Edexcel GCSE

Mathematics (Linear) – 1380

Paper 3 (Non-Calculator)

Quadratic Graphs

Past Paper Questions

Arranged by Topic

Materials required for examination	Items included with question papers
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser. Tracing paper may be used.	Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature.
Check that you have the correct question paper.
Answer ALL the questions. Write your answers in the spaces provided in this question paper.
You must NOT write on the formulae page.
Anything you write on the formulae page will gain NO credit.
If you need more space to complete your answer to any question, use additional answer sheets.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2).
There are 6 questions in this question paper. The total mark for this paper is 27.
There are 8 pages in this question paper. Any blank pages are indicated.
Calculators must not be used.

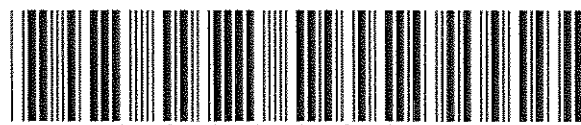## Advice to Candidates

Show all stages in any calculations.
Work steadily through the paper. Do not spend too long on one question.
If you cannot answer a question, leave it and attempt the next one.
Return at the end to those you have left out.

Turn over

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1. (a) Complete the table of values for $y = x^2 + x - 3$

x	-4	-3	-2	-1	0	1	2
y	9	3	-1	-3	-3	-1	3

(2)

$x = -3$ $y = (-3)^2 - 3 - 3 = 9 - 6 = 3$

$x = 0$ $y = 0^2 + 0 - 3 = -3$

$x = 1$ $y = 1^2 + 1 - 3 = -1$

(b) On the grid below, draw the graph of $y = x^2 + x - 3$ for values of x from -4 to 2

(2)
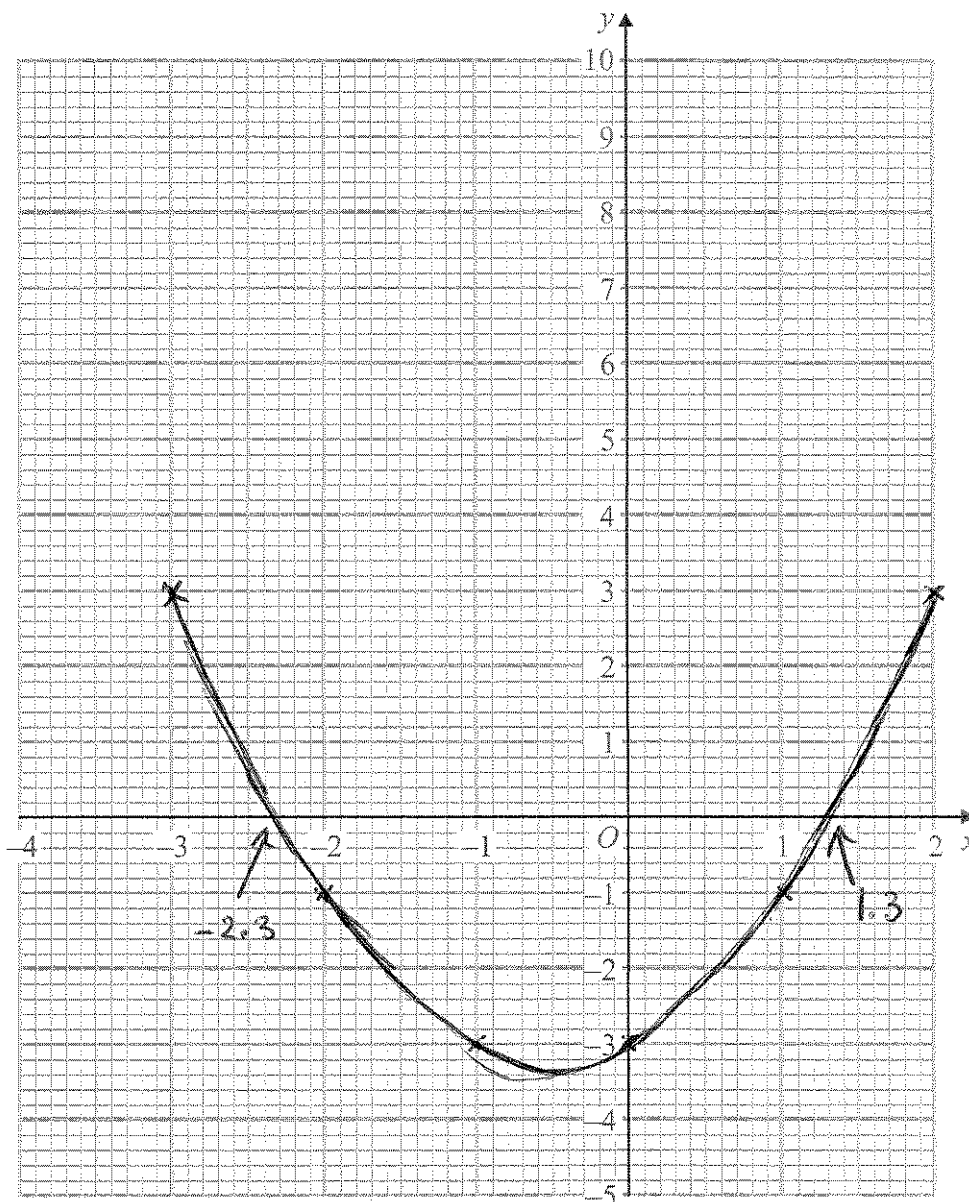
(c) Use your graph to find estimates for the solutions of $x^2 + x - 3 = 0$

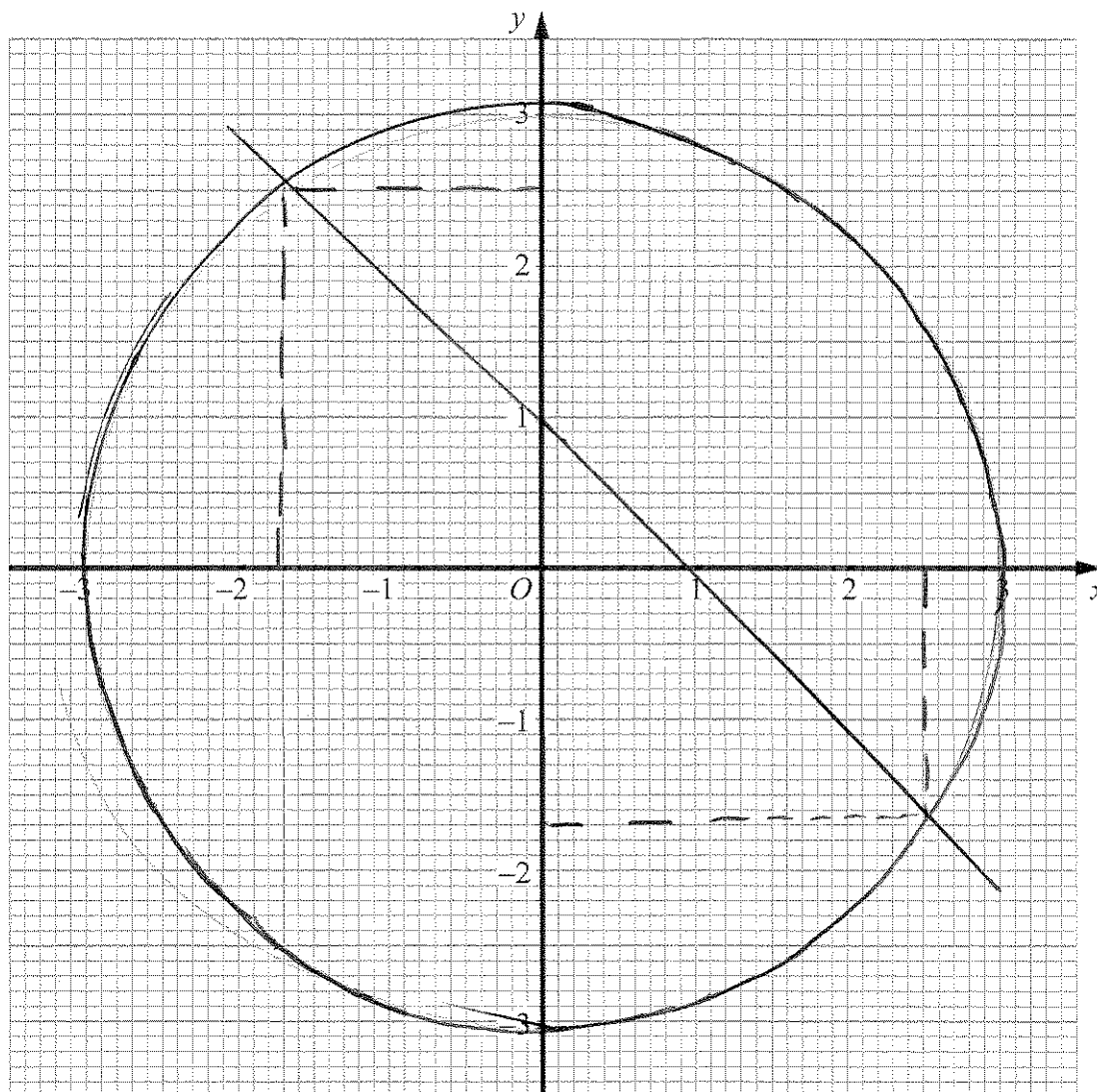where the curve crosses the X axis.

$x = \underline{\ +1 \cdot 3\ }$

$x = \underline{\ -2 \cdot 3\ }$

(1)

Q1

(Total 5 marks)

2. (a) Construct the graph of $x^2 + y^2 = 9$

(2)

(b) By drawing the line $x + y = 1$ on the grid, solve the equations $x^2 + y^2 = 9$
                                                                          $x + y = 1$

$x = $ ....2.5........ , $y = $ ......−1.7........

or $x = $ ......−1.7........ , $y = $ ......2.5........

(3)

(Total 5 marks)

3. (a) Complete the table of values for $y = x^2 - 4x + 2$

$x = 2$ $y = 2^2 - 4 \times 2 + 2$
$x = 4$ $y = 16 - 16 + 2$

x	-1	0	1	2	3	4	5
y	7	2	-1	-2	-1	2	7

(2)

(b) On the grid, draw the graph of $y = x^2 - 4x + 2$

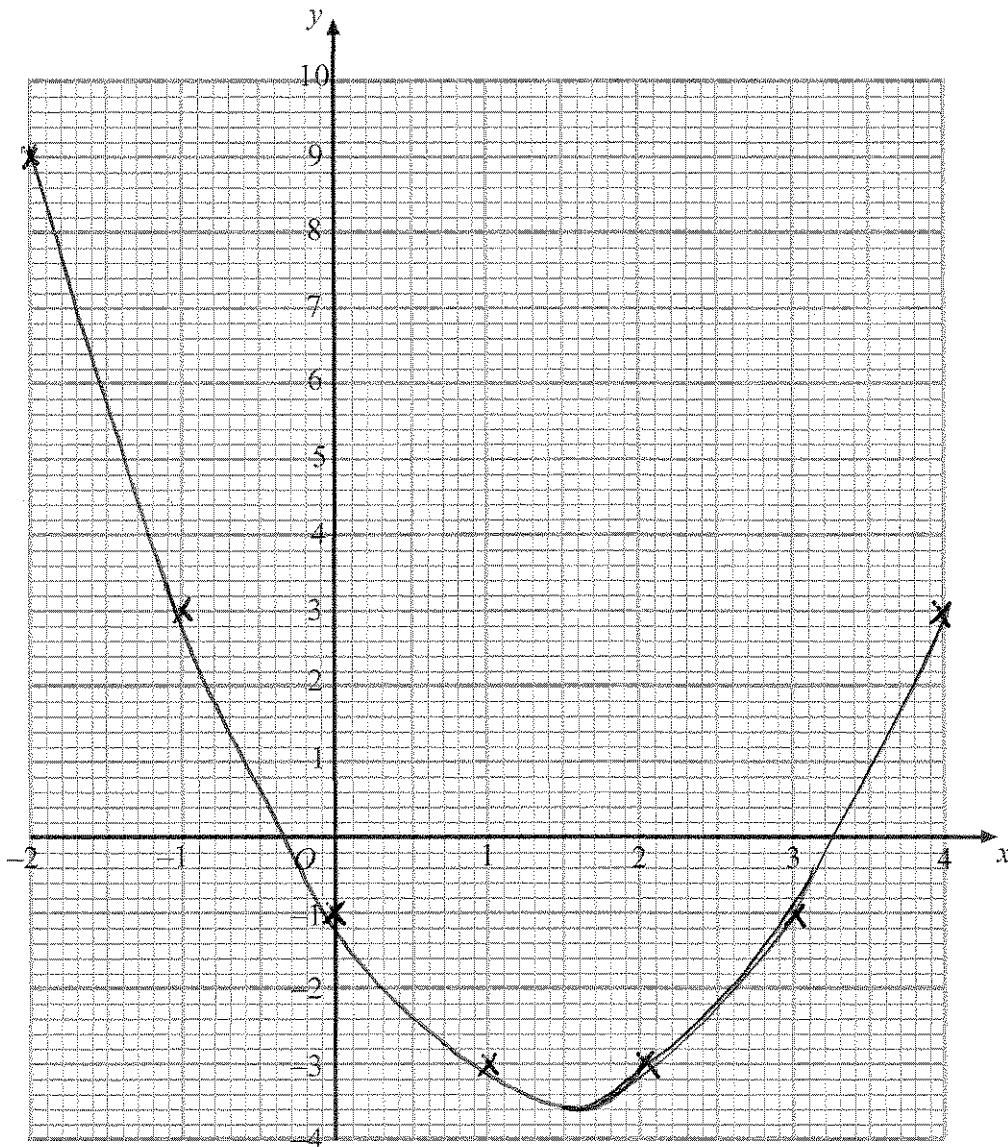$x = -1$ $y = (-1)^2 - 4(-1) + 2$
$= 1 + 4 + 2 = 7$
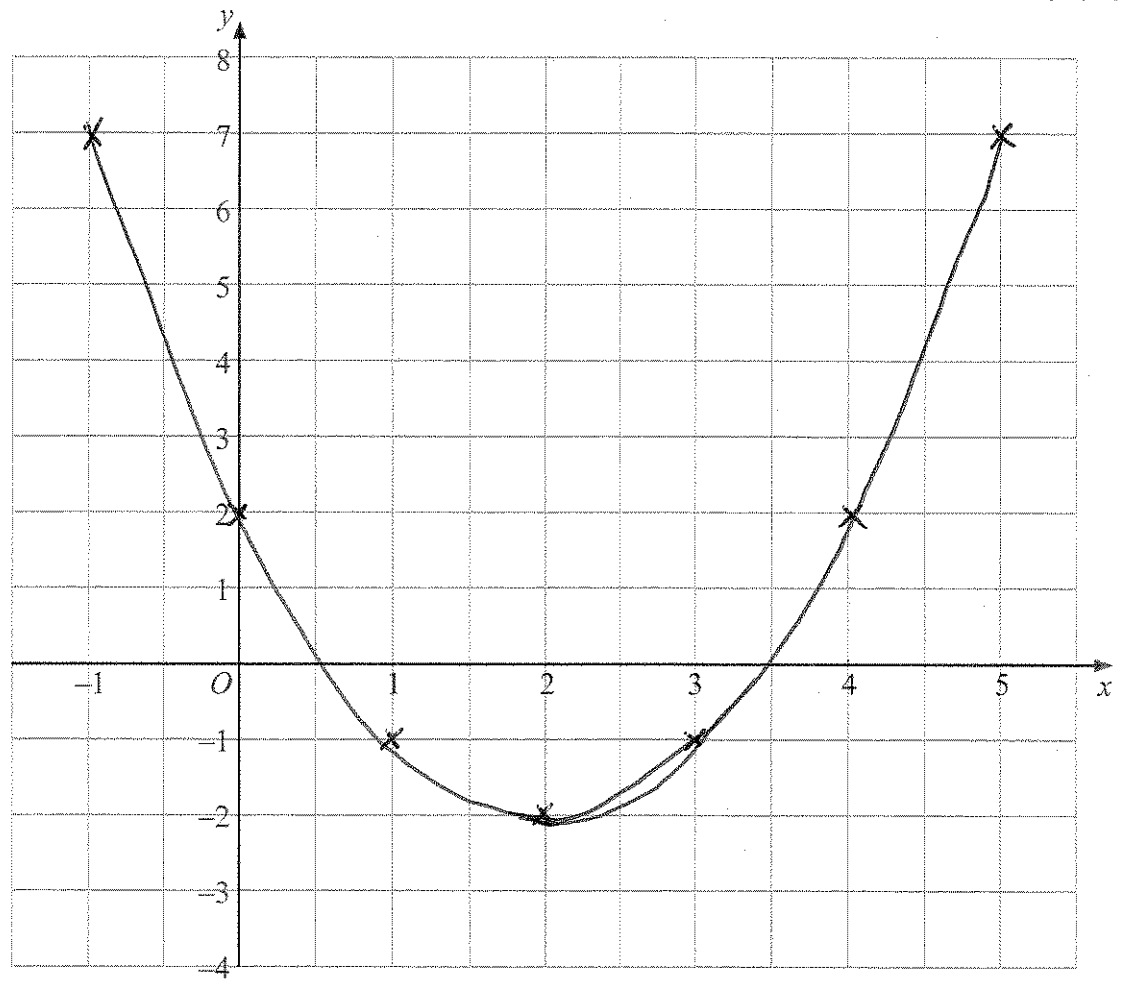
(2) Q3

(Total 4 marks)

4. (a) Complete the table of values for $y = x^2 - 3x - 1$

x	-2	-1	0	1	2	3	4
y	9	3	-1	-3	-3	-1	3

(2)

$x = -2$ $y = (-2)^2 - 3(-2) - 1 = 4 + 6 - 1 = 9$

$x = 2$ $y = 2^2 - 3(2) - 1 = 4 - 6 - 1 = -3$

$x = 4$ $y = 4^2 - 3(4) - 1 = 16 - 12 - 1 = 3$

(b) On the grid, draw the graph of $y = x^2 - 3x - 1$ for values of x from -2 to 4
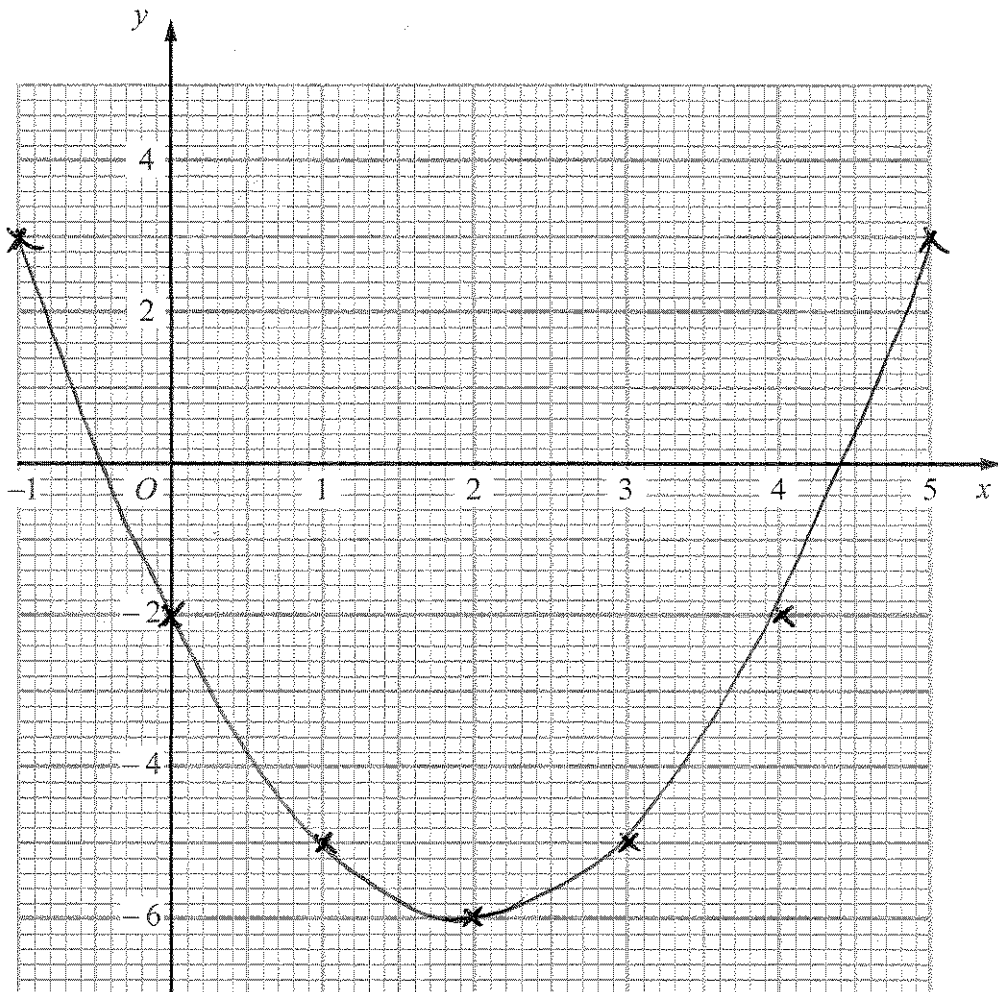

(2)   Q4

(Total 4 marks)

5. (a) Complete the table of values for $y = x^2 - 4x - 2$

x	−1	0	1	2	3	4	5
y	3	−2	−5	−6	−5	−2	3

$x = -1 \qquad y = (-1)^2 - 4(-1) - 2 = 1 + 4 - 2 = 3$

$x = 2 \qquad y = 2^2 - 4(2) - 2 = 4 - 8 - 2 = -6$

$x = 3 \qquad y = 3^2 - 4(3) - 2 = 9 - 12 - 2 = -5$

(2)

(b) On the grid, draw the graph of $y = x^2 - 4x - 2$

(2)

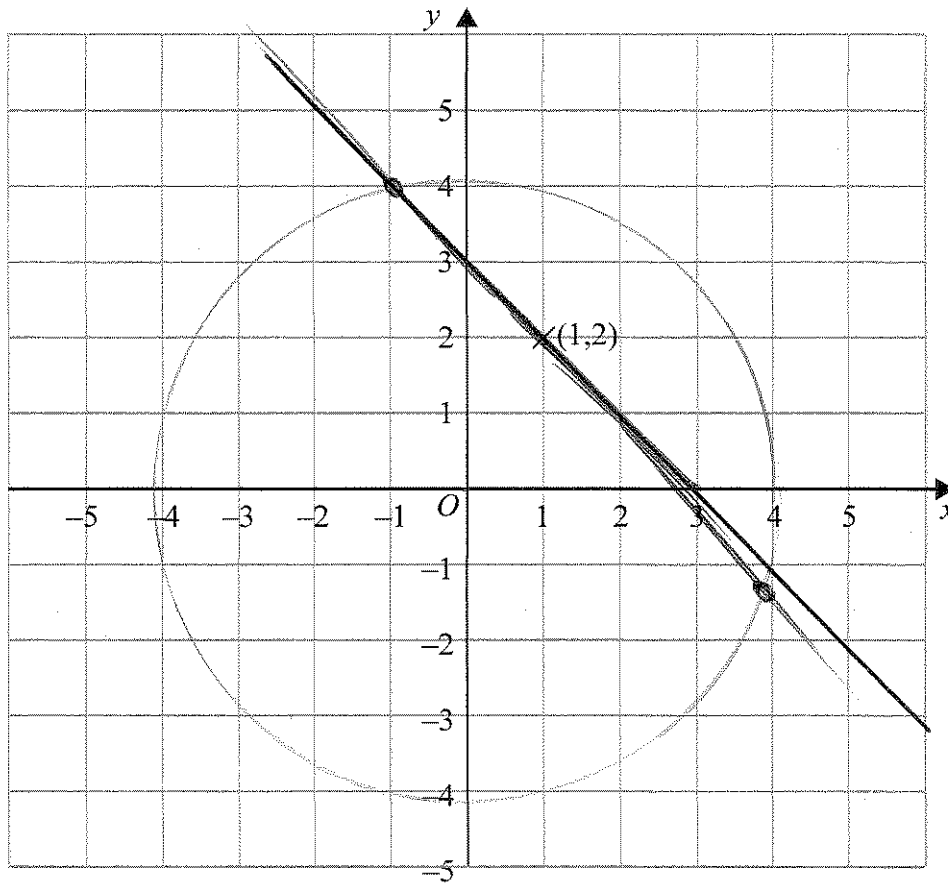(c) Use your graph to estimate the values of x when $y = -3$

$x =$ 4.4

$x =$ −0.5

(2)

(Total 6 marks)

6. Show that any straight line that passes through the point $(1, 2)$ must intersect the curve with equation $x^2 + y^2 = 16$ at two points.

$x + y = 3$ This is true for point $(1, 2)$
                                                    x y

(Total 3 marks)

TOTAL FOR PAPER: 27 MARKS

END