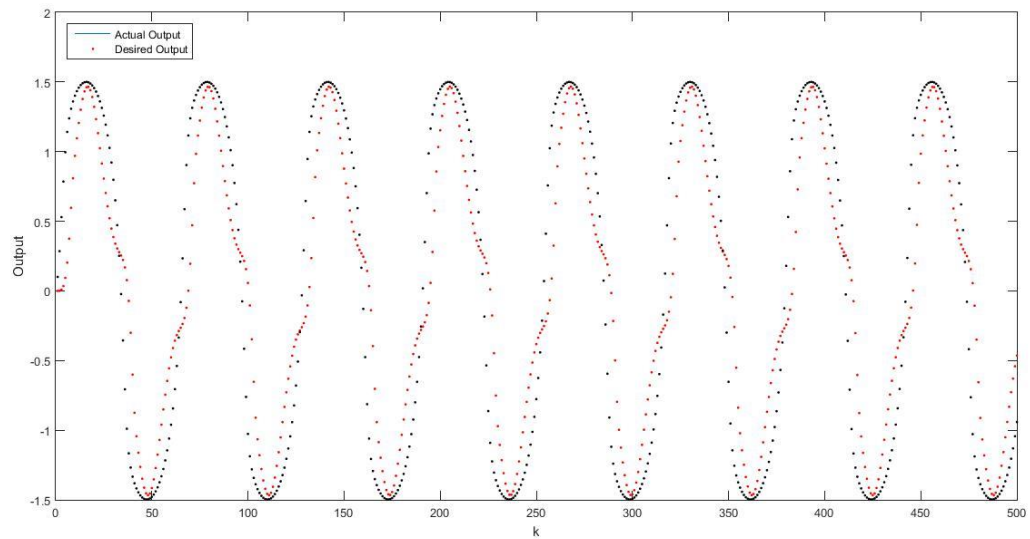
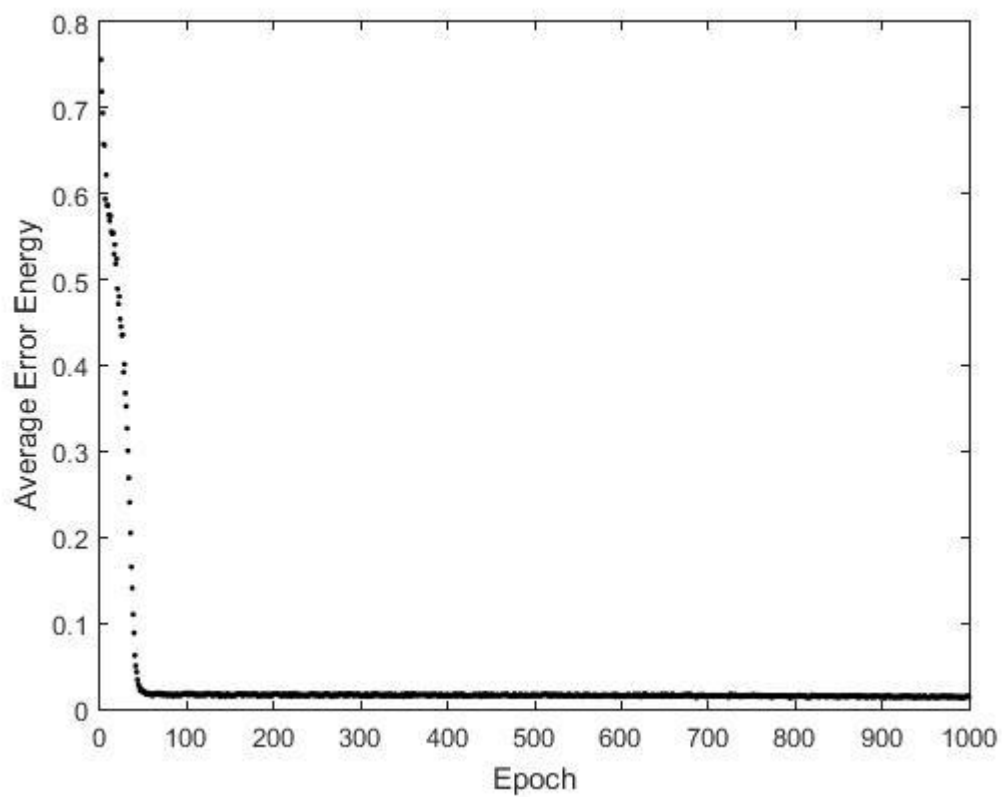


Realization of the Function using ANN...

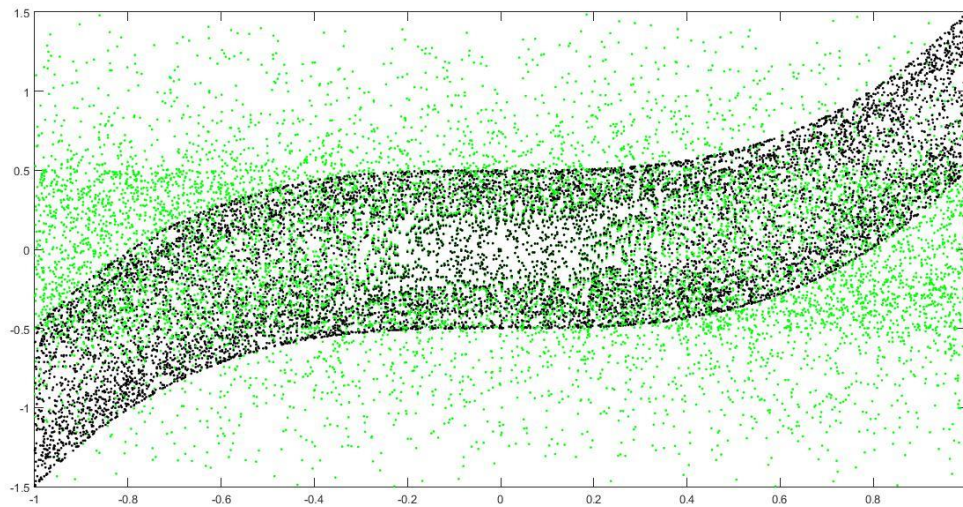
Output Result:-



Average Error during Training



Training Set



Steps:-

- 1) 10,000 training Examples were generated randomly using the equation (fig 3).
- 2) A Multilayer Neural Network was designed as 2-15-1 .
- 3) For Hidden Layer and Output Layer, a bias unit was added in the inputs.
- 4) Weights of all Neuron were initialized randomly.
- 5) Hyperbolic Tan was used as Sigmoid Function.
- 6) Gradient Decent was used to minimize the Error Function.
- 7) Learning Rate was taken as 0.01.
- 8) ANN was trained for 1,000 Epochs. For each epoch, randomly 1,000 training examples were chosen from the set of 10,000 examples.
- 9) Average Error Energy was plotted against Epochs (Fig 2).

For Evaluating the ANN,

500 discrete points were given to the network as $\sin(0.1 \cdot k)$. Second input was taken as Output of previous input.

Actual Output and Desired output was plotted as in fig 1.