IGCSE · Cambridge (CIE) · Maths

36 mins 8 questions

Exam Questions

Quadratic Graphs

Quadratic Graphs

Medium (3 questions)	/13
Hard (3 questions)	/13
Very Hard (2 questions)	/10
Total Marks	**/36**

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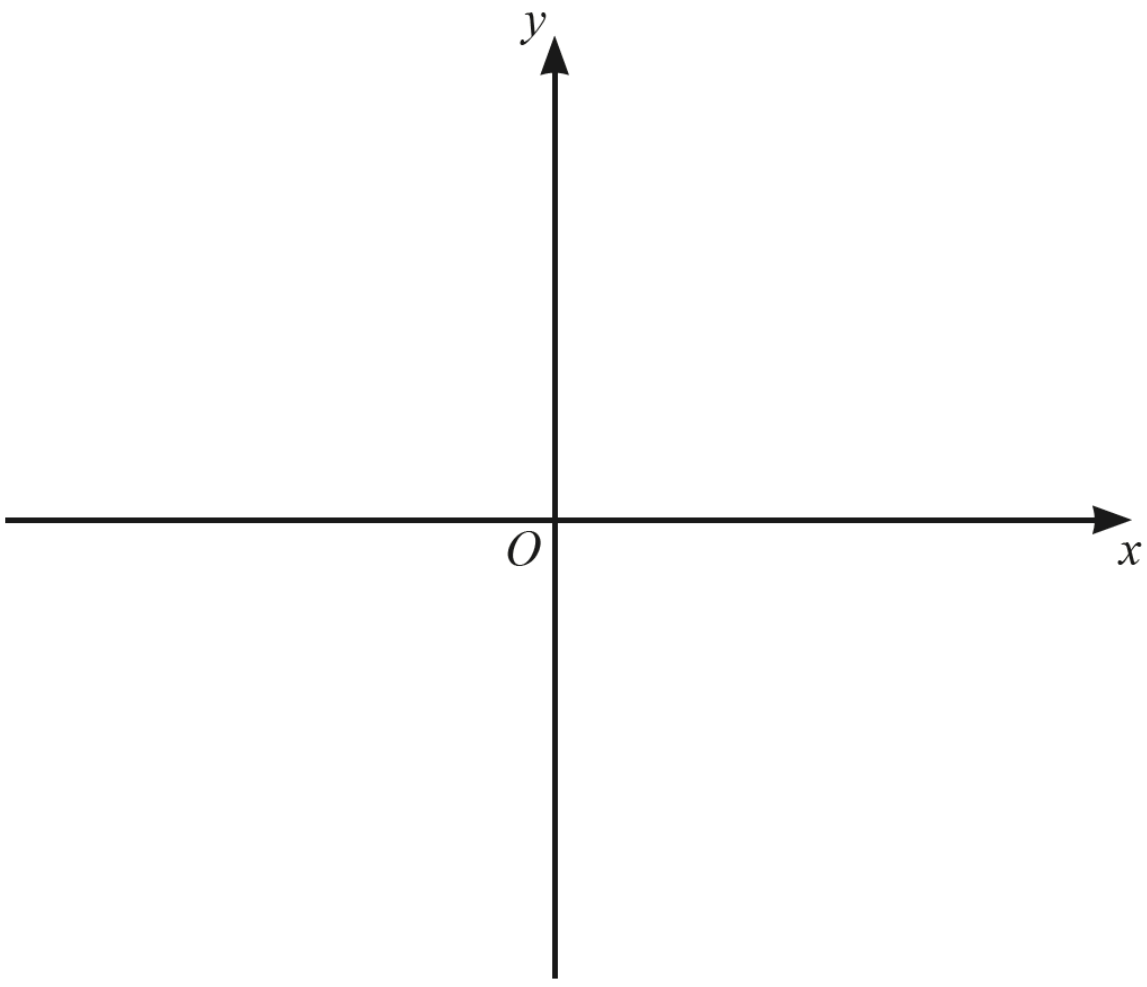
Medium Questions

1 (a) Write $x^2 + 10x + 14$ in the form $(x + a)^2 + b$.

(2 marks)

(b) Sketch the graph of $y = x^2 + 10x + 14$, indicating the coordinates of the turning point.



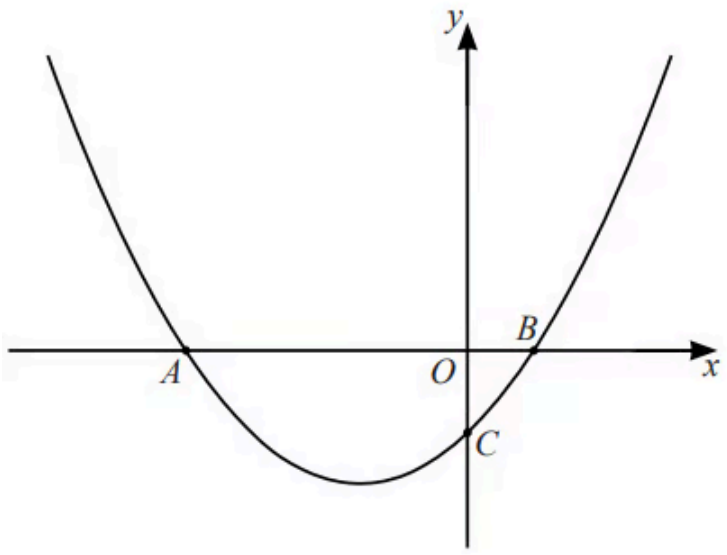
(3 marks)

2 Find the turning point of $y = x^2 + 4x - 3$ by completing the square.

(..... , ...)

(4 marks)

3



NOT TO SCALE

The diagram shows a sketch of the curve $y = x^2 + 3x - 4$.

Find the coordinates of the points *A*, *B* and *C*.

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

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

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

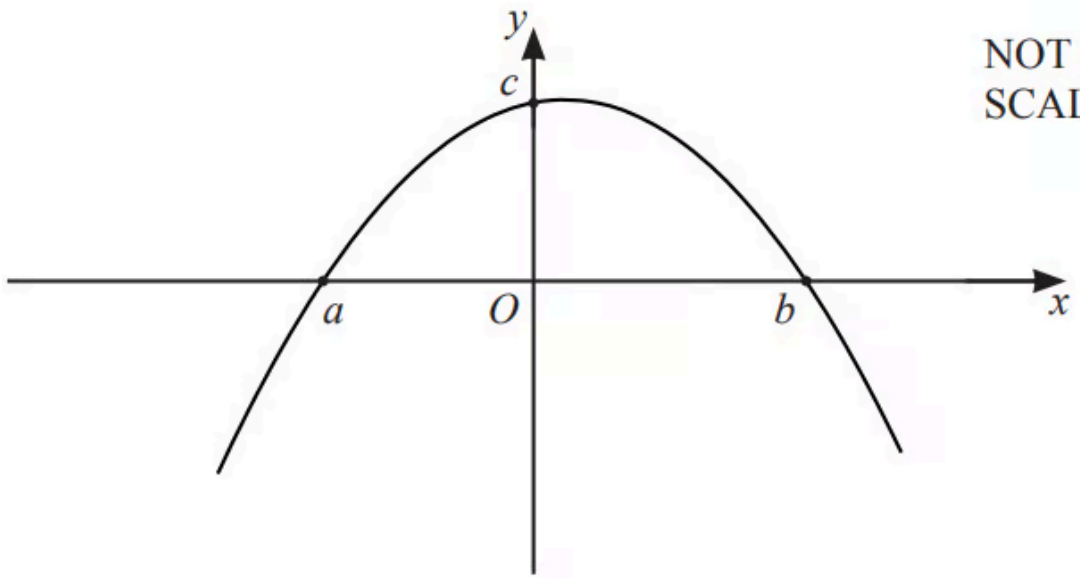
(4 marks)

Hard Questions

1 i) Factorise $24 + 5x - x^2$.

[2]

ii) The diagram shows a sketch of $y = 24 + 5x - x^2$.



Work out the values of a, b and c.

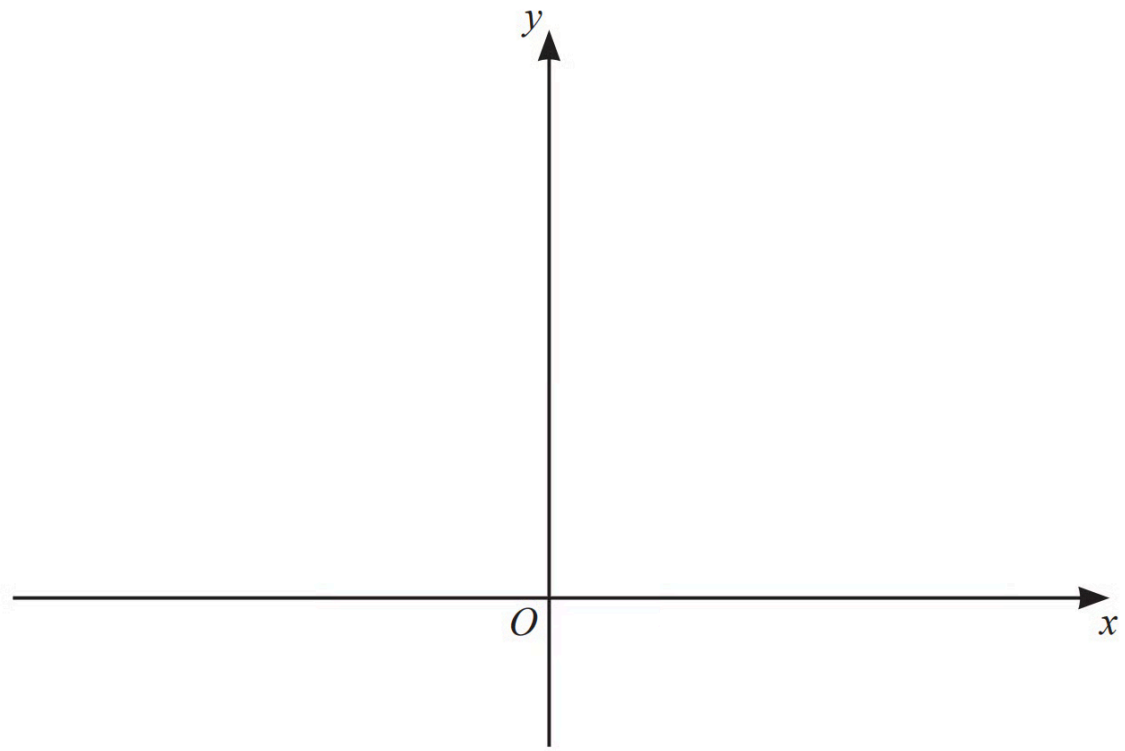
a = ...

b = ...

c = ... [3]

(5 marks)

2



On the diagram,

Sketch the graph of $y = (x - 1)^2$.

(2 marks)

3 (a) (i) Write $6x - 0.5x^2 - 7$ in the form $y = a(x - p)^2 + q$

(ii) Hence, write down the coordinates of the turning point on the curve with equation $y = 6x - 0.5x^2 - 7$

(4 marks)

(b) State the nature of this turning point.

(1 mark)

(c) State the equation of the axis of symmetry.

(1 mark)

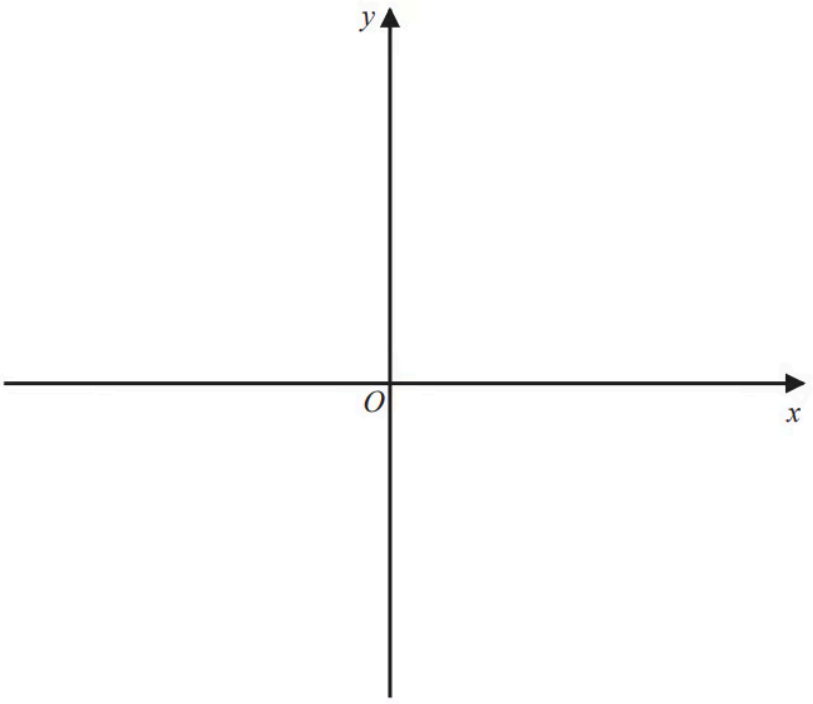
Very Hard Questions

1 The curve $\boldsymbol{C}$ has equation $y = 4(x - 1)^2 - a$ where $a > 4$

Using the axes below, sketch the curve $\boldsymbol{C}$.
On your sketch show clearly, in terms of a,

i) the coordinates of any points of intersection of $\boldsymbol{C}$ with the coordinate axes,

ii) the coordinates of the turning point.



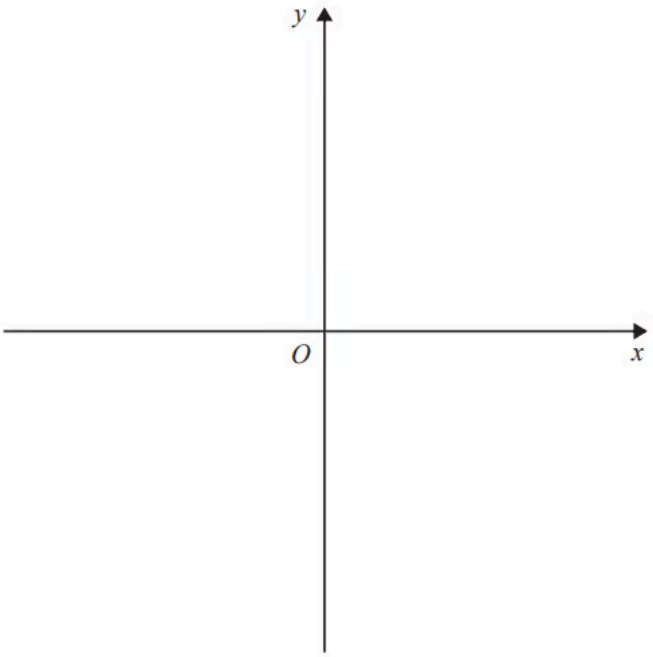
(4 marks)

2 The curve C has equation $y = x^2 - 6x + 4$

Using the axes below, sketch the curve C. On your sketch show clearly

i) the exact coordinates of any points of intersection of C with the coordinate axes,

ii) the coordinates of the turning point.



(6 marks)