

Answer on Question #64923-Physics-Other

Consider the function $y = x^n$ (for $n = -2$). Take the natural logarithm of both sides and plot $\ln(y)$ vs. $\ln(x)$ on the graph below. Explain or show how to obtain “ n ” from the graph. (Hint: Can you fit the graph below to a straight line?) (use $x=1, 2, 3, 4, 5, 6$)

Solution

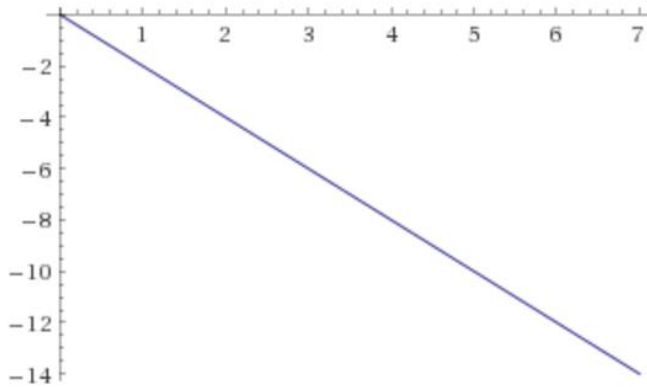
$$y = x^n.$$

$$\ln y = \ln x^n = n \ln x$$

For $n = -2$:

$$\ln y = -2 \ln x$$

It is a straight line.



We can obtain “ n ” from the graph as the slope of the line:

$$n = \frac{-4 - (-2)}{2 - 1} = -2.$$

Answer provided by <https://www.AssignmentExpert.com>