



Graphing Functions.

Past Exam Questions

Maths - Ordinary Level

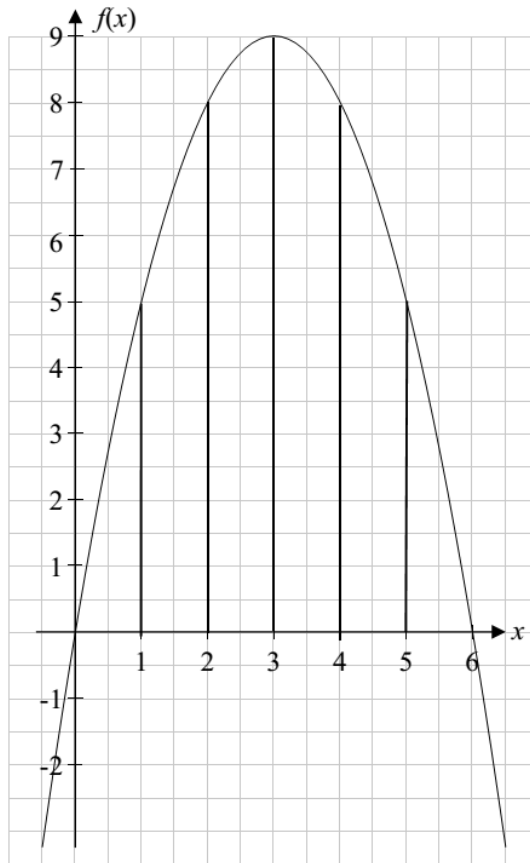
Question 2

(25 marks)

The diagram shows the graph of the function $f(x) = 6x - x^2$ in the domain $0 \leq x \leq 6$, $x \in \mathbb{R}$.

- (a) Find $f(0)$, $f(1)$, $f(2)$, $f(3)$, $f(4)$, $f(5)$ and $f(6)$. Hence, complete the table below.

x	0	1	2	3	4	5	6
$f(x)$							



- (b) Use the trapezoidal rule to estimate the area of the region enclosed between the curve and the x -axis in the given domain.



Question 5**(25 marks)**

A is the closed interval $[0, 5]$. That is, $A = \{x \mid 0 \leq x \leq 5, x \in \mathbb{R}\}$.

The function f is defined on A by:

$$f : A \rightarrow \mathbb{R} : x \mapsto x^3 - 5x^2 + 3x + 5.$$

- (a) Find the maximum and minimum values of f .

- (b) State whether f is injective. Give a reason for your answer.

Q5 2012 P1

Question 5

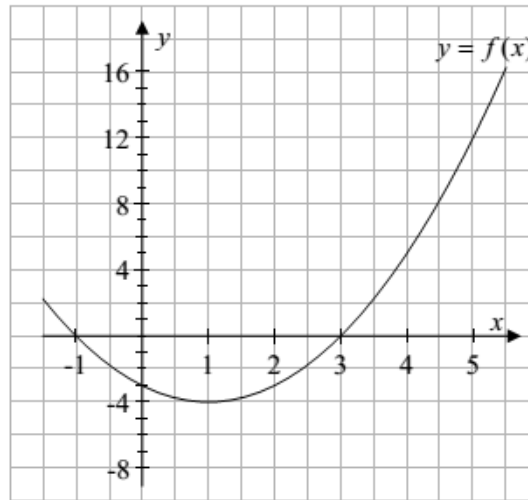
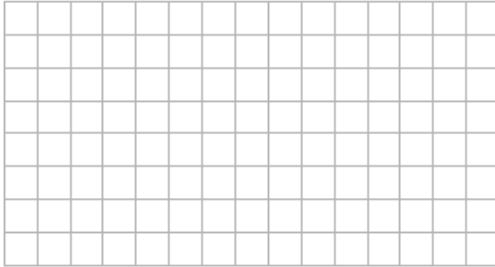
(25 marks)

The diagram shows the graph of a function f .

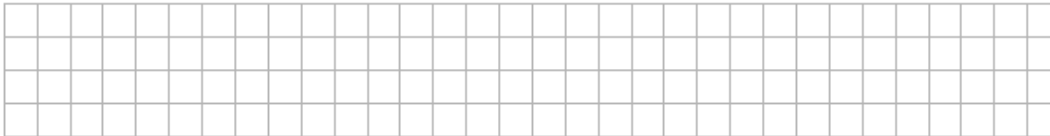
- (a) The graph of another function g is a straight line.

$$g(-1) = -6 \text{ and } g(3) = 6.$$

Draw the graph of g on the diagram.



- (b) Use the graphs to find the two values of x for which $g(x) = f(x)$.



- (c) The functions g and f are defined for $x \in \mathbb{R}$ by:

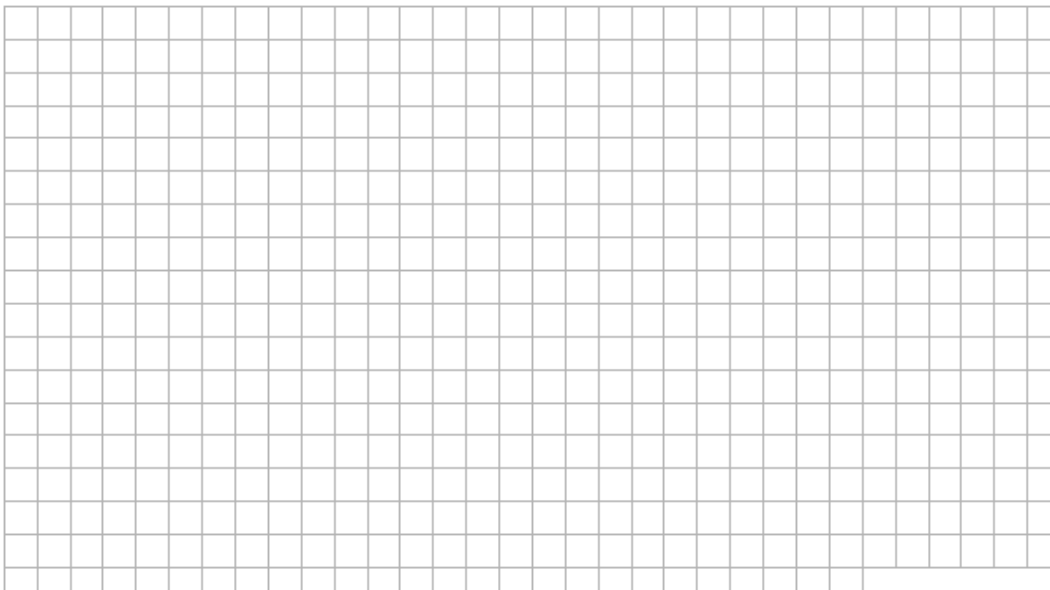
$$g : x \mapsto ax + b$$

$$f : x \mapsto x^2 + px + q$$

where $a, b, p,$ and q are constants.

The graph of f crosses the x -axis at -1 and 3 , as shown.

By finding the values of $a, b, p,$ and q , use algebra to solve $g(x) = f(x)$.



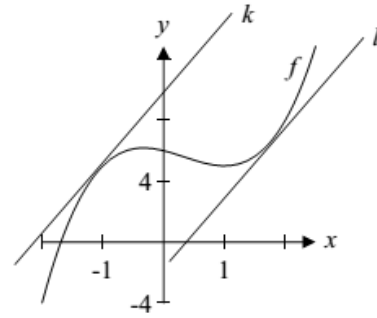
Q6 2012 P1

Question 6

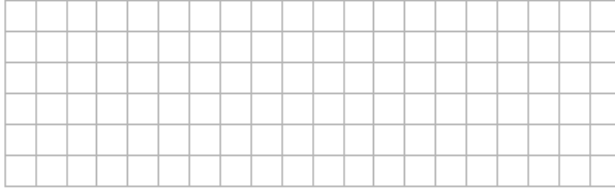
(25 marks)

The diagram shows the graph of the cubic function f , defined for $x \in \mathbb{R}$ as

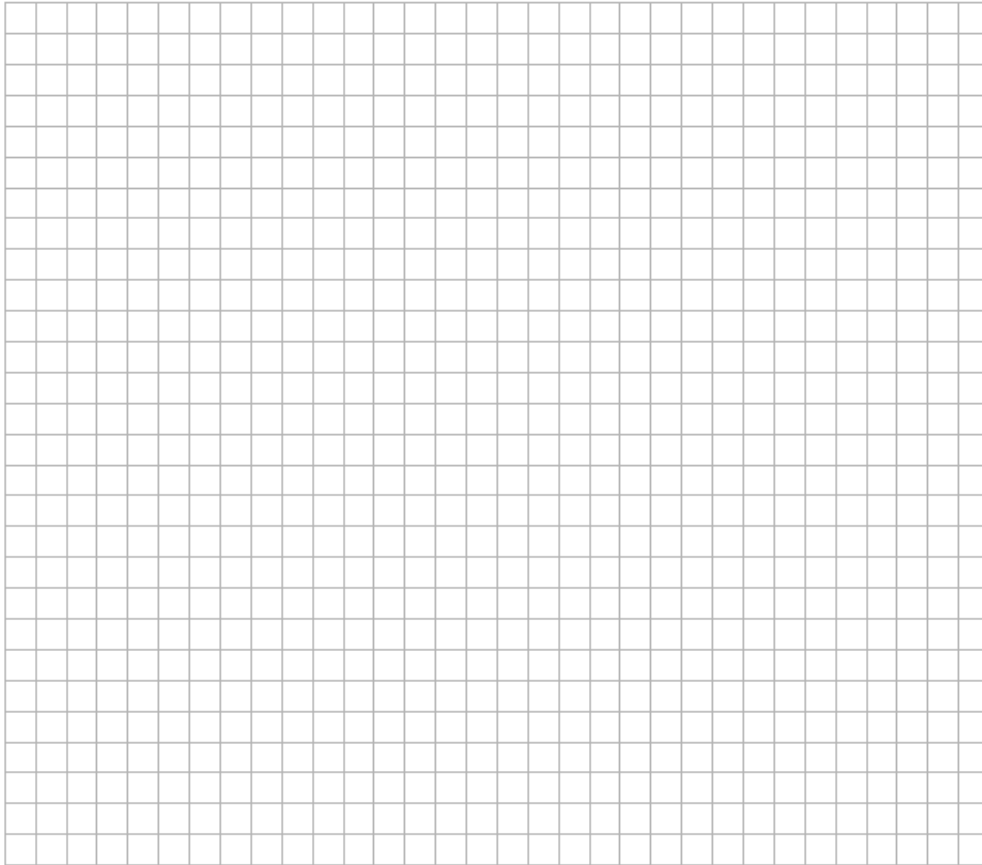
$$f : x \mapsto x^3 - x^2 - x + 6.$$



- (a) Find the co-ordinates of the point at which f cuts the y -axis.



- (b) f has a minimum turning point at $(1, 5)$. Find the co-ordinates of the maximum turning point.



- (c) The lines k and l are tangents to the curve $y = f(x)$ and l is parallel to k . The equation of k is $4x - y + 9 = 0$. Find the x co-ordinate of the point at which l is a tangent to the curve.

