

AQA IGCSE FM "Full Coverage": Cubic & Quadratic Graphs

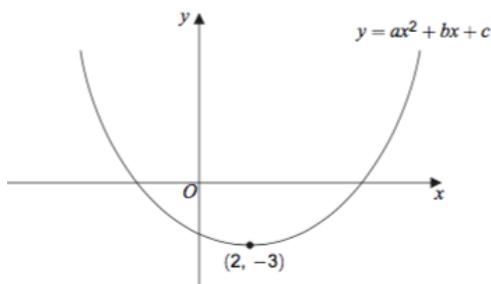
This worksheet is designed to cover one question of each type seen in past papers, for each AQA IGCSE Further Maths topic. This worksheet was automatically generated by the DrFrostMaths Homework Platform: students can practice this set of questions interactively by going to www.drfrostmaths.com/homework, logging on, *Practise* → *Past Papers/Worksheets* (or *Library* → *Past/Past Papers* for teachers), and using the 'Revision' tab.

Question 1

Categorisation: Recognise the shape of a quadratic for positive x^2 term vs negative.

[AQA IGCSE FM June2012-P2 Q4a]

A sketch of $y = ax^2 + bx + c$ is shown.



The value of a is

zero positive negative

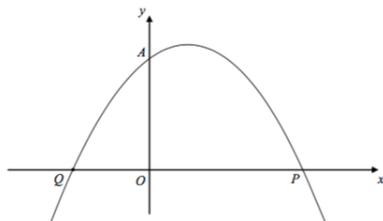
Question 2

Categorisation: Determine the roots of a quadratic.

[AQA IGCSE FM Practice paper set 4 P2 Q20a]

A sketch of the curve $y = (x + 1)(2 - x)$ is shown.

A(0, 2), P(2, 0) and Q are points on the curve.



Write down the coordinates of point Q.

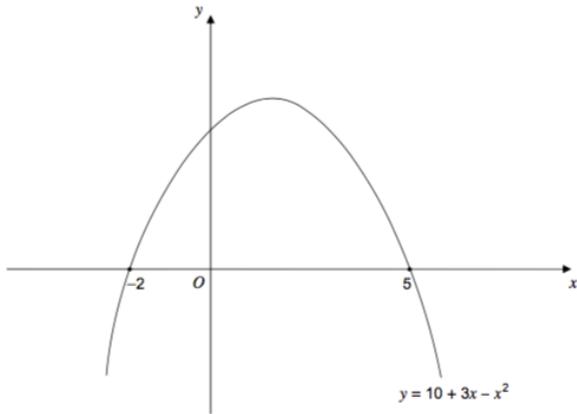
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Question 3

Categorisation: Determine the line of symmetry of a quadratic.

[AQA IGCSE FM Practice paper set 2 P2 Q6b]

Here is a sketch of $y = 10 + 3x - x^2$



Write down the equation of the line of symmetry of $y = 10 + 3x - x^2$

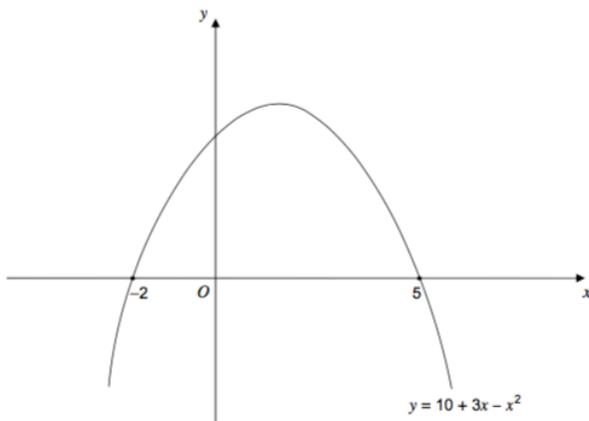
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Question 4

Categorisation: Understand that the solutions of $f(x) = 0$, i.e. the roots of the function, are the x -intercepts of the graph.

[AQA IGCSE FM Practice paper set 2 P2 Q6a]

Here is a sketch of $y = 10 + 3x - x^2$



Write down the two solutions of $10 + 3x - x^2 = 0$

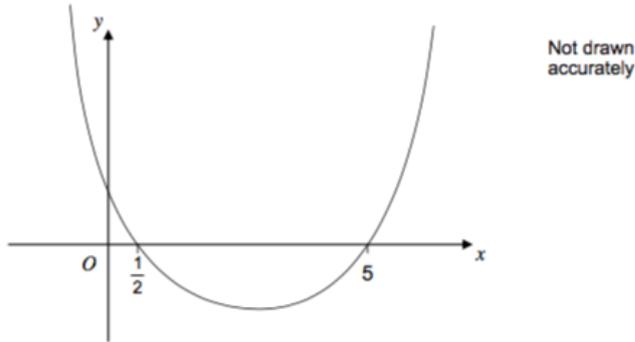
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Question 5

Categorisation: Determine an equation of a quadratic graph given its roots.

[AQA IGCSE FM Practice paper set 1 P2 Q15]

The diagram shows a quadratic graph that intersects the x -axis when $x = \frac{1}{2}$ and $x = 5$.



Work out the equation of the quadratic graph.

Give your answer in the form $y = ax^2 + bx + c$ where a , b and c are integers.

$y = \dots\dots\dots$

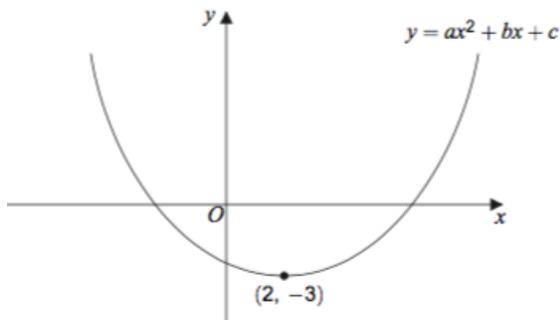
Question 6

Categorisation: Determine the number of solutions to $f(x) = g(x)$ by considering the number of points of intersection of the lines $y = f(x)$ and $y = g(x)$.

[AQA IGCSE FM June2012-P2 Q4d]

A sketch of $y = ax^2 + bx + c$ is shown.

The minimum point is $(2, -3)$



The **number** of solutions of $ax^2 + bx + c = -6$ is

[] 0 [] 1 [] 2 [] 3

Question 7

Categorisation: Determine the minimum point of a quadratic graph.

[AQA IGCSE FM June2016-P1 Q12b Edited]

Write down the coordinates of the minimum point on the curve $y = x^2 + 6x + 2$

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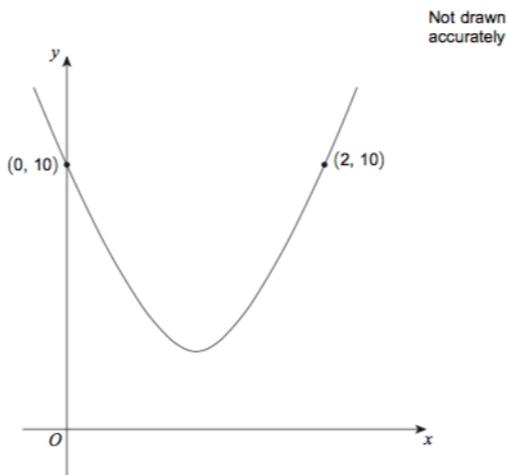
Question 8

Categorisation: Determine the completed square of a quadratic equation gives information about its minimum point.

[AQA IGCSE FM June2015-P2 Q18a Edited]

The sketch shows the quadratic curve $y = 4(x - a)^2 + b$

The curve passes through (0,10) and (2,10)



Work out the value of a .

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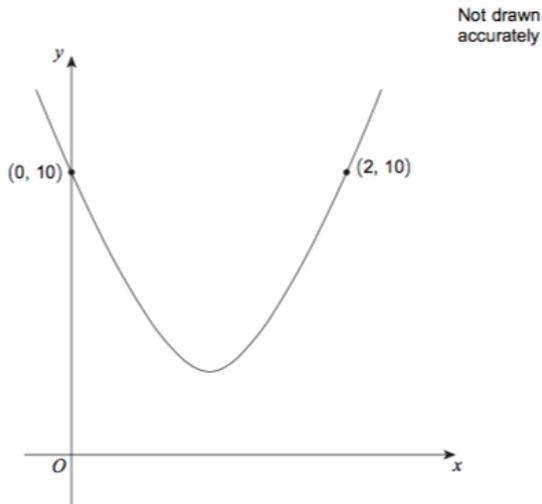
Question 9

Categorisation: Continuation of above.

[AQA IGCSE FM June2015-P2 Q18b]

The sketch shows the quadratic curve $y = 4(x - a)^2 + b$

The curve passes through (0,10) and (2,10)



Work out the value of b .

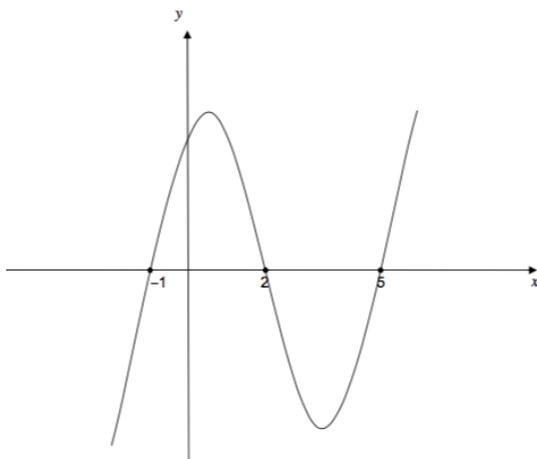
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Question 10

Categorisation: Determine the equation of a cubic given its root.

[AQA IGCSE FM Practice paper set 2 P2 Q14]

Here is a sketch of $y = x^3 + bx^2 + cx + d$ where b, c and d are constants.



Work out the values of b, c and d .

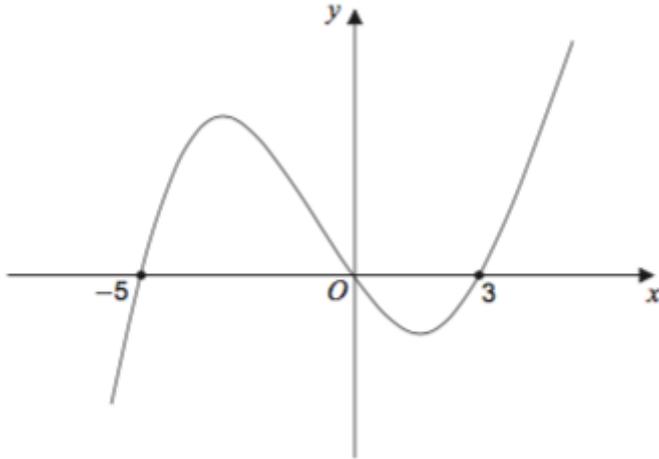
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Question 11

Categorisation: As above.

[AQA IGCSE FM June 2013-P1 Q11b]

Here is a sketch of a cubic function $y = f(x)$



You are given that $f(x) = x^3 + bx^2 + cx$
Work out the values of b and c .

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Question 12

Categorisation: Construct a cubic graph given information about it.

[AQA IGCSE FM June 2015-P2 Q21]

A cubic curve has

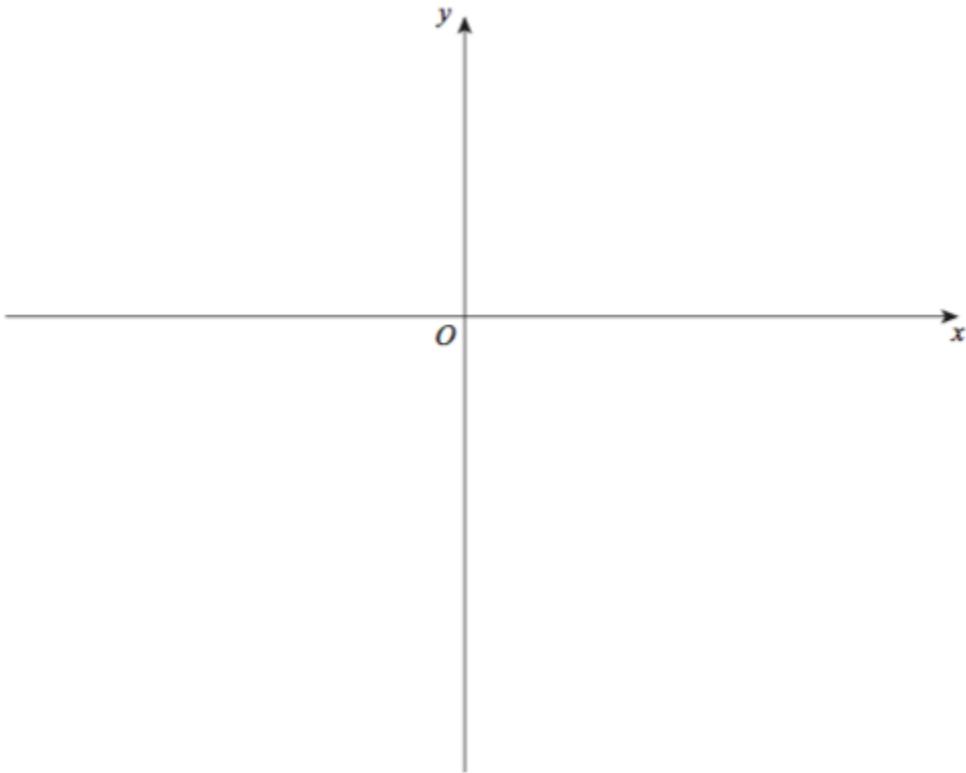
a maximum point at A $(-4, 10)$

a minimum point at B $(2, -26)$

The tangent to the curve at A and the normal to the curve at B intersect at point C.

Work out the area of triangle ABC.

You may sketch a diagram to help you.



..... unit²

Answers

Question 1

positive

Question 2

$(-1,0)$

Question 3

$x = 1.5$

Question 4

$x = -2$ or $x = 5$

Question 5

$y = 2x^2 - 11x + 5$

Question 6

0

Question 7

$(-3, -7)$

Question 8

$a = 1$

Question 9

$b = 6$

Question 10

$a = -6, b = 3, c = 10$

Question 11

$b = 2, c = -15$

Question 12

108 unit²