

Exponential Model

Given n data points, find the parameters C and b , for the exponential equation

$$y = C \cdot 10^{bx}$$

so that the data points come as close as possible to the graph of the equation.

If there are more than 2 data points we will use the least squares method to find the parameters C and b , causing this model to be the “best fit” rather than an “exact fit”.

Method:

1. Find the coefficients of a line that models the modified data set $(x, \log_{10}y)$.
 2. The coefficients of the line found in part 1 are $\log_{10}C$ and b .
 3. Calculate the value of C using $C = 10^{\log_{10}(C)}$.
 4. Write the exponential model $y = C \cdot 10^{bx}$ with the values you found.
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Power Law Model

Given n data points, find the parameters C and b , for the power law equation

$$y = C \cdot x^b$$

so that the data points come as close as possible to the graph of the equation.

If there are more than 2 data points we will use the least squares method to find the parameters C and b , causing this model to be the “best fit” rather than an “exact fit”.

Method:

1. Find the coefficients of a line that models the modified data set $(\log_{10}x, \log_{10}y)$.
 2. The coefficients of the line found in part 1 are $\log_{10}C$ and b .
 3. Calculate the value of C using $C = 10^{\log_{10}(C)}$.
 4. Write the power law model $y = C \cdot x^b$ with the values you found.
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