MATHSAURUS

AS Mathematics Exam Questions by Topic
Chapter 11a: Integration

These questions are taken from the Specimen Exam materials and the real 2018 papers for the new syllabus AS and A-level mathematics courses and arranged by chapter of the textbooks by Goldie et al (available here: `https://amzn.to/39umfr5` and `https://amzn.to/3hE8kBL`). There are a mixture of questions from OCR A, OCR B (MEI), Edexcel and AQA. Although the style of questions varies a little across the exam boards the content of the syllabus is almost identical so these are suitable for students preparing for any exam board.

Free problem sets for all other chapters, as well as video solutions, full past papers and other content for GCSE and A-level maths can be found at:

`https://mathsaurus.com/`

Edexcel AS 2018 Paper 1 Question 1:

1. Find

$$\int\left(\frac{2}{3}x^3 - 6\sqrt{x} + 1\right)\mathrm{d}x$$

giving your answer in its simplest form.

(4)

Edexcel AS Sample Paper 1 Question 5:

5. Given that

$$\mathrm{f}(x) = 2x + 3 + \frac{12}{x^2}, \quad x > 0$$

show that $\int_1^{2\sqrt{2}} \mathrm{f}(x)\mathrm{d}x = 16 + 3\sqrt{2}$

(5)

Edexcel Sample Paper 2 Question 9:

9. Given that A is constant and

$$\int_1^4 \left(3\sqrt{x} + A\right)\mathrm{d}x = 2A^2$$

show that there are exactly two possible values for A.

(5)

OCR A AS 2018 Paper 1 Question 4ii:

(ii) Find $\int(3-4\sqrt{x})\mathrm{d}x$. **[5]**

OCR B MEI 2018 Paper 2 Question 7:

7 Find $\int\left(4\sqrt{x}-\frac{6}{x^3}\right)\mathrm{d}x$. **[4]**

OCR B MEI AS 2018 Paper 2 Question 6:

6 Show that $\int_0^9(3+4\sqrt{x})\mathrm{d}x = 99$. **[4]**

OCR B MEI AS Sample Paper 2 Question 1:

1 Find $\int\left(x^2+\frac{1}{x^2}\right)\mathrm{d}x$. **[3]**
