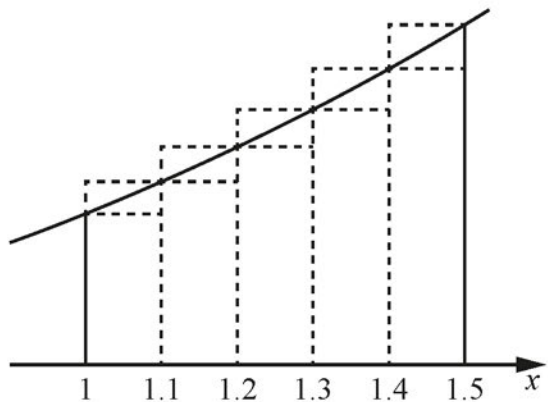


- 6 Alex is investigating the area, A , under the graph of $y = x^2$ between $x = 1$ and $x = 1.5$. They draw the graph, together with rectangles of width $\delta x = 0.1$, and varying heights y .



- (a) Use the rectangles in the diagram to show that lower and upper bounds for the area A are 0.73 and 0.855 respectively. [1]
- (b) Alex finds lower and upper bounds for the area A , using widths δx of decreasing size. The results are shown in the table. Where relevant, values are given correct to 3 significant figures.

Width δx	0.1	0.05	0.025	0.0125
Lower bound for area A	0.73	0.761	0.776	0.784
Upper bound for area A	0.855	0.823	0.807	0.799

Use Alex's results to estimate the value of A correct to 2 significant figures. Give a brief justification for your estimate. [2]

- (c) Write down an expression, in terms of y and δx , for the exact value of the area A . [2]