1.6 Graphs of Functions

Question Paper

Course	Edexcel IAL Maths: Pure 1
Section	1. Algebra & Functions
Topic	1.6 Graphs of Functions
Difficulty	Easy

Time allowed: **50**

Score: **/38**

Percentage: **/100**

Question 1

Sketch the graph of $y = 6x - 12$, labelling any points where the graph intersects the coordinate axes.

[3 marks]

Question 2

Sketch the graph of $y = x^2 - 1$, labelling any points where the graph intersects the coordinate axes.

[3 marks]

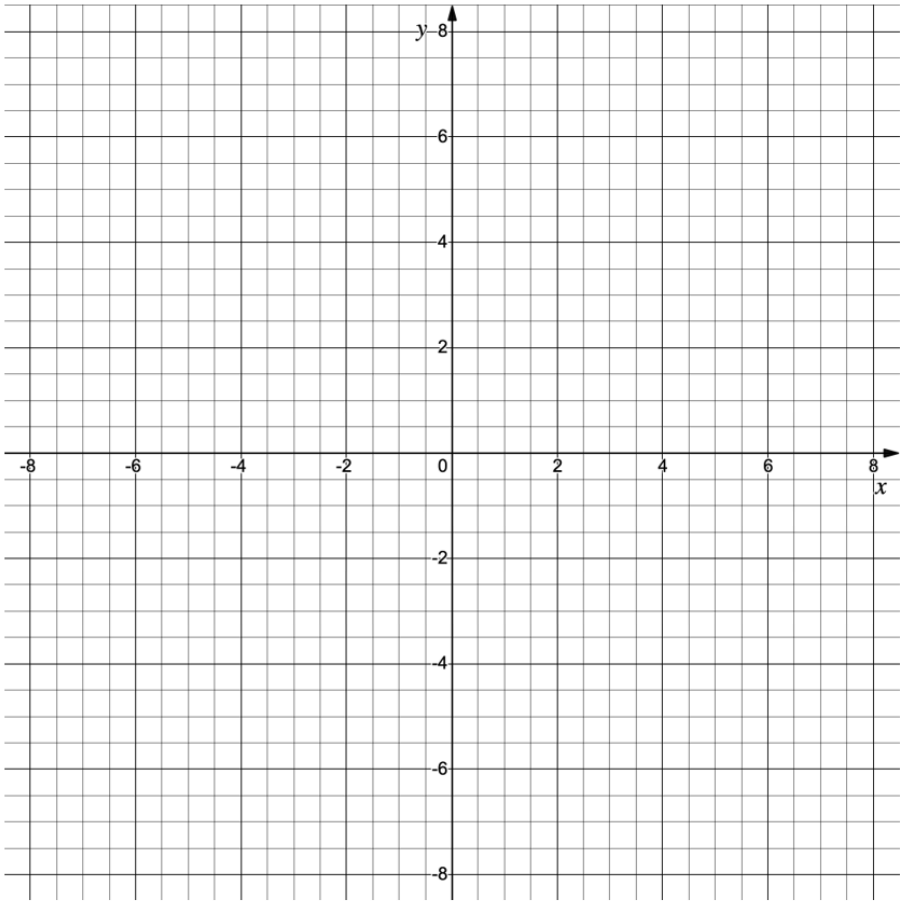
Question 3

Sketch the graph of $y = \frac{1}{x}$, labelling any points where the graph intersects the coordinate axes and stating the equations of any asymptotes.

[3 marks]

Question 4

(i) On the axes below, sketch the graphs of both $y = x$ and $y = -x + 2$.



(ii) Using your graph, or otherwise, find the solution to the simultaneous equations

$y = x$ and $y = -x + 2$.

[3 marks]

Question 5

(a) (i) Write down the value of $x^2 + 3x - 4$ when $x = 0$.

(ii) Factorise $x^2 + 3x - 4$.

[2 marks]

Question 5

(b) Sketch the graph of $y = x^2 + 3x - 4$, labelling any points where the graph intersects the coordinate axes.

[3 marks]

Question 6

(a) Express $2x^3 + 2x^2 - 12x$ in the form $ax(x + b)(x + c)$, where a, b and c are integers to be found.

[2 marks]

Question 6

(b) Hence sketch the graph of $y = 2x^3 + 2x^2 - 12x$, labelling any points where the graph intersects the coordinate axes.

[3 marks]

Question 7

y is proportional to x.

When $x = 2, y = 10$.

(i) Find the constant of proportionality.

(ii) Sketch the graph of y against x.

[3 marks]

Question 8

By sketching the graphs of $y = x^3$ and $y = \frac{1}{x}$ on the same diagram show that there are two real solutions to the equation $x^3 = \frac{1}{x}$.

[3 marks]

Question 9

(a) Use the factor theorem to show that $(x - 2)$ is a factor of the function $f(x) = x^3 - 2x^2 - 4x + 8$.

[2 marks]

Question 9

(b) Hence, or otherwise, express $f(x)$ as a product of three linear factors.

[2 marks]

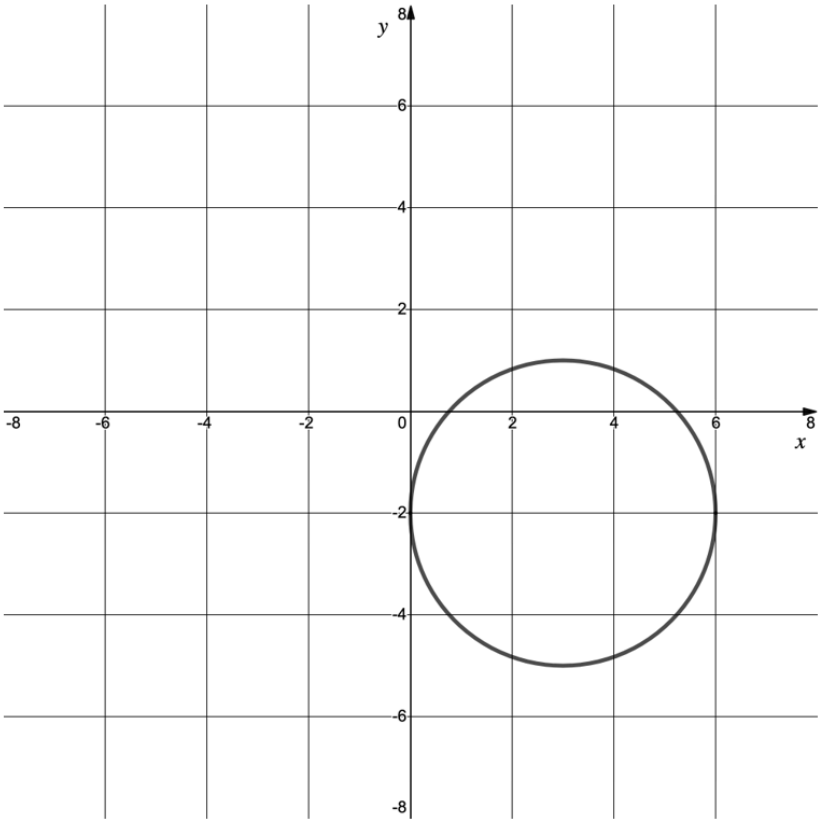
Question 9

(c) Sketch the graph of $y = f(x)$ labelling any points where the graph intersects the coordinate axes.

[3 marks]

Question 10

The diagram below shows the graph of a circle with equation $(x - 3)^2 + (y + 2)^2 = 9$. Add straight lines passing through the point to the diagram to show how the circle can have either no, one or two intercepts. All lines must pass through the point (-6, -4).



[3 marks]