The variables *y* and *x* are related to each other according to the following equation for $\mathbf{0 \leq x \leq 2}$.

$$y = ax + be^{x}$$

You are provided with **data.txt** file where each line contains a value of *x* and the corresponding value of *y*.

i. Compute the values of *a* & *b* so that the corresponding curve best fit the data provided in the data.txt file. **(13)**

ii. Plot the provided data points as well as the computed curve **in a single plot with different colors**. **(7)**

$e^{x} : z$

$\ln z = x$

$y = a \ln z + bz$

$y = ax + be^{x}$

$\ln y = \ln a + \ln x + \ln b + \ln e^{x}$

$\Rightarrow \frac{\ln y}{x} = \ln a + \frac{\ln x}{x} + \ln b + x$

$\Rightarrow Y = \ln a + X + \ln b + x$

$\Rightarrow Y = A + B + X + x$

$\text{so, } \Sigma (y_i - A - B - X_i - x_i)$