

Answer on Question #63021, Programming & Computer Science / Other

Explain why the plot of the function n^c is a straight line with slope c on a log-log scale.

Answer:

Given a power law equation $y = an^c$, taking the logarithm of the equation (with any base) yields:

$$\log y = c \log n + \log a$$

Setting $X = \log n$ and $Y = \log y$, which corresponds to using a log-log graph, yields the equation of the line:

$$Y = mX + b$$

where $m = c$ is the slope of the line (gradient) and $b = \log a$ is the intercept on the ($\log y$)-axis.