

Figure 3

Figure 3 shows a sketch of the curve with equation $y = 2^{x^2} - x$

The finite region R , shown shaded in Figure 3, is bounded by the curve, the line with equation $x = -0.5$, the x -axis and the line with equation $x = 1.5$

- (a) Use the trapezium rule with four strips of equal width to find an estimate for the area of R . Show your working and give your answer to two decimal places.

(4)

A copy of Figure 3, called Diagram 1, is drawn below.

- (b) Explain, with the aid of Diagram 1, whether your answer in part (a) is an underestimate or overestimate of the true value for the area of R .

(1)

Using your answer to part (a) and showing your working,

- (c) estimate the value of $\int_{-0.5}^{1.5} (2^{x^2+1} + 2x) dx$

(3)

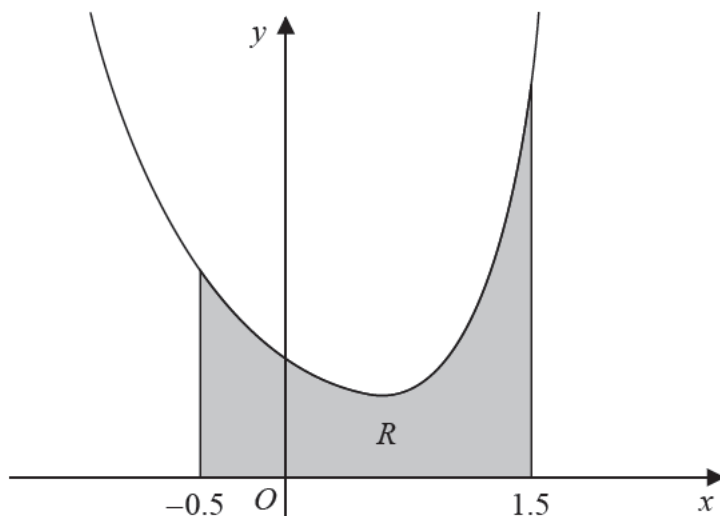


Diagram 1