

Pearson Edexcel

A Level Mathematics 9MA0

Unit Test

10 Integration – 1

Time allowed: 50 minutes

School:

Name:

Teacher:

Question	Points	Score
1	6	
2	8	
3	3	
4	5	
5	5	
6	6	
7	4	
8	4	
9	9	
Total:	50	



1.

$$f(x) = \frac{6}{x} + \frac{3}{x^2} - 7x^{\frac{5}{2}}$$

(a) Find $\int f(x) dx$. [3]

(b) Evaluate $\int_4^9 f(x) dx$, giving your answer in the form $m + n \ln(p)$, where m, n and p are rational numbers. [3]

Total: 6



2. Given that

$$\int_{\ln(2)}^{\ln(b)} \frac{e^{2x}}{e^{2x} - 1} dx = \ln(4)$$

[8]

find the value of b showing each step in your working.



3. Showing all steps, find

[3]

$$\int \cot(3x) \, dx$$



4. Find

[5]

$$\int \cos^2(6x) dx$$



5. Given that

$$\int_a^4 (10 - 2x) dx = \frac{211}{10}$$

[5]

find the value of a .



6. (a) Show that

[3]

$$\cos(7x) + \cos(3x) = 2 \cos(5x) \cos(2x)$$

by expanding $\cos(5x + 2x)$ and $\cos(5x - 2x)$ using the compound-angle formulae.

(b) Hence find

[3]

$$\int \cos(5x) \cos(2x) \, dx$$

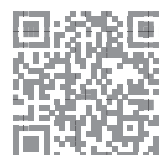
Total: 6



7. Find

$$\int_{\frac{\pi}{12}}^{\frac{\pi}{8}} \sin(4x)(1 - \cos(4x))^3 dx$$

[4]



8. Find

[4]

$$\int \sin^3(x) \, dx$$



9. (a) Show that

[4]

$$\tan^4(x) \equiv \sec^2(x) \tan^2(x) + 1 - \sec^2(x)$$

(b) Hence find the exact value of

[5]

$$\int_0^{\frac{\pi}{4}} \tan^4(x) \, dx$$

Total: 9

