timotius Andrean Patrick Lagaunne

14173082

Figure 3.8



(1) What happens to the predictive variance at a data point?

Predictive variance around data point is smaller because the data point is known which is logical for the predictive variance to be closer to zero

(2) What happens to the predictive variance as you move away from a data point?

The predictive variance increase as it move from a data point

(3) What happens to the predictive variance far, far from any data?

It start to be closer to zero which is because the radial function is only good for approximating the points close to data points.

(4) How well do you approximate the true function as you increase the number of data points?

As the number of data increase the red line is approximate the blue line better which means it approximate better the true function as the number of data points increase.

Homework 4

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1. Figure 3.9

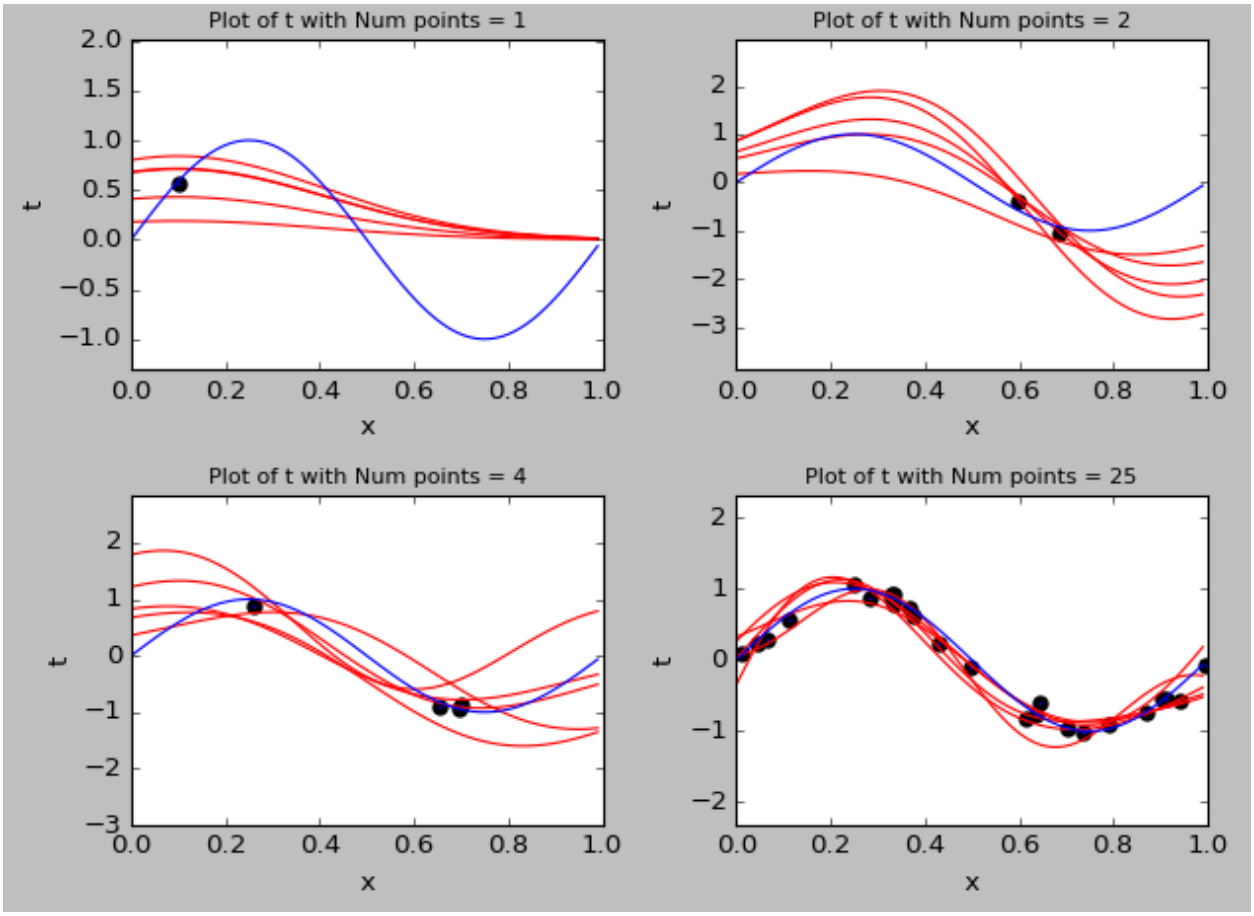
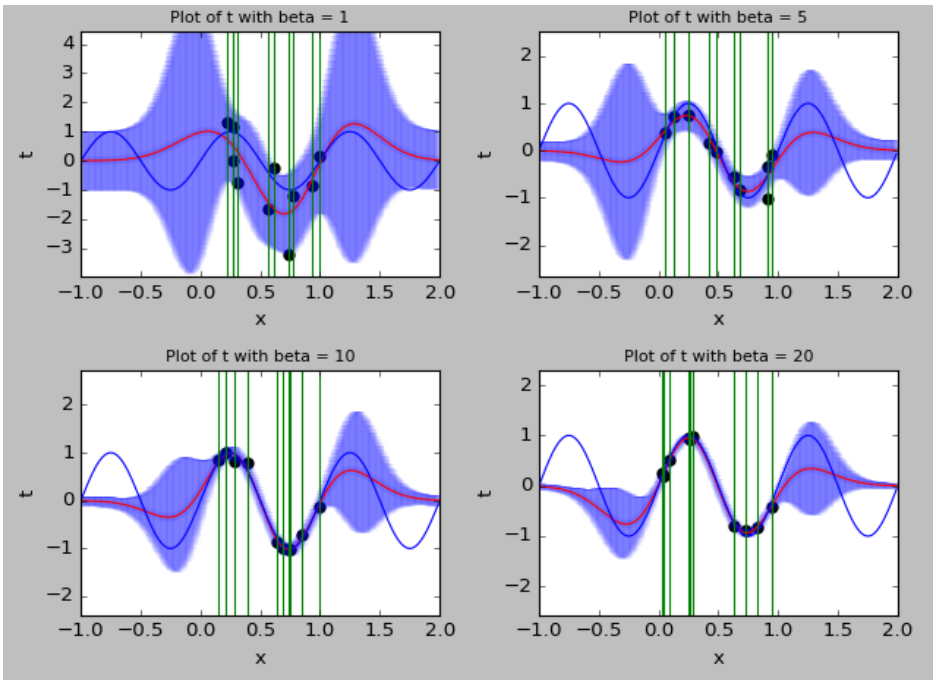
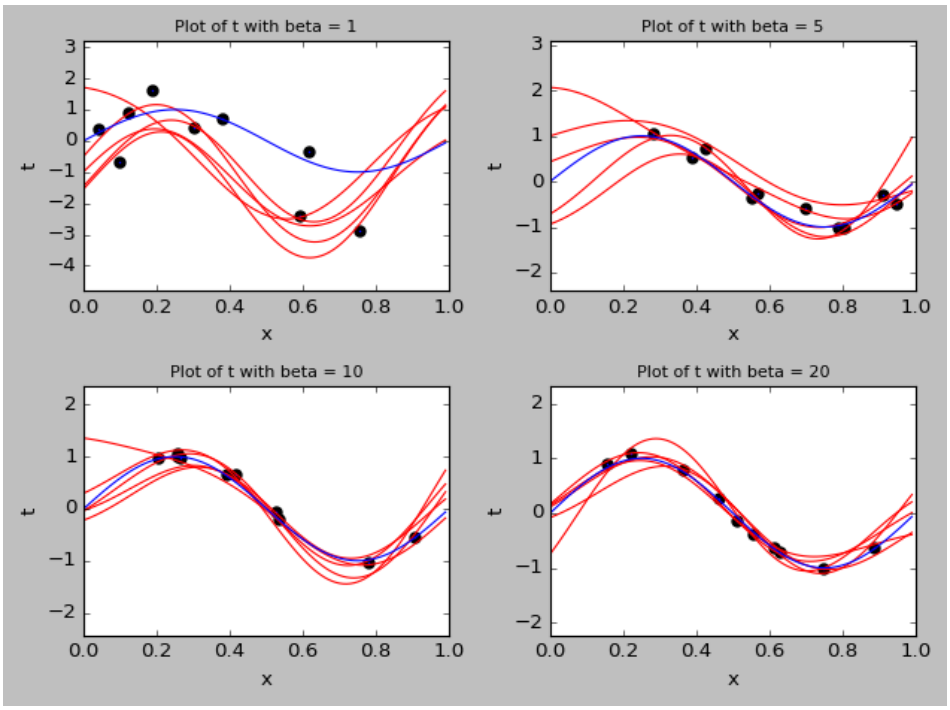


Figure 3.9 show the y function that is resulted from using w that is generated from posterior distribution. The posterior distribution used is the distribution that comes from Gaussian distribution for the prior and the likelihood which is multivariate Gaussian distribution. The result of the graph is not quite similar with the one in textbook because the basis function used is different. The textbook used the basis function with 9 Gaussian function while in our case, we used radial basis function in which the complexity change based on the number of data we have. Even though the basis function is different, but the figure generated still give the same conclusion as the one in the textbook which is that the increase of number of data points give better approximation for the y or in different words the covariance of the posterior distribution is lower as the number of data points increase.

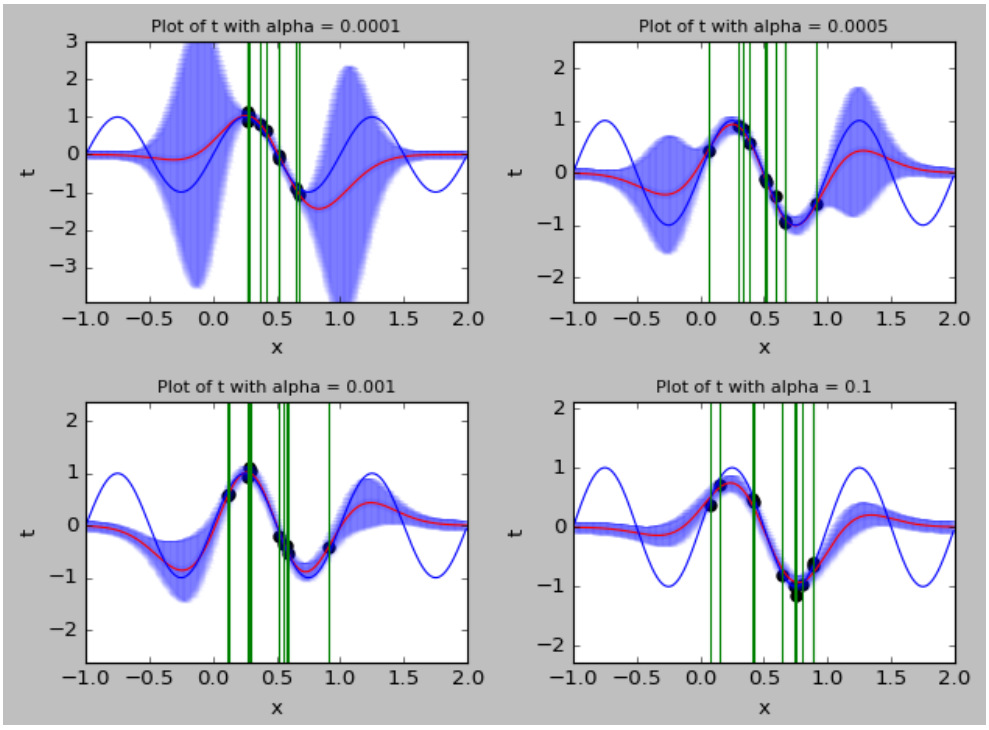
2. Varying Beta Parameter

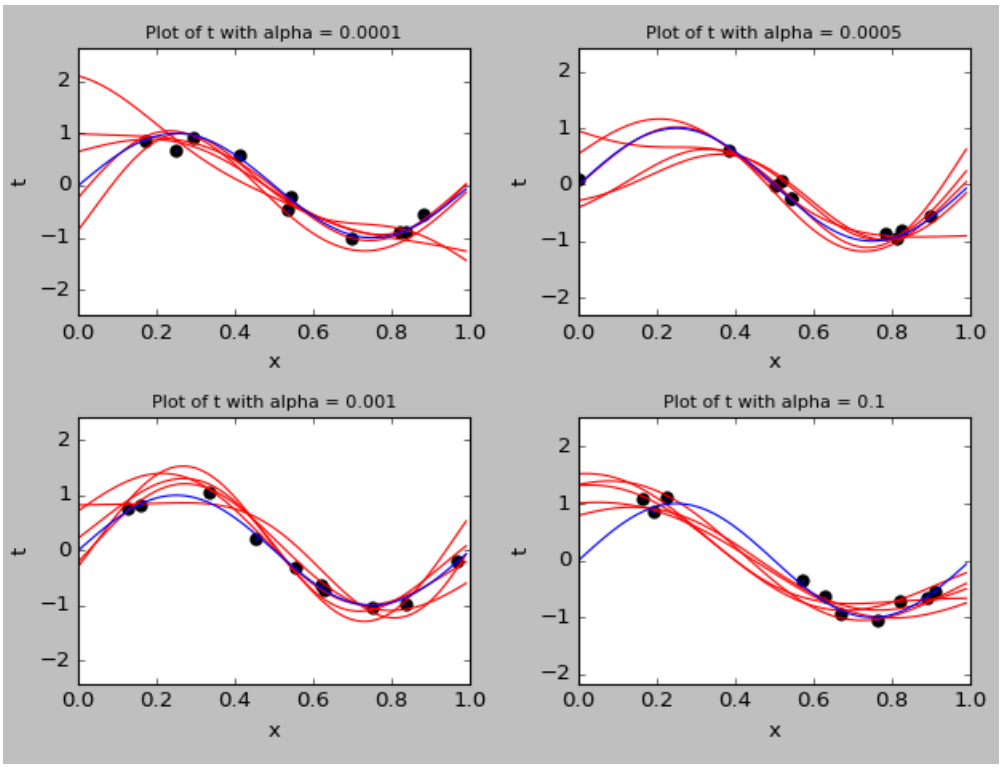




Based on the figure above, as the beta increase the predictive variance decrease and it approximate the true function bette

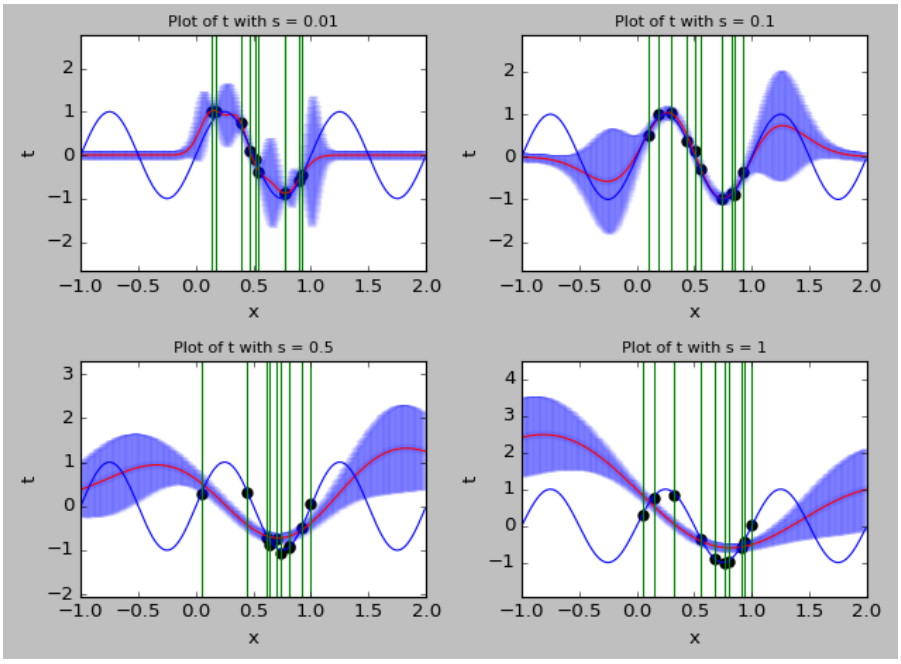
3.Varying the Alpha Parameter

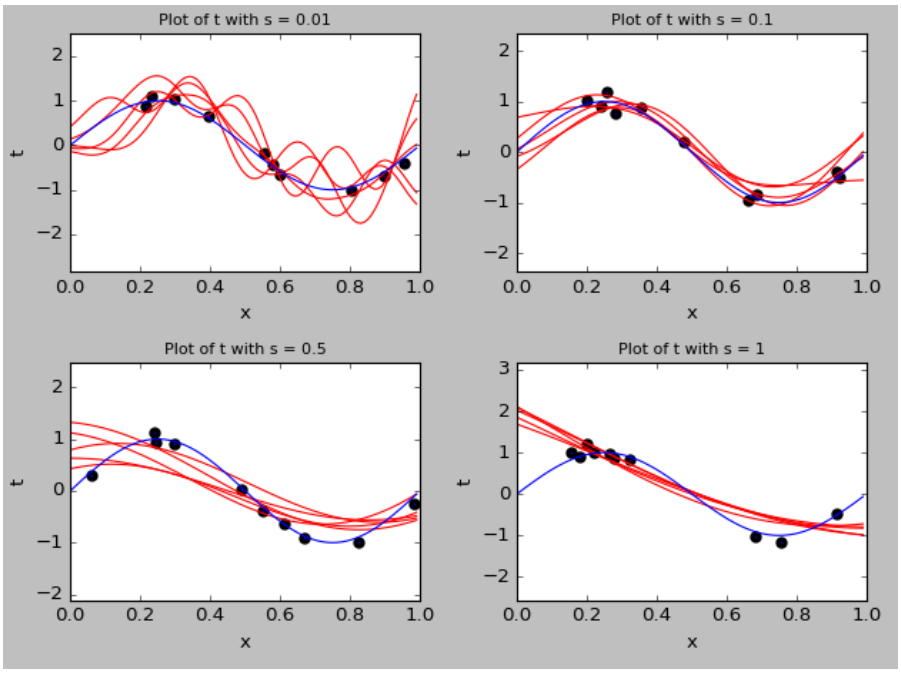




Based on the figured above, The predictive variance decrease as the alpha increase

4. Varying the s Parameter





Based on the figure above, As the s increase the predictive variance in the further apart from data increase