Answer on Question#52457 - Physics - Electric Circuits

In an experiment to determine the relationship between the current I through a piece of tungsten wire and the potential difference V across it, the theoretical relationship used was $I = kV^n$ where k and n are constants which may be obtained from a straight line graph of the form $y = mx + c$, the symbols having their usual meaning. The corresponding linear equation for this experiment is.....??

Solution:

To get the equation of the form $y = mx + c$ we should take the log of both sides of equation $I = kV^n$:

$$\log I = n \log V + \log k$$

In this case $y = \log I$, $m = n$, $x = \log V$ and $c = \log k$.

Answer: $\log I = n \log V + \log k$.