

**Trapezium Rule (From OCR 4722)****Q1, (Jun 2006, Q9i,ii)**

- (i) Sketch the curve  $y = \left(\frac{1}{2}\right)^x$ , and state the coordinates of any point where the curve crosses an axis. [3]
- (ii) Use the trapezium rule, with 4 strips of width 0.5, to estimate the area of the region bounded by the curve  $y = \left(\frac{1}{2}\right)^x$ , the axes, and the line  $x = 2$ . [4]
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**Q2, (Jan 2007, Q5b)**

Use the trapezium rule, with two strips of width 3, to find an approximate value for

$$\int_3^9 \log_{10} x \, dx,$$

giving your answer correct to 3 significant figures. [4]

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**Q3, (Jan 2008, Q2)**

Use the trapezium rule, with 3 strips each of width 2, to estimate the value of

$$\int_1^7 \sqrt{x^2 + 3} \, dx. \quad [4]$$


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**Q4, (Jun 2009, Q9)**

- (i) Sketch the graph of  $y = 4k^x$ , where  $k$  is a constant such that  $k > 1$ . State the coordinates of any points of intersection with the axes. [2]
- (ii) The point  $P$  on the curve  $y = 4k^x$  has its  $y$ -coordinate equal to  $20k^2$ . Show that the  $x$ -coordinate of  $P$  may be written as  $2 + \log_k 5$ . [4]
- (iii) (a) Use the trapezium rule, with two strips each of width  $\frac{1}{2}$ , to find an expression for the approximate value of

$$\int_0^1 4k^x \, dx. \quad [3]$$

- (b) Given that this approximate value is equal to 16, find the value of  $k$ . [3]
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**Q5, (Jan 2010, Q4)**

- (i) Use the trapezium rule, with 4 strips each of width 0.5, to find an approximate value for

$$\int_3^5 \log_{10}(2+x) \, dx,$$

giving your answer correct to 3 significant figures. [4]

- (ii) Use your answer to part (i) to deduce an approximate value for  $\int_3^5 \log_{10} \sqrt{2+x} \, dx$ , showing your method clearly. [2]
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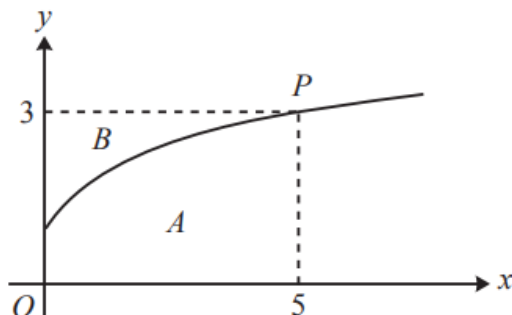
**Q6, (Jun 2013, Q1)**

Use the trapezium rule, with 3 strips each of width 2, to estimate the value of

$$\int_5^{11} \frac{8}{x} dx. \quad [4]$$


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**Q7, (Jun 2014, Q9i,ii)**



The diagram shows part of the curve  $y = -3 + 2\sqrt{x+4}$ . The point  $P(5, 3)$  lies on the curve. Region  $A$  is bounded by the curve, the  $x$ -axis, the  $y$ -axis and the line  $x = 5$ . Region  $B$  is bounded by the curve, the  $y$ -axis and the line  $y = 3$ .

- (i) Use the trapezium rule, with 2 strips each of width 2.5, to find an approximate value for the area of region  $A$ , giving your answer correct to 3 significant figures. [3]
  - (ii) Use your answer to part (i) to deduce an approximate value for the area of region  $B$ . [2]
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**Q8, (Jun 2015, Q2)**

- (i) Use the trapezium rule, with 4 strips each of width 1.5, to estimate the value of

$$\int_4^{10} \sqrt{2x-1} dx,$$

giving your answer correct to 3 significant figures. [4]

- (ii) Explain how the trapezium rule could be used to obtain a more accurate estimate. [1]
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**Q9, (Jun 2016, Q8v)**

Use the trapezium rule, with 2 strips each of width 1.5, to find an estimate for  $\int_1^4 3^{x-2} dx$ . Give your answer correct to 3 significant figures. [3]

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