Tangents and Gradients

Question Paper 1

Level	IGCSE
Subject	Maths (0580)
Exam Board	Cambridge International Examinations (CIE)
Paper Type	Extended
Topic	Algebra and Graphs
Sub-Topic	Tangents and Gradients
Booklet	Question Paper 1

Time Allowed: **30 minutes**

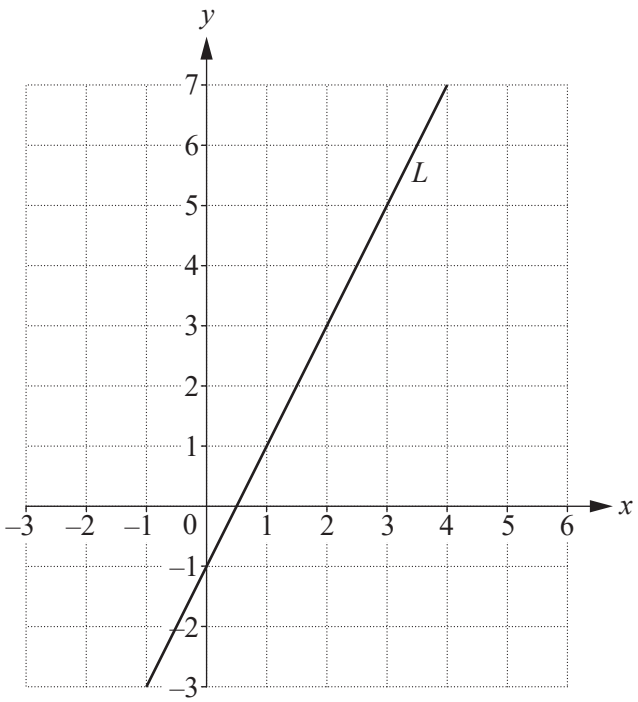
Score: **/25**

Percentage: **/100**

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	60%	45%	35%	25%	<25%

1



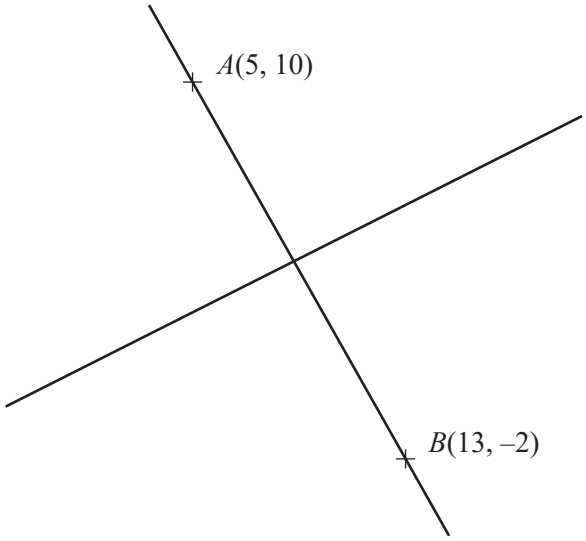
(a) Work out the gradient of the line L.

..... [2]

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

..... [2]

2



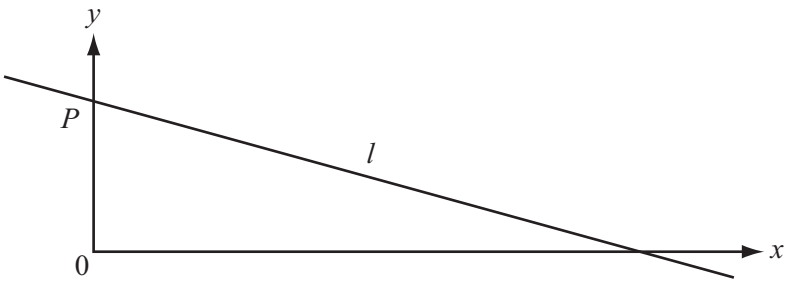
NOT TO SCALE

$A(5, 10)$ 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.

Answer ..... [4]

3



NOT TO SCALE

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

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

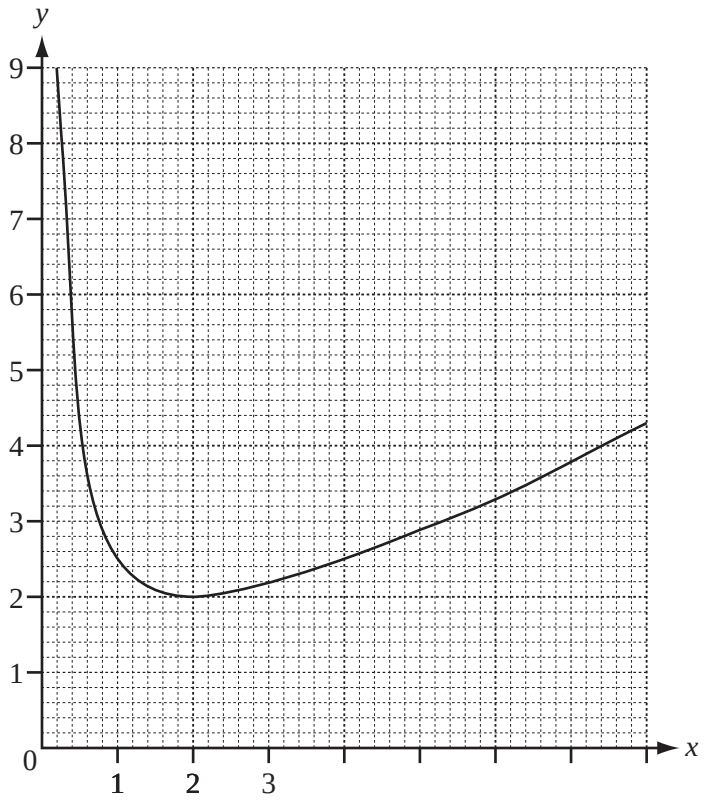
Write down the co-ordinates of P.

Answer(a) (..... , ...) [1]

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

Answer(b) ..... [1]

4



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

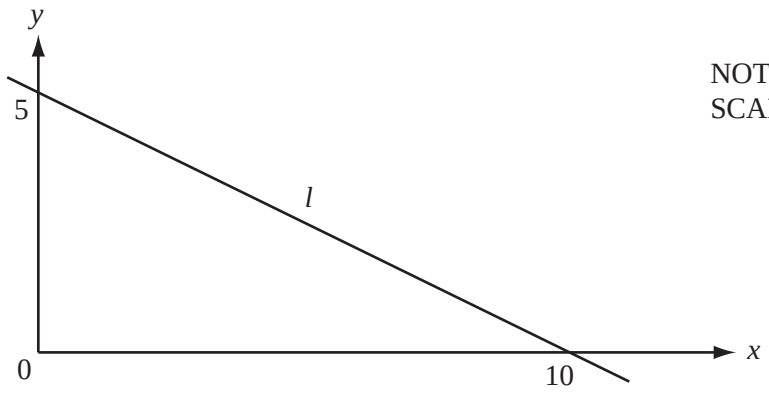
(a) Use the graph to solve the equation $\frac{x}{2} + \frac{2}{x} = 3$.

Answer (a) $x =$ ..... or $x =$ ..... [2]

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

Answer(b) ..... [3]

5



NOT TO SCALE

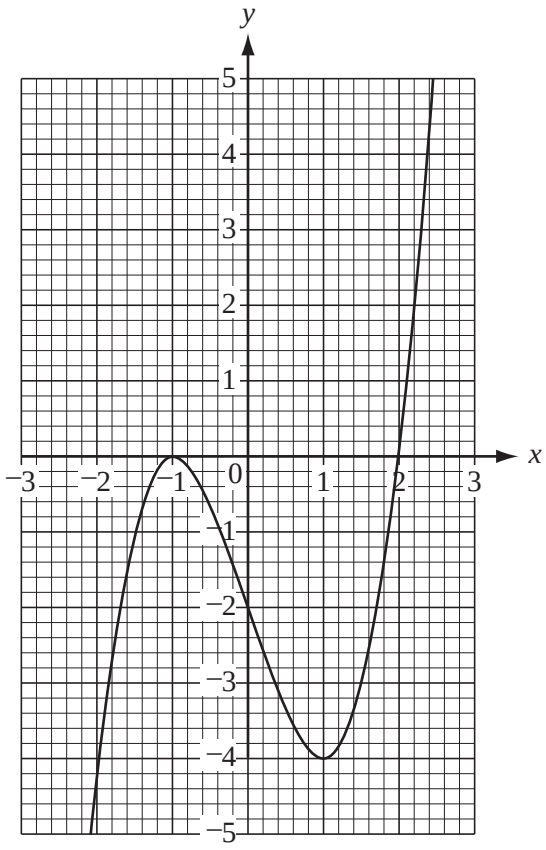
(a) Calculate the gradient of the line *l*.

Answer(a) ..... [2]

(b) Write down the equation of the line *l*.

Answer(b) ..... [2]

6



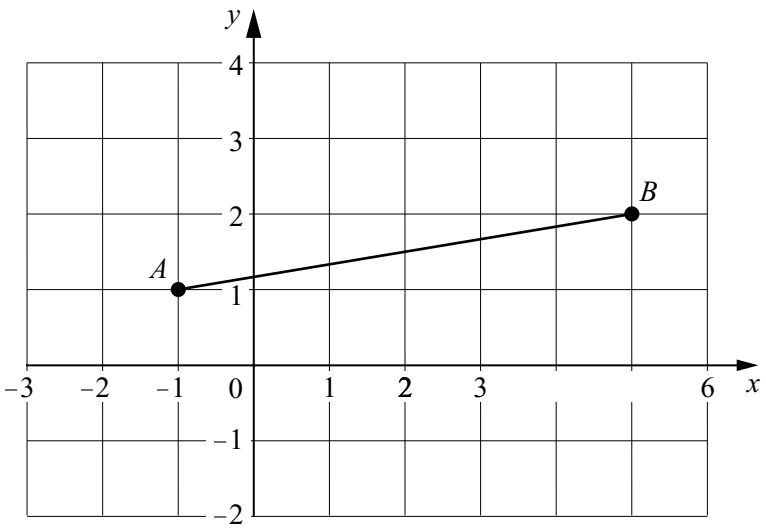
(a) Write down the coordinates of the points where the gradient of the curve is zero.

Answer(a) (....., ...) and (....., ...) [2]

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

Answer(b) ..... [1]

7



(a) Find the gradient of the line AB.

Answer (a) ..... [1]

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

Answer (b) ..... [2]