

Solving Differential Equations

Difficulty: Easy

Question Paper 1

Level	A Level only
Subject	Maths - Pure
Exam Board	Edexcel
Topic	Integration
Sub-Topic	Solving Differential Equations
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: 32 minutes

Score: /27

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>76%	61%	52%	42%	33%	23%	<23%

Question 1

(a) Find $\int \frac{9x+6}{x} dx, x > 0.$ (2)

(b) Given that $y = 8$ at $x = 1$, solve the differential equation

$$\frac{dy}{dx} = \frac{(9x+6)y^{\frac{1}{3}}}{x}$$

giving your answer in the form $y^2 = g(x).$

(6)

(Total 8 marks)

Question 2

(a) Find $\int (4y+3)^{\frac{1}{2}} dy$ (2)

(b) Given that $y = 1.5$ at $x = -2$, solve the differential equation

$$\frac{dy}{dx} = \frac{\sqrt{4y+3}}{x^2}$$

giving your answer in the form $y = f(x)$.

(6)

(Total 8 marks)

Question 3

Given that $y = 2$ at $x = \frac{\pi}{4}$, solve the differential equation

$$\frac{dy}{dx} = \frac{3}{y \cos^2 x} \quad (5)$$

(Total 5 marks)

Question 4

Given that $y = 2$ at $x = \frac{\pi}{8}$, solve the differential equation

$$\frac{dy}{dx} = \frac{3y^2}{2\sin^2 2x}$$

giving your answer in the form $y = f(x)$.

(6)

(Total 6 marks)