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Candidate surname					Other names								
Pearson Edexcel International Advanced Level					Centre Number					Candidate Number			
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Wednesday 9 October 2019													
Morning (Time: 1 hour 30 minutes)					Paper Reference WMA11/01								
Mathematics International Advanced Subsidiary/Advanced Level Pure Mathematics P1													
You must have: Mathematical Formulae and Statistical Tables (Lilac), calculator								Total Marks					

Candidates may use any calculator permitted by Pearson regulations. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions and ensure that your answers to parts of questions are clearly labelled.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You should show sufficient working to make your methods clear. Answers without working may not gain full credit.
- Inexact answers should be given to three significant figures unless otherwise stated.

Information

- A booklet 'Mathematical Formulae and Statistical Tables' is provided.
- There are 11 questions in this question paper. The total mark for this paper is 75.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.
- If you change your mind about an answer, cross it out and put your new answer and any working underneath.

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3. **In this question you must show all stages of your working.**
Solutions relying on calculator technology are not acceptable.

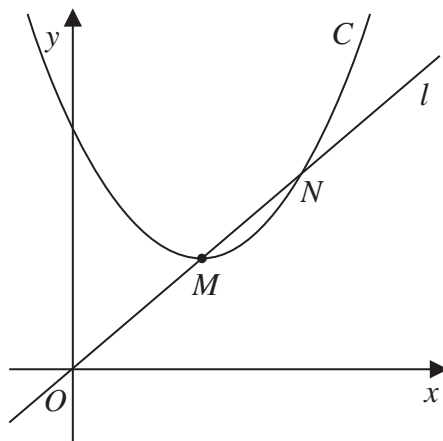


Figure 2

Figure 2 shows a sketch of the curve C with equation $y = x^2 - 5x + 13$

The point M is the minimum point of C .

The straight line l passes through the origin O and intersects C at the points M and N as shown.

Find, showing your working,

- (a) the coordinates of M , (3)

- (b) the coordinates of N . (5)

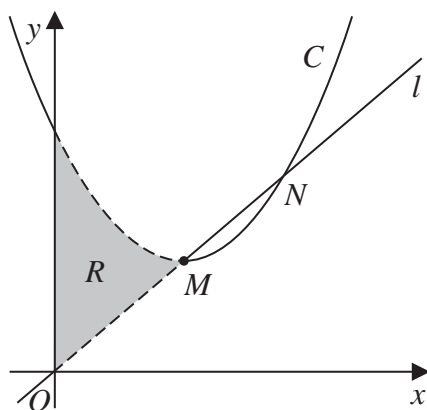


Figure 3

Figure 3 shows the curve C and the line l . The finite region R , shown shaded in Figure 3, is bounded by C , l and the y -axis.

- (c) Use inequalities to define the region R . (2)

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4. A parallelogram $ABCD$ has area 40 cm^2

Given that AB has length 10 cm , BC has length 6 cm and angle DAB is obtuse, find

(a) the size of angle DAB , in degrees, to 2 decimal places,

(3)

(b) the length of diagonal BD , in cm, to one decimal place.

(2)

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8. Solve, using algebra, the equation

$$x - 6x^{\frac{1}{2}} + 4 = 0$$

Fully simplify your answers, writing them in the form $a + b\sqrt{c}$, where a , b and c are integers to be found.

(5)

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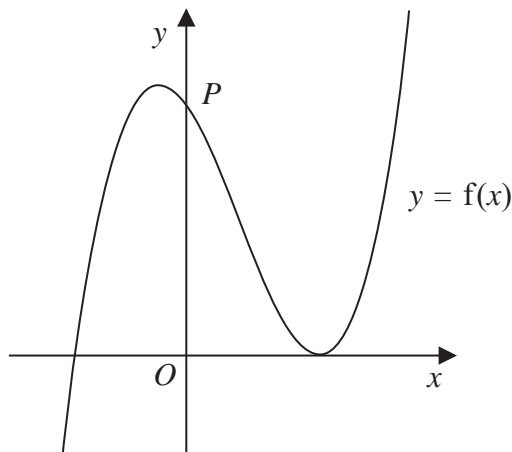


Figure 6

Figure 6 shows a sketch of part of the curve with equation $y = f(x)$, where

$$f(x) = (2x + 5)(x - 3)^2$$

- (a) Deduce the values of x for which $f(x) \leq 0$ (2)

The curve crosses the y -axis at the point P , as shown.

- (b) Expand $f(x)$ to the form $ax^3 + bx^2 + cx + d$ where a, b, c and d are integers to be found. (3)

- (c) Hence, or otherwise, find
- (i) the coordinates of P ,
 - (ii) the gradient of the curve at P . (2)

The curve with equation $y = f(x)$ is translated two units in the positive x direction to a curve with equation $y = g(x)$.

- (d) (i) Find $g(x)$, giving your answer in a simplified factorised form. (ii) Hence state the y intercept of the curve with equation $y = g(x)$. (3)

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