The variables x and y satisfy the equation $y = 4^{2x-a}$, where a is an integer. As shown in the diagram, the graph of $\ln y$ against x is a straight line passing through the point $(0, -20.8)$, where the second coordinate is given correct to 3 significant figures.

(a) Show that the gradient of the straight line is $\ln 16$. [2]

....

....

....

....

....

....

....

(b) Determine the value of a. [2]

....

....

....

....

....

....

....