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Paper Reference(s)

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Edexcel GCE

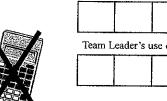
Core Mathematics C1 Advanced Subsidiary

Wednesday 10 January 2007 - Afternoon Time: 1 hour 30 minutes

Materials required for examination Mathematical Formulae (Green)

Items included with question papers

Calculators may NOT be used in this examination.



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Question Number	Leave Blank				
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Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature.

Check that you have the correct question paper.

You must write your answer for each question in the space following the question.

Information for Candidates

A booklet 'Mathematical Formulae and Statistical Tables' is provided.

Full marks may be obtained for answers to ALL questions.

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2).

There are 10 questions in this question paper. The total mark for this question paper is 75.

There are 20 pages in this question paper. Any blank pages are indicated.

Advice to Candidates

You must ensure that your answers to parts of questions are clearly labelled.

You must show sufficient working to make your methods clear to the Examiner. Answers without working may gain no credit.

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	Given	tha
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$$y = 4x^3 - 1 + 2x^{\frac{1}{2}}, \quad x > 0,$$

find $\frac{\mathrm{d}y}{\mathrm{d}x}$.

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(Total 4 marks)

Q1



3

3. Given that

$$f(x) = \frac{1}{x}, \quad x \neq 0,$$

(a) sketch the graph of y = f(x) + 3 and state the equations of the asymptotes.

(4)

(b) Find the coordinates of the point where y = f(x) + 3 crosses a coordinate axis.

(2)

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Question 3 continued	
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	Q3
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4.	Solve	the	simultaneous	equations
4.	SOLVE	шe	Simunaneous	equations

$$y = x - 2$$
.

y x 2,
$y^2 + x^2 = 10.$
(7)
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(Total 4 marks)



7.	The curve C has equation $y = f(x)$, $x \ne 0$, and the point $P(2, 1)$ lies on C.	Given that
	$f'(x) = 3x^2 - 6 - \frac{8}{x^2},$	

(a) find f(x).

(5)

(b)	Find an equation for the tangent to C at the point P , giving your answer in the	e form
	y = mx + c, where m and c are integers.	

(4)

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Question 7 continued	
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	27
(Total 9 marks)	



- **8.** The curve C has equation $y = 4x + 3x^{\frac{3}{2}} 2x^2$, x > 0.
 - (a) Find an expression for $\frac{dy}{dx}$.

(3)

(b) Show that the point P(4, 8) lies on C.

(1)

(c) Show that an equation of the normal to C at the point P is

$$3y = x + 20$$
.

(4)

The normal to C at P cuts the x-axis at the point Q.

(d) Find the length PQ, giving your answer in a simplified surd form.

.

(3)

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	Question 8 continued	Leave blank
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Q		Q8



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(b) Find th	ne total number of s	ticks Ann uses	in making th	ese 10 rows.	(3)
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Question 9 continued	blank
	Q9
(Total 12 marks)	



17

- 10. (a) On the same axes sketch the graphs of the curves with equations
 - (i) $y = x^2(x-2)$,

(3)

(ii)
$$y = x(6-x)$$
,

(3)

and indicate on your sketches the coordinates of all the points where the curves cross the x-axis.

(b) Use algebra to find the coordinates of the points where the graphs intersect.

(7)

Question 10 continued	
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	TOTAL FOR PAPER: 75 MARKS

