

1MA1 Higher themed papers: Quadratic graphs

Write your name here						
Surname	Other names					
Pearson Edexcel Level 1/Level 2 GCSE (9–1)	Centre Number <table border="1"><tr><td></td><td></td><td></td><td></td><td></td></tr></table>					
	Candidate Number <table border="1"><tr><td></td><td></td><td></td><td></td><td></td></tr></table>					
Mathematics Quadratic graphs						
	Paper Reference 1MA1					
You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.						
Total Marks						

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is **35**. There are **8** questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by all students in the June 2017–November 2019 examinations.
- 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.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

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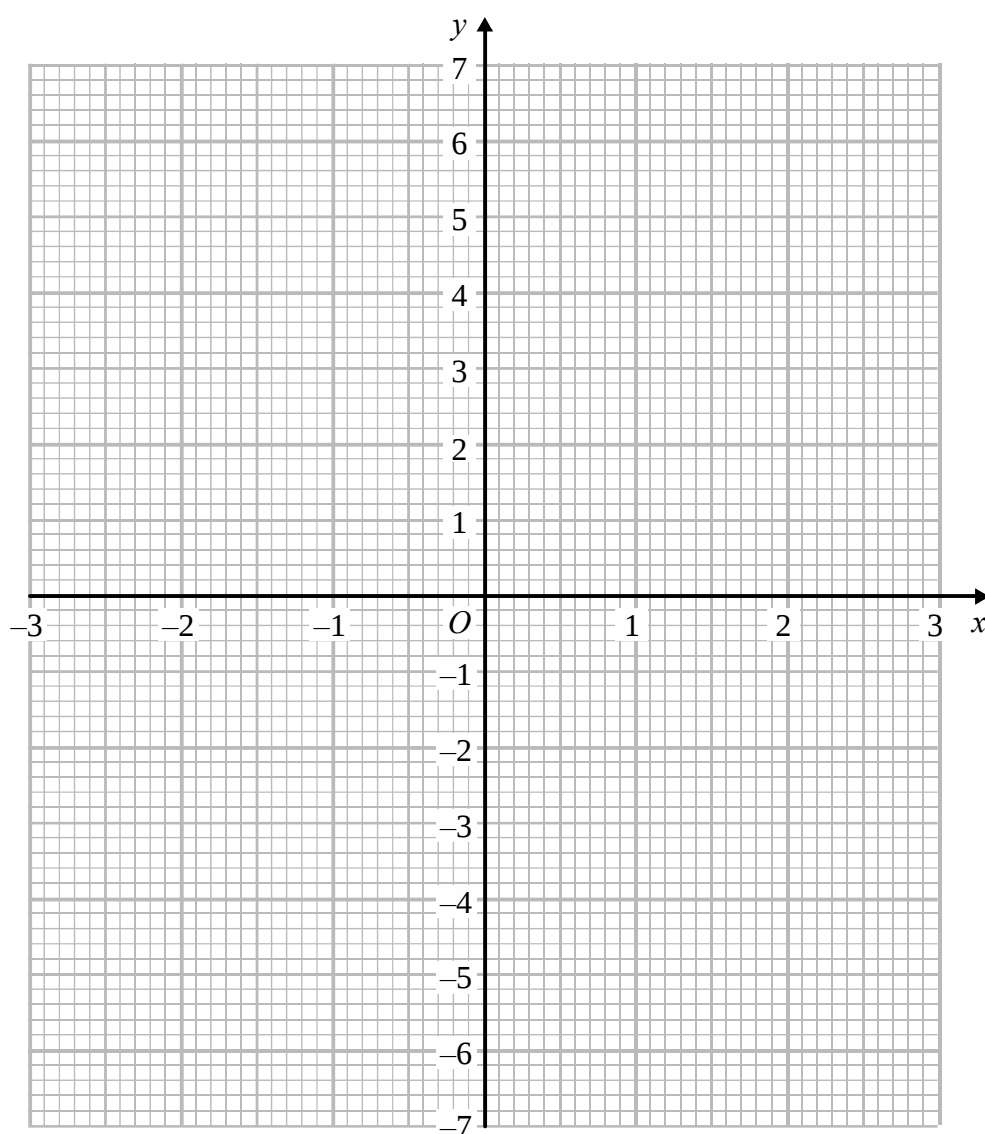
- 1 (a) Complete the table of values for $y = x^2 - x - 6$

x	-3	-2	-1	0	1	2	3
y	6			-6			

(2)

- (b) On the grid, draw the graph of $y = x^2 - x - 6$ for values of x from -3 to 3

(2)



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(c) Use your graph to find estimates of the solutions to the equation $x^2 - x - 6 = -2$

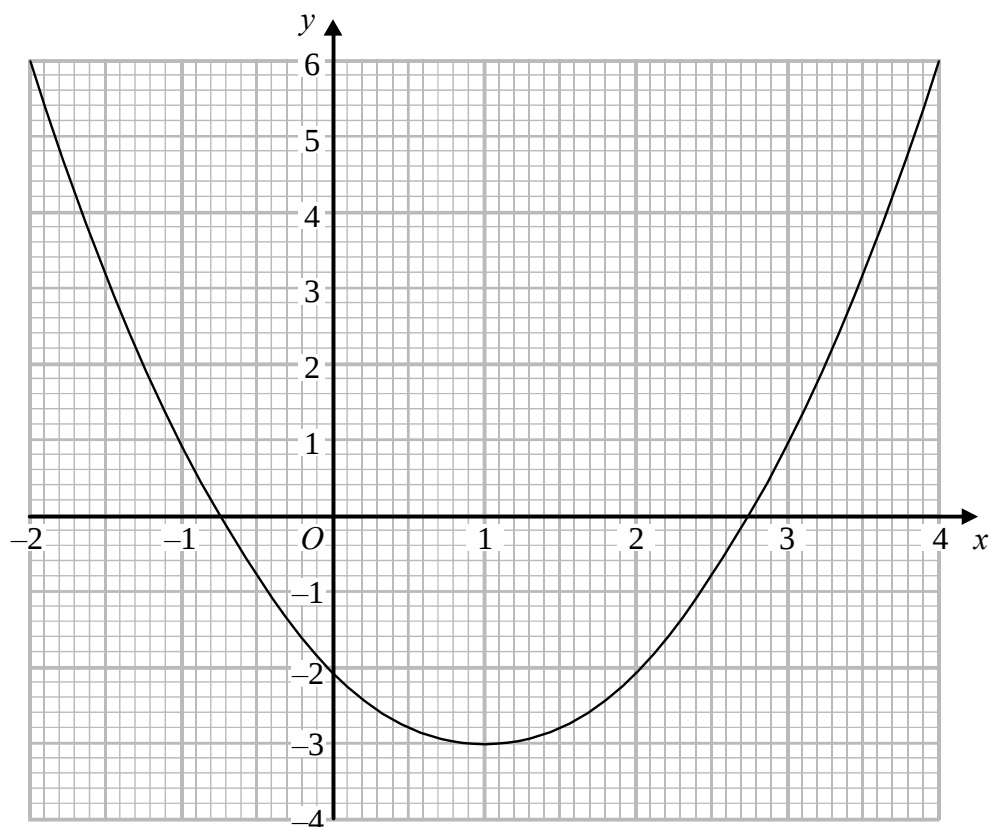
.....
(2)

(Total for Question 1 is 6 marks)

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2 The graph of $y = f(x)$ is drawn on the grid.



(a) Write down the coordinates of the turning point of the graph.

(..... ,)
(1)

(b) Write down estimates for the roots of $f(x) = 0$

.....
(1)

(c) Use the graph to find an estimate for $f(1.5)$

.....
(1)

(Total for Question 2 is 3 marks)

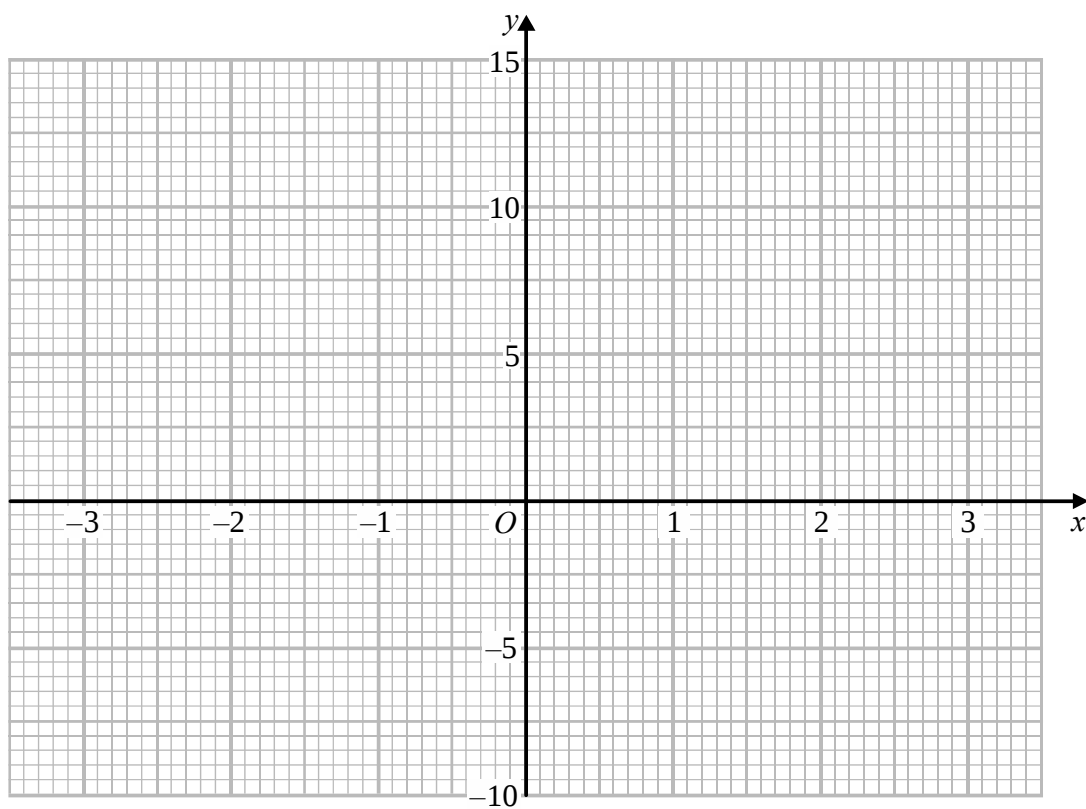
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- 3 (a) Complete this table of values for $y = x^2 + x - 4$

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

(2)

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



(2)

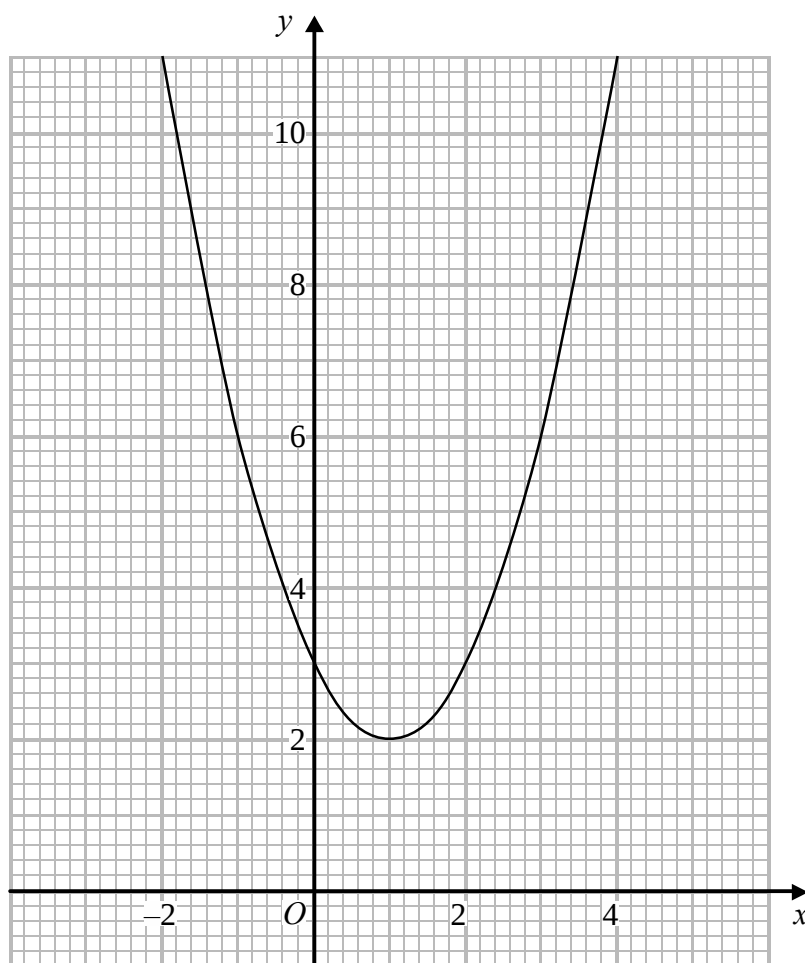
- (c) Use the graph to estimate a solution to $x^2 + x - 4 = 0$

.....
(1)

(Total for Question 3 is 5 marks)

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- 4 The diagram shows part of the graph of $y = x^2 - 2x + 3$



- (a) By drawing a suitable straight line, use your graph to find estimates for the solutions of $x^2 - 3x - 1 = 0$

.....
(2)

P is the point on the graph of $y = x^2 - 2x + 3$ where $x = 2$

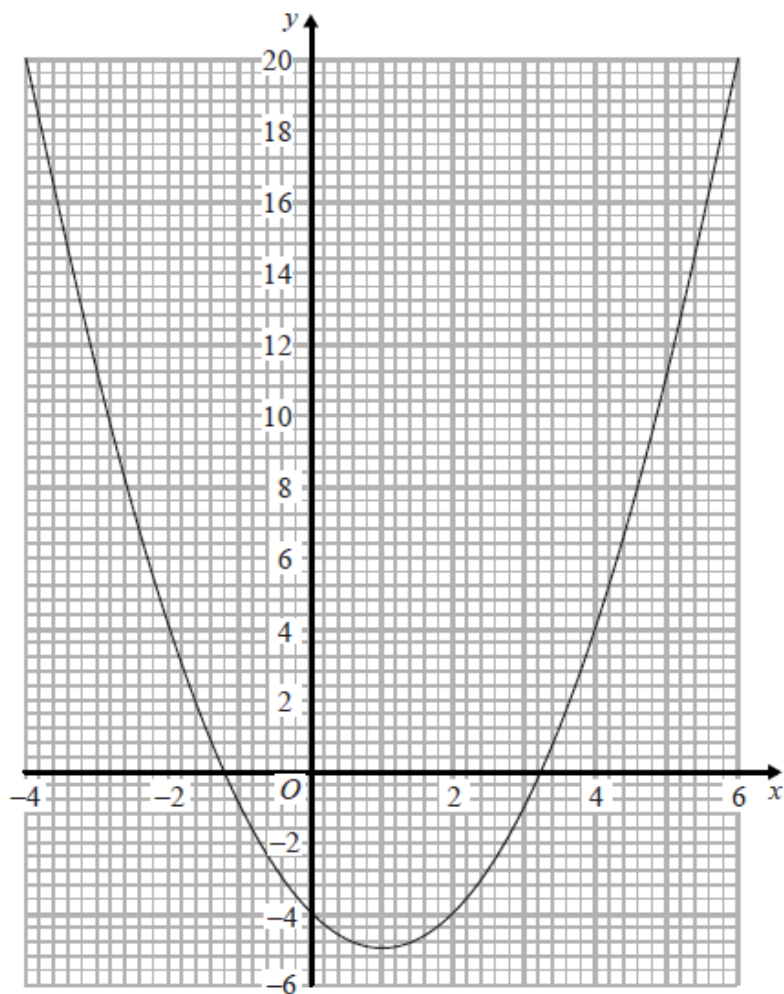
- (b) Calculate an estimate for the gradient of the graph at the point P .

.....
(3)

(Total for Question 4 is 5 marks)

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- 5 Here is the graph of $y = x^2 - 2x - 4$



- (a) Write down estimates for the roots of $x^2 - 2x - 4 = 0$

.....
(2)

- (b) Write down the coordinates of the turning point of $y = x^2 - 2x - 4$

(..... ,)
(1)

(Total for Question 4 is 3 marks)

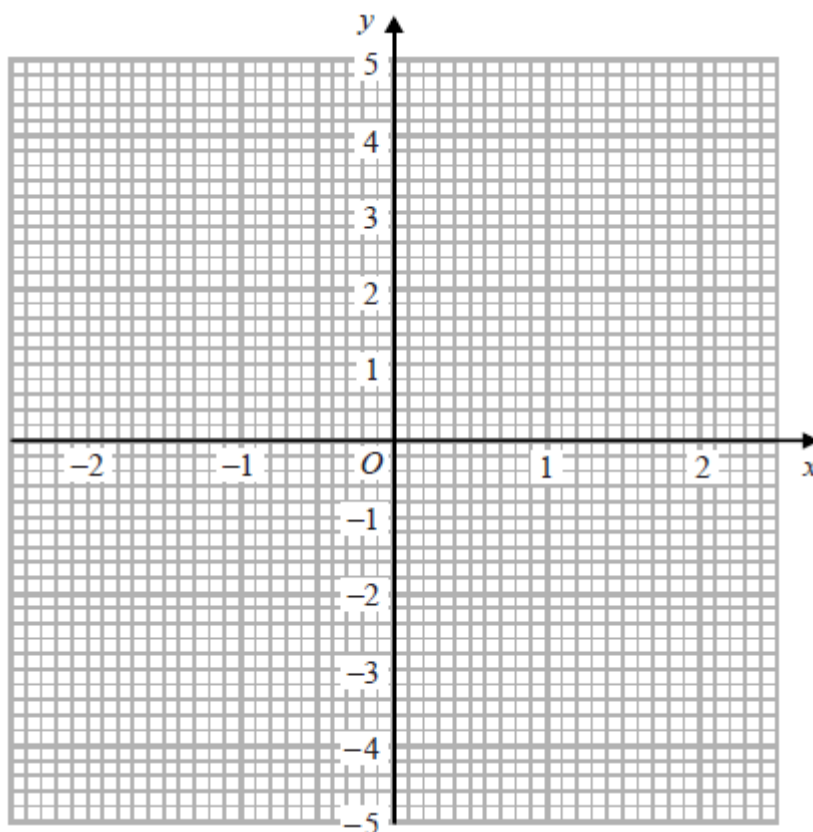
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- 6** (a) Complete the table of values for $y = x^3 - 3x + 1$

x	-2	-1	0	1	2
y					

(2)

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



(2)

(Total for Question 6 is 4 marks)

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7

Sketch the graph of

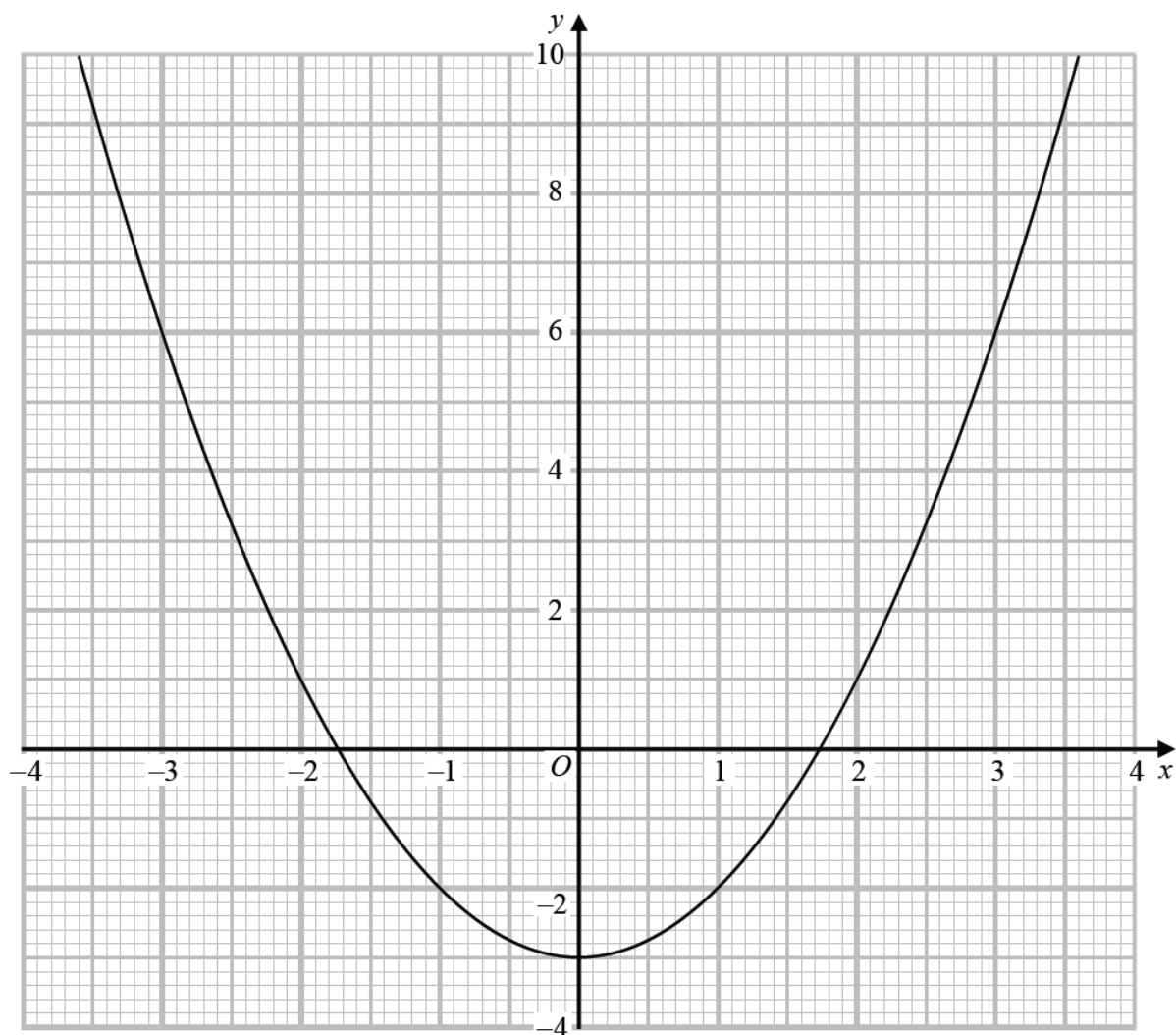
$$y = 2x^2 - 8x - 5$$

showing the coordinates of the turning point and the exact coordinates of any intercepts with the coordinate axes.

(Total for Question 7 is 5 marks)

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- 8 Here is the graph of $y = x^2 - 3$



Use the graph to find estimates for the solutions to the equation $x^2 - 2x - 2 = 0$
You must show how you get your solutions.

.....
(Total for Question 8 is 4 marks)

TOTAL MARKS FOR PAPER: 35