

(a) Use the trapezium rule with three intervals to show that the value of $\int_1^4 \ln x \, dx$ is approximately $\ln 12$. [4]

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(b) Use a graph of $y = \ln x$ to show that $\ln 12$ is an under-estimate of the true value of $\int_1^4 \ln x \, dx$. [2]

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