Quadratic graphs

Question 1

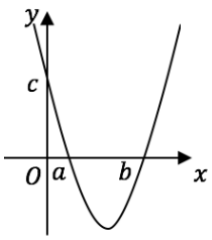
Complete the table of values for $y = x^3 - 3x^2 + 5$

x	-2	-1	0	1	2	3	4
y	-15	1	5	3	.....	.....	.....

(1 mark)

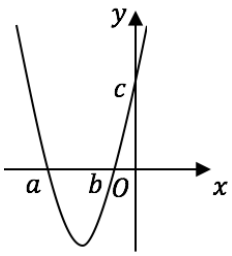
Question 2

Below is a sketch of the graph with equation $y = 2x^2 - 11x + 12$. Work out the values of a, b and c.



Question 3

Below is a sketch of the graph with equation $y = 6x^2 + 19x + 10$. Work out the values of a, b and c.



Question 4

Work out the equation of the line of symmetry of the graph of $y = x^2 + 7x - 18$

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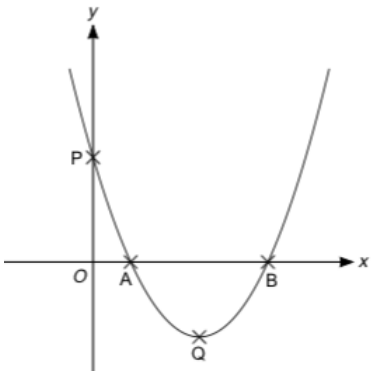
(1 mark)

Question 5

This is a sketch of the graph of $y = (x - 1)(x - 3)$. Write down the coordinates of points A and B.



(2 marks)

Question 6

The curve C has equation $y = 3 - 5(x + 1)^2$ The point A is the maximum point on C.

Write down the coordinates of A.

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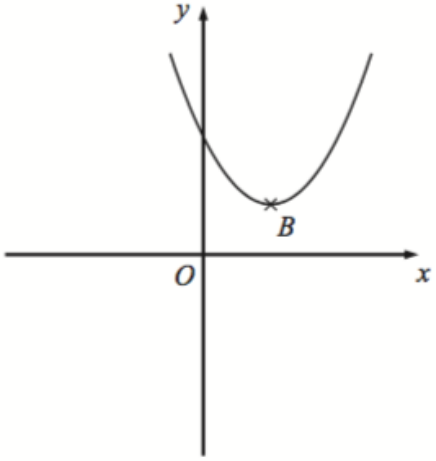
(1 mark)

Question 7

$x^2 - 8x + 23 = (x - 4)^2 + 7$ for all values of x.
Here is a sketch of the curve with equation $y = x^2 - 8x + 23$



B is the minimum point on the curve.
(b) Find the coordinates of B.

(1 mark)

Question 8

By completing the square, find the coordinates of the turning point of the curve with equation $y = x^2 + 10x + 18$ You must show all your working.

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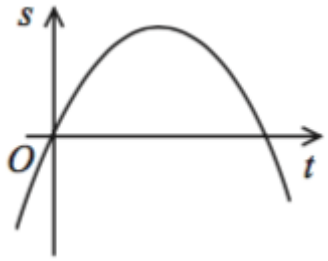
(3 marks)

Question 9



A particle P is moving in a straight line. O is a fixed point on the straight line.

The distance, s metres, of P from O at time t seconds is given by

$$s = 80t - 5t^2$$

Use algebra to find the greatest distance of P from O when $0 \leq t \leq 16$

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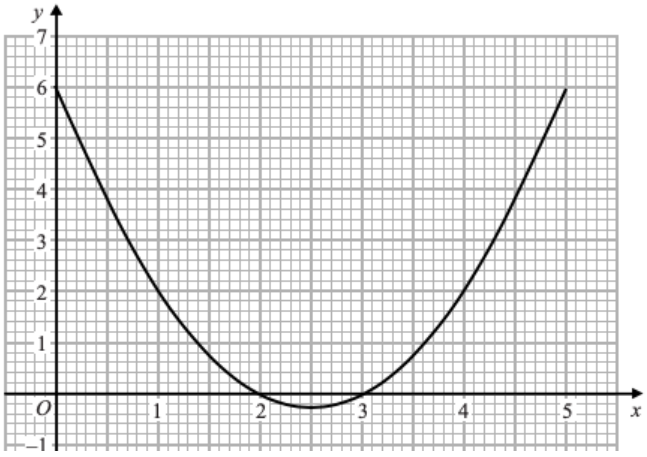
(4 marks)

Question 10

The graph of $y = x^2 - 5x + 6$ is drawn on the grid below.



By drawing a suitable straight line on the grid, find estimates for the solutions of the equation $x^2 - 5x = x - 7$

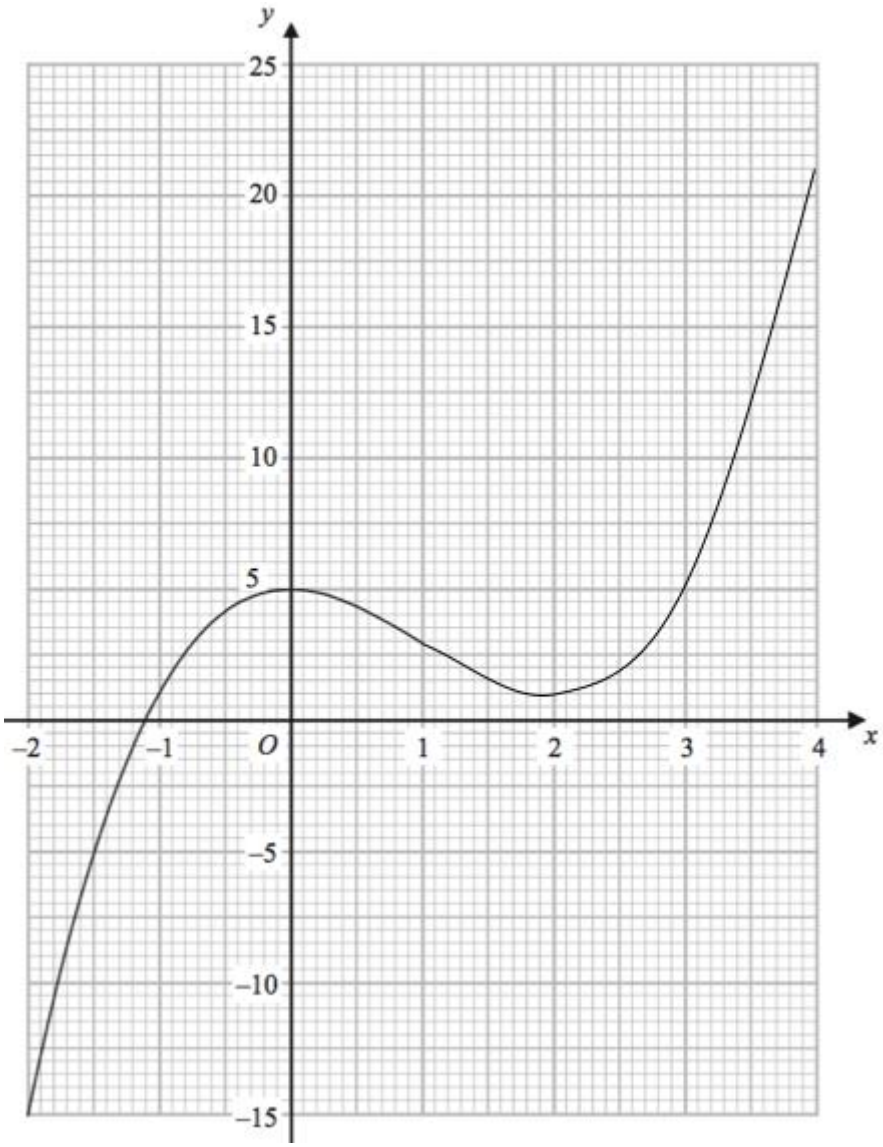
$x =$ .....

$x =$ .....

(3 marks)

Question 11

The graph of $y = x^3 - 3x^2 + 5$ is drawn below.



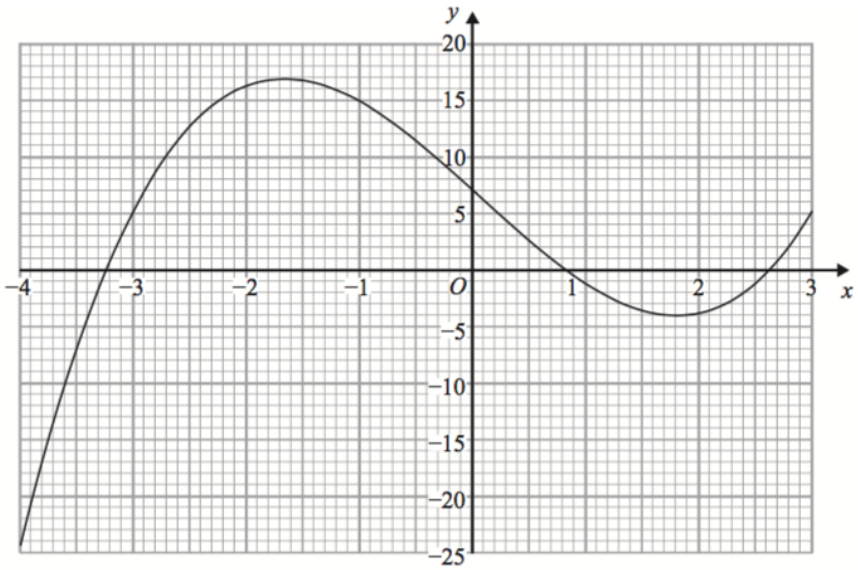
By drawing a suitable straight line on the grid, find an estimate for the solution of the equation $x^3 - 3x^2 + 2x + 4 = 0$

$x =$ .....

(3 marks)

Question 12

Here is the graph of $y = x^3 - 0.2x^2 - 9x + 7$ for $-4 \leq x \leq 3$



By drawing a suitable straight line on the grid, find an estimate for the solution of the equation $x^3 - 0.2x^2 - 4x + 7 = 0$

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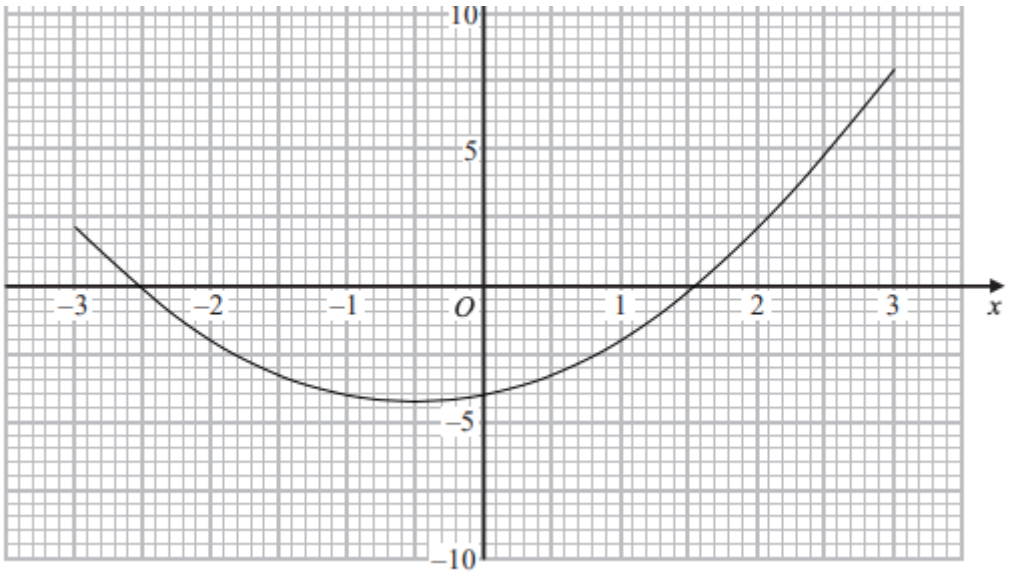
(3 marks)

Question 13

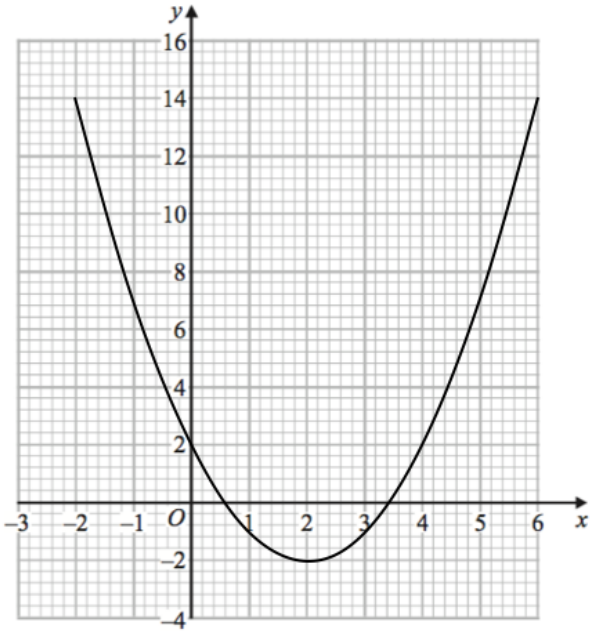
The graph of $y = x^2 + x - 4$ is drawn below.



Use the graph to estimate the solutions to $x^2 + x - 4 = 0$

Question 14

The graph of $y = x^2 - 4x + 2$ is drawn below.



The point $P(k, 4)$ where $k > 0$ lies on the graph of $y = x^2 - 4x + 2$

Use the graph to find an estimate for the value of k.

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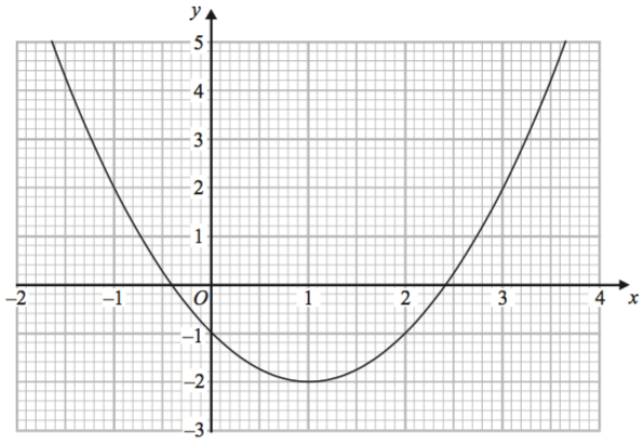
(1 mark)

Question 15

Here is the graph of $y = x^2 - 2x - 1$. Use the graph to solve the equation $x^2 - 2x - 1 = 2$



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(2 marks)
