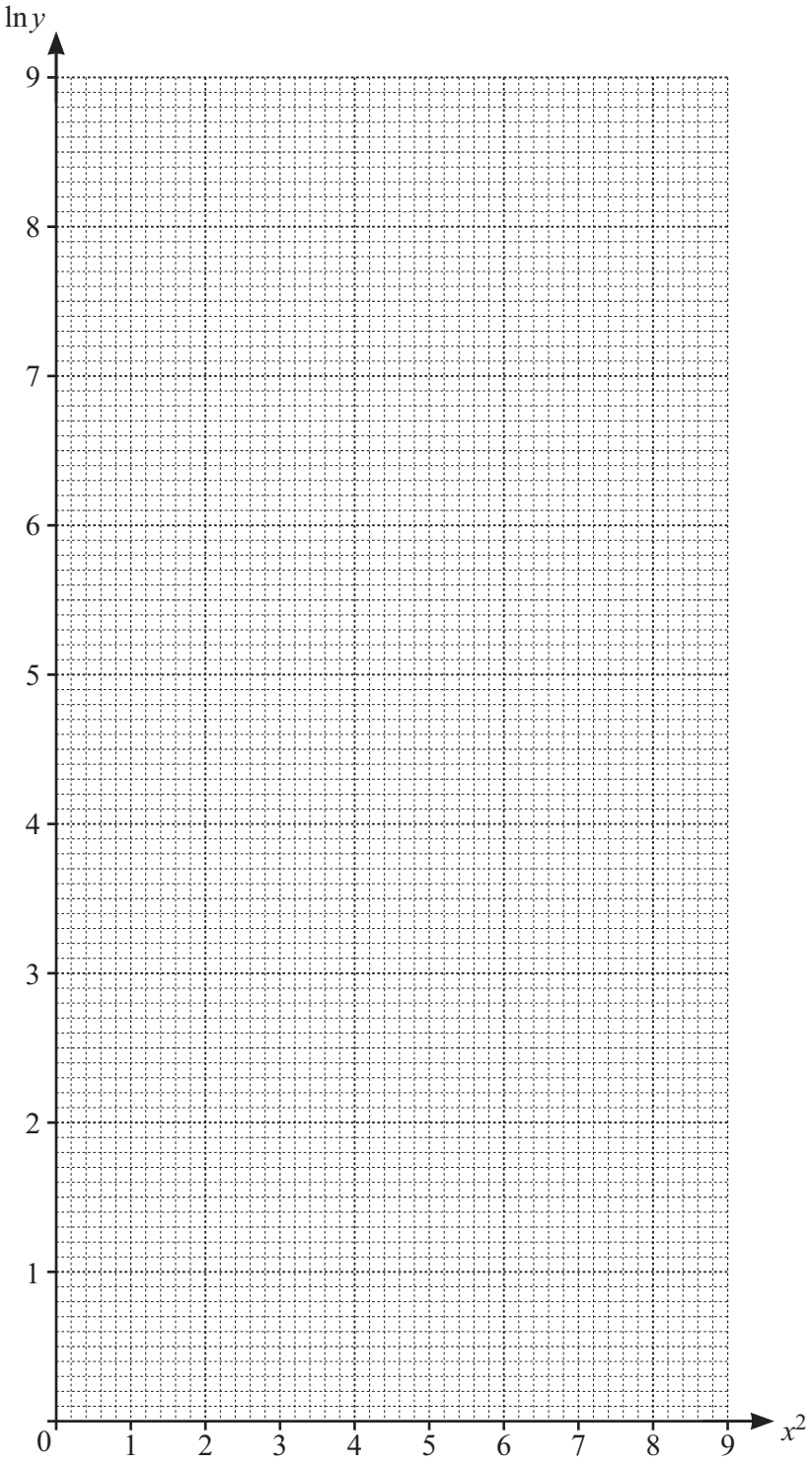
6 The table shows the variables x and y which are related by the equation $y = Ab^{x^2}$, where A and b are constants.

x	1	1.5	2	2.5	3
y	14	33.3	112	532.8	3584

(a) Use the data to draw a straight line graph of $\ln y$ against x^2. [2]



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(b) Use your graph to estimate the values of A and b. Give your answers correct to 1 significant figure. [5]

(c) Use your graph to estimate the value of x when $y = 200$. Give your answer correct to 2 significant figures. [2]

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7 **(a)** Given that $y = x^3 \ln x$, find $\frac{\mathrm{d}y}{\mathrm{d}x}$. [2]

(b) Hence find $\int_1^2 3x^2 \ln x \, \mathrm{d}x$, giving your answer in the form $\ln a + b$, where a is an integer and b is a rational number. [4]

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