

- (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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