# Gaussian Bimodal Sample Generator

We first define the probability distribution function as follows:

So, the final probability density function become.

For creating sample from this probability distribution function.

* We will take x in range from with the bin size of 0.1
* Then we will find the probability of each x assuming the probability f(x) is distributed uniformly inside each bin and call it ‘data’.
* Then we use inbuilt function we will obtain the samples of size equal to batch size, we are using the ‘data’ as input probabilities for each value of x.
* After that we noticed that our results are giving the bin index instead of x when we sampled data from the distribution, so we scaled the results to obtain the x from the bin size.

For our specific implementation of stochastic ruler method, we defined a special function for the purpose.

* For the batch size we are using .
* Then we will reset seed to 1234 each time if mixing probability is new or percentage reduction is new.
* We are creating the number in batches so if all the values in batch is used then we will create a new batch using sampling algorithm specified above.