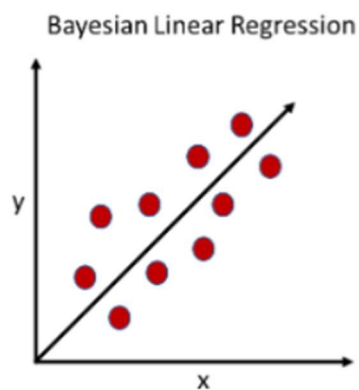# Bayesian Linear Regression

Bayesian Linear Regression is a statistical method that combines the principles of Bayesian inference with linear regression. Instead of estimating a single set of parameters (like in ordinary linear regression), Bayesian linear regression estimates a distribution over possible parameter values. This approach allows for incorporating prior beliefs about the parameters and updating these beliefs based on observed data.

In this, we start with a prior distribution over the model parameters. After observing the data, we update this prior using Bayes' theorem to obtain the posterior distribution. The posterior distribution combines the prior information and the likelihood of the observed data, providing a more comprehensive understanding of the parameter uncertainties.

Bayesian Linear Regression

The predictions produced by linear regression and Bayesian regression are comparable. Additionally, we can recover the entire range of explanatory solutions rather than simply extracting a prediction equation using Bayesian processing.