

Tangents & Gradients

Difficulty: Easy

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Algebra and graphs
Sub-Topic	Tangents & Gradients
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: 32 minutes

Score: /25

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

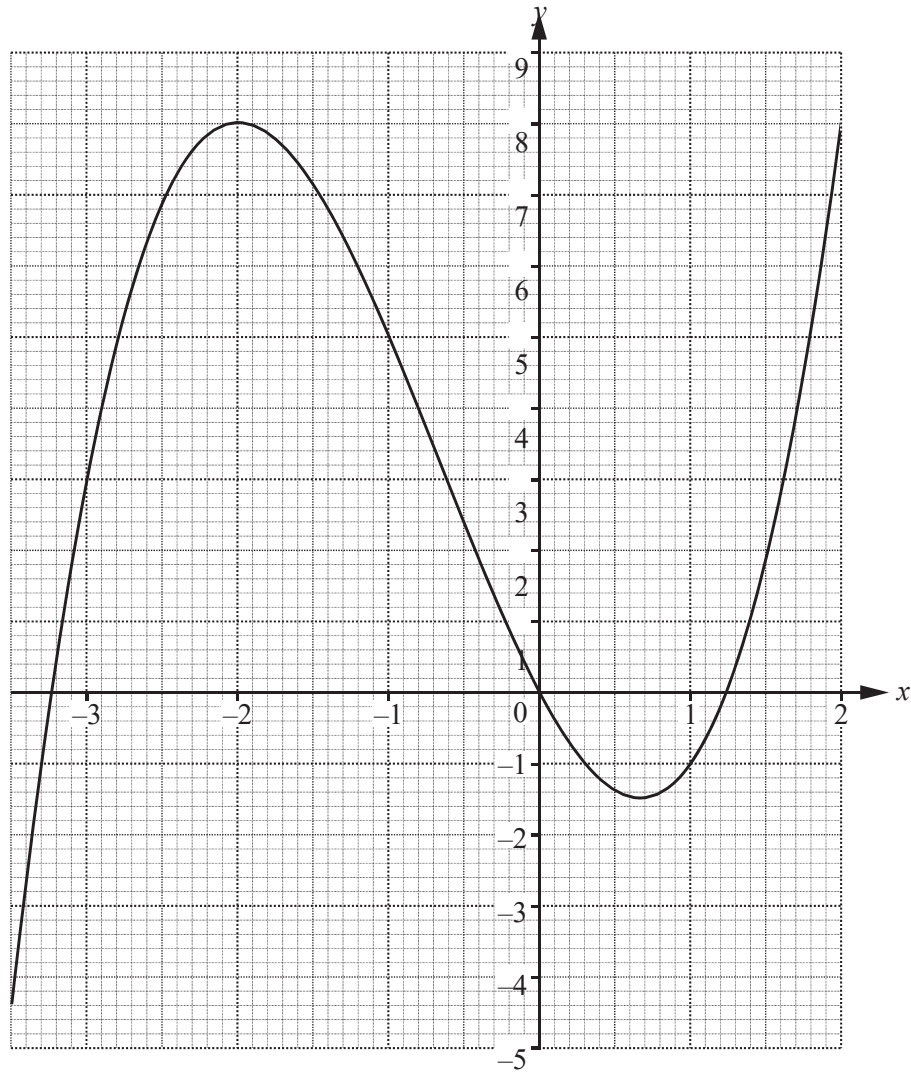
A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

The curve $y = x^3 + 2x^2 - 4x$ is shown on the grid.



(a) By drawing a suitable tangent, find an estimate of the gradient of the curve when $x = 1$.

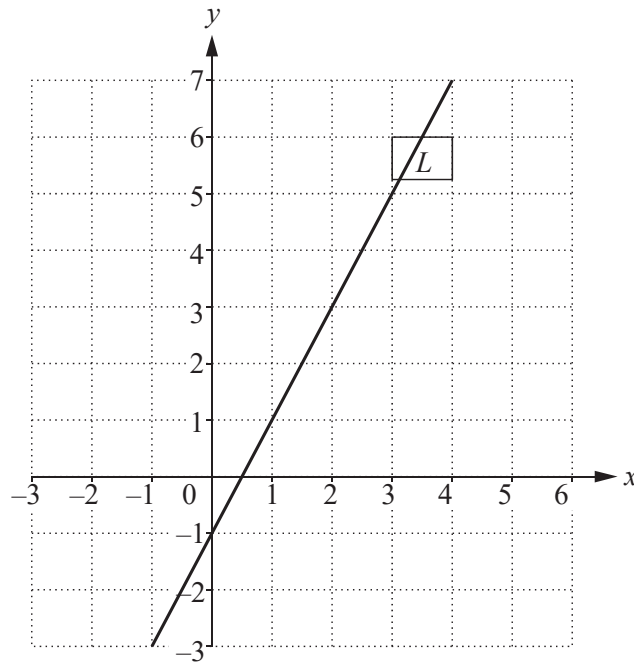
[3]

(b) A point D lies on the curve.
The x co-ordinate of D is negative.
The gradient of the tangent at D is 0.

Write down the co-ordinates of D .

[1]

Question 2



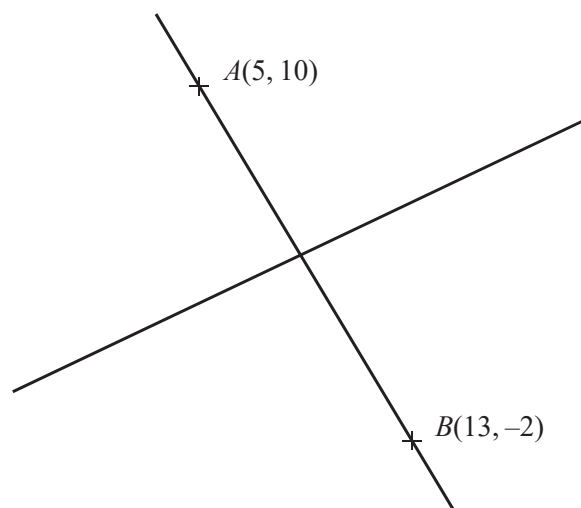
(a) Work out the gradient of the line L .

[2]

(b) Write down the equation of the line parallel to the line L that passes through the point $(0, 6)$.

[2]

Question 3



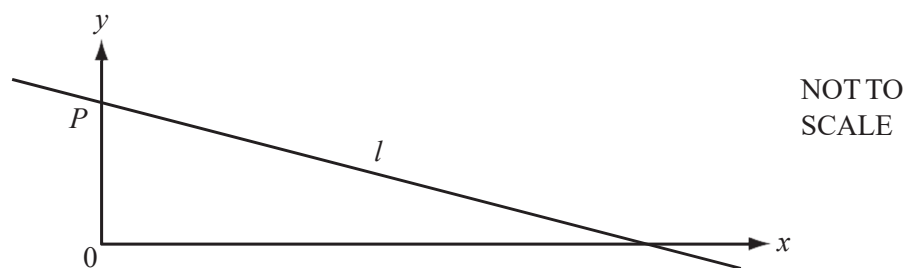
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$A(5, 10)$ and $B(13, -2)$ are two points on the line AB .
The perpendicular bisector of the line AB has gradient $\frac{2}{3}$.

Find the equation of the perpendicular bisector of AB .

[4]

Question 4



The equation of the line l in the diagram is $y = 5 - x$.

(a) The line cuts the y -axis at P .

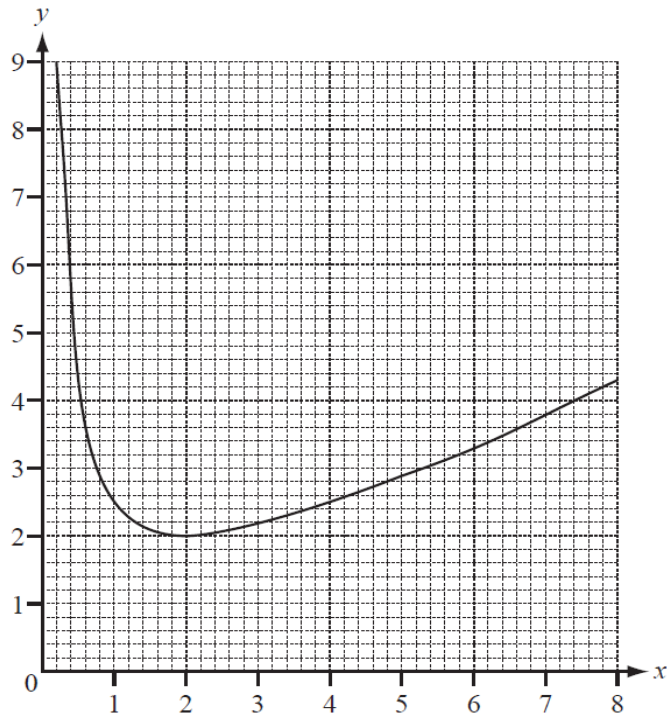
Write down the co-ordinates of P .

[1]

(b) Write down the gradient of the line l .

[1]

Question 5



The diagram shows the graph of $y = \frac{x}{2} + \frac{2}{x}$, for $0 < x \leq 8$.

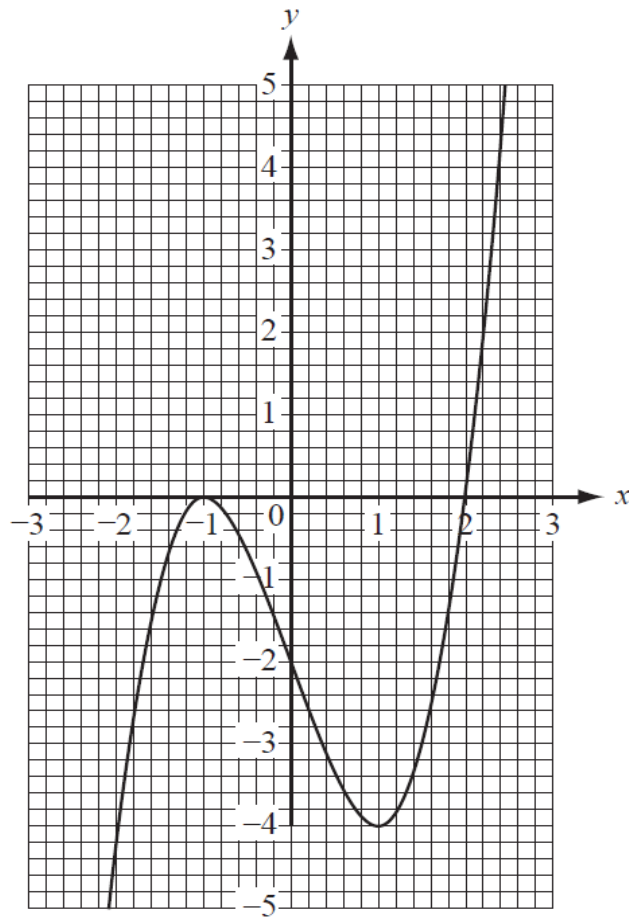
(a) Use the graph to solve the equation $\frac{x}{2} + \frac{2}{x} = 3$.

[2]

(b) By drawing a suitable tangent, work out an estimate of the gradient of the graph where $x = 1$.

[3]

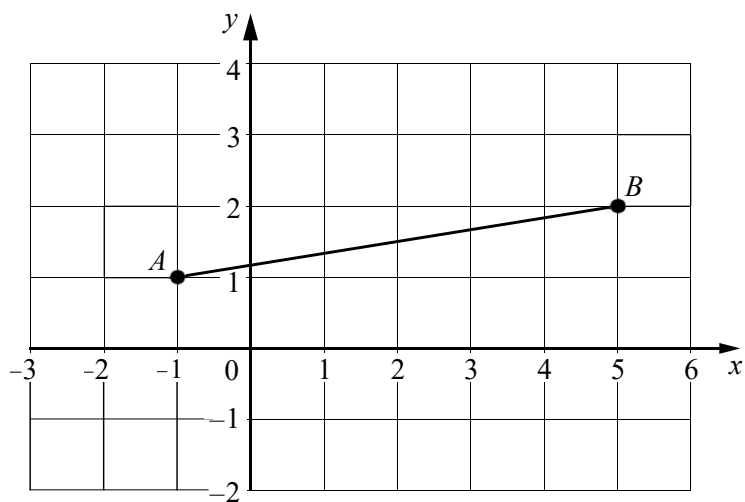
Question 6



(a) Write down the coordinates of the points where the gradient of the curve is zero. [2]

(b) Write down the range of values of x when the gradient of the curve is negative. [1]

Question 7



(a) Find the gradient of the line AB . [1]

(b) Calculate the angle that AB makes with the x -axis. [2]