Deerwalk Institute Of Technology

LabSheet#2

Sagar Giri
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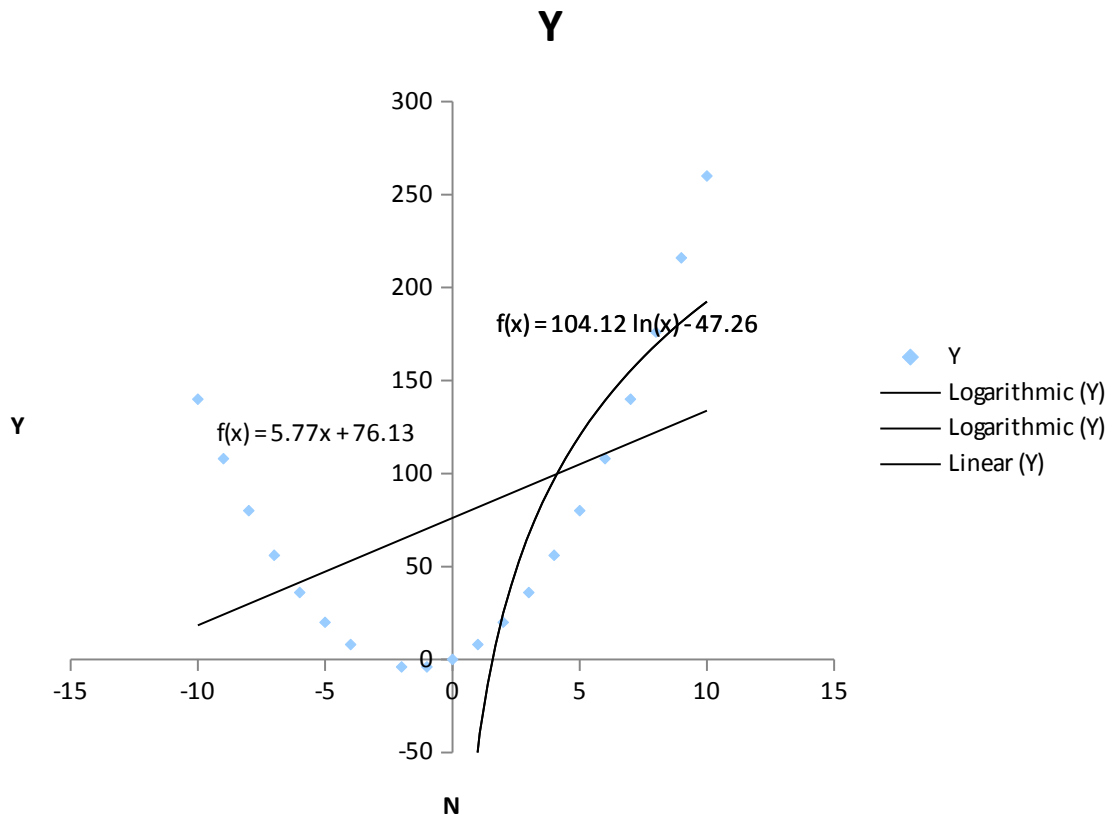
Submitted To: Sarbin Sayami

a) Create a function of your own whose time complexity should be at least O (n^2). Plot the graph for different values of n. (at least 15 plots). Find a generalized equation of those 15 plots (Generalization). Finally, the time complexity of generalized equation should be linear i.e. O (n) or (n log n).

Solution: Let the function be $2n^2+6n$ which is a function of time complexity O (n^2).



From the graph, the generalized equation is y = 5.7708x + 76.134.
So, the time complexity of the generalized equation of $y = 2x^2+6x$ is O (n).

b) Formalize a descriptive statement for the following equation.

$$P(n) = 1 - (1 - P(1))(1-\Theta)^{n-1}$$

In $P(n) = 1 - (1 - P(1))(1-\Theta)^{n-1}$, Θ is the learning rate. The number of iterations required for training the neural network is directly proportional to the value of learning rate. Depending on the problem being solved, the learning rate is determined.