18 The line with equation $2y = x + 1$ intersects the curve with equation
$3y^2 + 7y + 16 = x^2 - x$ at the points A and B

Find the coordinates of A and the coordinates of B
Show clear algebraic working.

(.................... , ...) and (.................... , ...)

(Total for Question 18 is 5 marks)

P68729A02332

19 The straight line **L** has equation $x - y = 3$
The curve **C** has equation $3x^2 - y^2 + xy = 9$

L and **C** intersect at the points P and Q.

Find the coordinates of the midpoint of PQ.
Show clear algebraic working.

(......................... , ...)

(Total for Question 19 is 6 marks)

20 The equation of the line **L** is $y = 9 - x$

The equation of the curve **C** is $x^2 - 3xy + 2y^2 = 0$

L and **C** intersect at two points.

Find the coordinates of these two points.
Show clear algebraic working.

(......................... , ...) and (......................... , ...)

(Total for Question 20 is 5 marks)

21 The curve with equation $y = (10x - 3)(x + 1)$ and the line with equation $y - 6x = 0$ intersect at the points A and B.

Find the coordinates of the midpoint of AB.
Show your working clearly.

(.......................... , ...)

(Total for Question 21 is 6 marks)

Turn over ▶

21 Work out the coordinates of the points of intersection of

$$y - 2x = 1 \quad \text{and} \quad y^2 + xy = 7$$

Show clear algebraic working.

(......................... , ...)

(......................... , ...)

(Total for Question 21 is 5 marks)

22 The line with equation $y = x + 2$ intersects the curve with equation $x^2 + y^2 - 2y = 24$ at the points A and B.

Find the coordinates of A and B.
Show clear algebraic working.

($...........................$, $...........................$)

($...........................$, $...........................$)

(Total for Question 22 is 5 marks)

21 The line with equation $x + 2y = 5$ intersects the curve with equation $x^2 + 3y^2 = 13$ at the points A and B

Find the coordinates of A and the coordinates of B
Show clear algebraic working.

(........................ , ...)

(........................ , ...)

(Total for Question 21 is 5 marks)

Turn over ▶

22 The curve with equation $x^2 - x + y^2 = 10$ and the straight line with equation $x - y = -4$ intersect at the points A and B.

Work out the exact length of AB.

Show your working clearly and give your answer in the form $\dfrac{\sqrt{a}}{2}$ where a is an integer.

(Total for Question 22 is 6 marks)

22 The straight line **L** has equation $x + y = 5$

The curve **C** has equation $2x^2 + 3y^2 = 210$

Find the coordinates of the points where **L** and **C** intersect.
Show clear algebraic working.

(............................ , ...) (............................ , ...)

(Total for Question 22 is 5 marks)

23 The curve **C** has equation $y = x^2 - 8x - 9$
The straight line **L** has equation $y = k$ where k is an integer.

C and **L** intersect at the points A and B

The coordinates of point A are (p, k)
The coordinates of point B are (q, k)

Given that $p - q = 14$

find the value of k
Show clear algebraic working.

$k = $ ....

(Total for Question 23 is 5 marks)