## Edexcel Maths C1

Topic Questions from Papers

Simultaneous Equations

**(6)** 

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<b>5.</b>	Solve	the	simultaneous	equations
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$$x-2y=1,$$

$$x^2 + y^2 = 29.$$

y = x - 2,	
y = x - 2, $y^2 + x^2 = 10$ .	
y 1 x = 10.	(7)

<b>6.</b>	(a)	Bv	elimir	nating	ν	from	the	equatio	ns
•	(4)		CIIIIII	1441115	,	110111	uic	equation	110

$$y = x - 4$$
,

$$2x^2 - xy = 8,$$

show that

$$x^2 + 4x - 8 = 0.$$

**(2)** 

(b) Hence, or otherwise, solve the simultaneous equations

$$y = x - 4$$
,

$$2x^2 - xy = 8,$$

giving your answers in the form  $a \pm b\sqrt{3}$ , where a and b are integers.

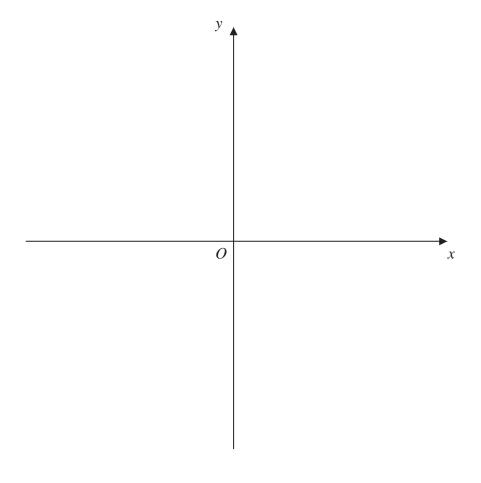
**(5)** 

- **6.** The curve C has equation  $y = \frac{3}{x}$  and the line l has equation y = 2x + 5.
  - (a) On the axes below, sketch the graphs of C and l, indicating clearly the coordinates of any intersections with the axes.

**(3)** 

(b) Find the coordinates of the points of intersection of C and l.

**(6)** 



estion 6 continued	



y - 3x + 2 = 0	
$y^2 - x - 6x^2 = 0$	(7)
	(7)

10. (a) On the axes below sketch the graphs of

(i) 
$$y = x(4-x)$$

(ii) 
$$y = x^2(7-x)$$

showing clearly the coordinates of the points where the curves cross the coordinate axes.

**(5)** 

(b) Show that the x-coordinates of the points of intersection of

$$y = x(4-x)$$
 and  $y = x^2(7-x)$ 

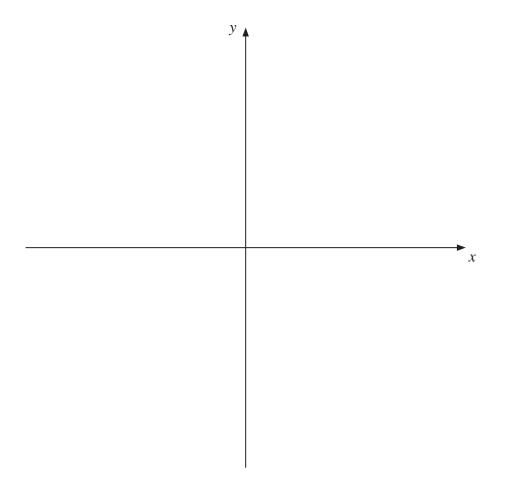
are given by the solutions to the equation  $x(x^2 - 8x + 4) = 0$ 

(3)

The point A lies on both of the curves and the x and y coordinates of A are both positive.

(c) Find the exact coordinates of A, leaving your answer in the form  $(p+q\sqrt{3}, r+s\sqrt{3})$ , where p, q, r and s are integers.

**(7)** 





x + y = 2	
$4y^2 - x^2 = 11$	
4y - x = 11	(7)

**6.** 

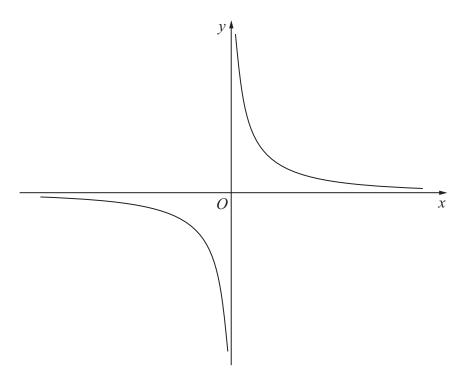


Figure 1

Figure 1 shows a sketch of the curve with equation  $y = \frac{2}{x}$ ,  $x \neq 0$ 

The curve C has equation  $y = \frac{2}{x} - 5$ ,  $x \ne 0$ , and the line l has equation y = 4x + 2

(a) Sketch and clearly label the graphs of C and l on a single diagram.

On your diagram, show clearly the coordinates of the points where C and l cross the coordinate axes.

**(5)** 

(b) Write down the equations of the asymptotes of the curve C.

**(2)** 

(c) Find the coordinates of the points of intersection of  $y = \frac{2}{x} - 5$  and y = 4x + 2 (5)

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Question 6 continued	



11.

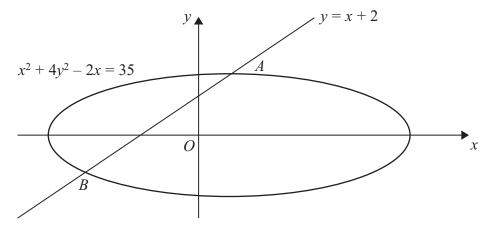


Figure 2

The line y = x + 2 meets the curve  $x^2 + 4y^2 - 2x = 35$  at the points A and B as shown in Figure 2.

(a) Find the coordinates of A and the coordinates of B.

**(6)** 

(b) Find the distance AB in the form  $r\sqrt{2}$  where r is a rational number.

(3	1
(2	"

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Question 11 continued	
	Q11
(Total 9 marks)	
TOTAL FOR PAPER: 75 MARKS	
END	

10. Given the simultaneous equations

$$2x + y = 1$$
$$x^2 - 4ky + 5k = 0$$

where k is a non zero constant,

(a) show that

$$x^2 + 8kx + k = 0$$

**(2)** 

Given that  $x^2 + 8kx + k = 0$  has equal roots,

(b) find the value of k.

**(3)** 

(c) For this value of k, find the solution of the simultaneous equations.

**(3)** 

estion 10 continued	



## **Core Mathematics C1**

## Mensuration

Surface area of sphere =  $4\pi r^2$ 

Area of curved surface of cone =  $\pi r \times \text{slant height}$ 

## Arithmetic series

$$u_n = a + (n-1)d$$

$$S_n = \frac{1}{2}n(a+l) = \frac{1}{2}n[2a+(n-1)d]$$