



Coordinate Geometry and Differentiation

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1) June 2009 V1

- 7 Find the co-ordinates of the mid-point of the line joining the points $A(2, -5)$ and $B(6, 9)$.

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

2) November 2009 V1

- 8 Find the length of the line joining the points $A(-4, 8)$ and $B(-1, 4)$.

Answer $AB =$ [2]

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3) June 2011 V1

- 7 Find the length of the straight line from $Q(-8, 1)$ to $R(4, 6)$.

Answer $QR = \dots\dots\dots$ [3]

4) June 2015 V1

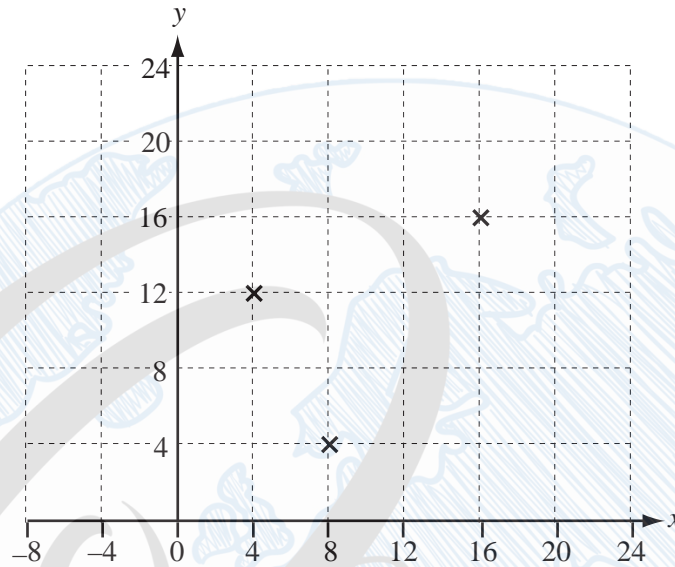
- 8 The point A has co-ordinates $(-4, 6)$ and the point B has co-ordinates $(7, -2)$.

Calculate the length of the line AB .

Answer $AB = \dots\dots\dots$ units [3]

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- 2 Three of the vertices of a parallelogram are at (4, 12), (8, 4) and (16, 16).



Write down the co-ordinates of two possible positions of the fourth vertex.

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

6) June 2016 V1

7 $y = mx + c$

Find the value of y when $m = -2$, $x = -7$ and $c = -3$.

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$y =$

[2]

17 Find the equation of the line passing through the points $(0, -1)$ and $(3, 5)$.



Answer [3]

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- 15 Find the equation of the straight line which passes through the points (0, 8) and (3, 2).



Answer

[3]

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13 Find the equation of the line passing through the points with co-ordinates (5, 9) and (-3, 13).

Answer [3]



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15 The points $(2, 5)$, $(3, 3)$ and $(k, 1)$ all lie in a straight line.

(a) Find the value of k .

Answer(a) $k = \dots\dots\dots$ [1]

(b) Find the equation of the line.

Answer(b) $\dots\dots\dots$ [3]



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18 $A(5, 23)$ and $B(-2, 2)$ are two points.

(a) Find the co-ordinates of the midpoint of the line AB .

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

(b) Find the equation of the line AB .

Answer(b) [3]

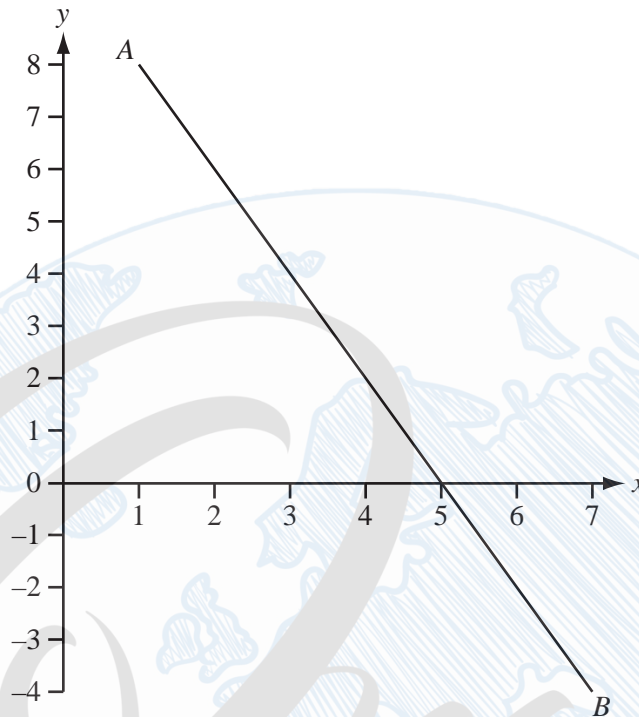
(c) Show that the point $(3, 17)$ lies on the line AB .

Answer(c)

[1]

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- (a) Using a straight edge and compasses only, construct the perpendicular bisector of AB on the diagram above. [2]
- (b) Write down the co-ordinates of the midpoint of the line segment joining $A(1, 8)$ to $B(7, -4)$.

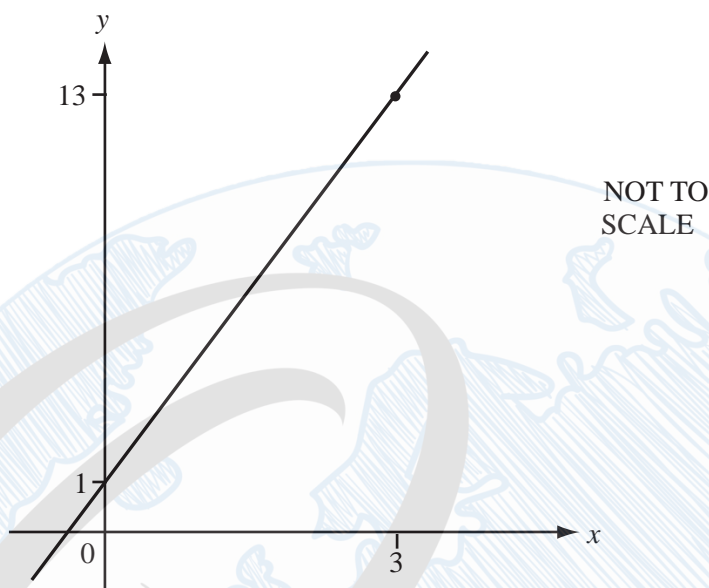
Answer(b) (..... ,) [1]

- (c) Find the equation of the line AB .

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Answer(c) [3]

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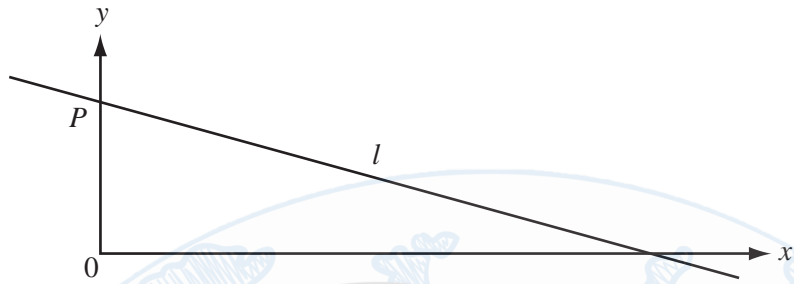
The diagram shows the straight line which passes through the points $(0, 1)$ and $(3, 13)$.

Find the equation of the straight line.

Answer [3]

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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]

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20 (a) The two lines $y = 2x + 8$ and $y = 2x - 12$ intersect the x -axis at P and Q .

Work out the distance PQ .

Answer(a) $PQ =$ [2]

(b) Write down the equation of the line with gradient -4 passing through $(0, 5)$.

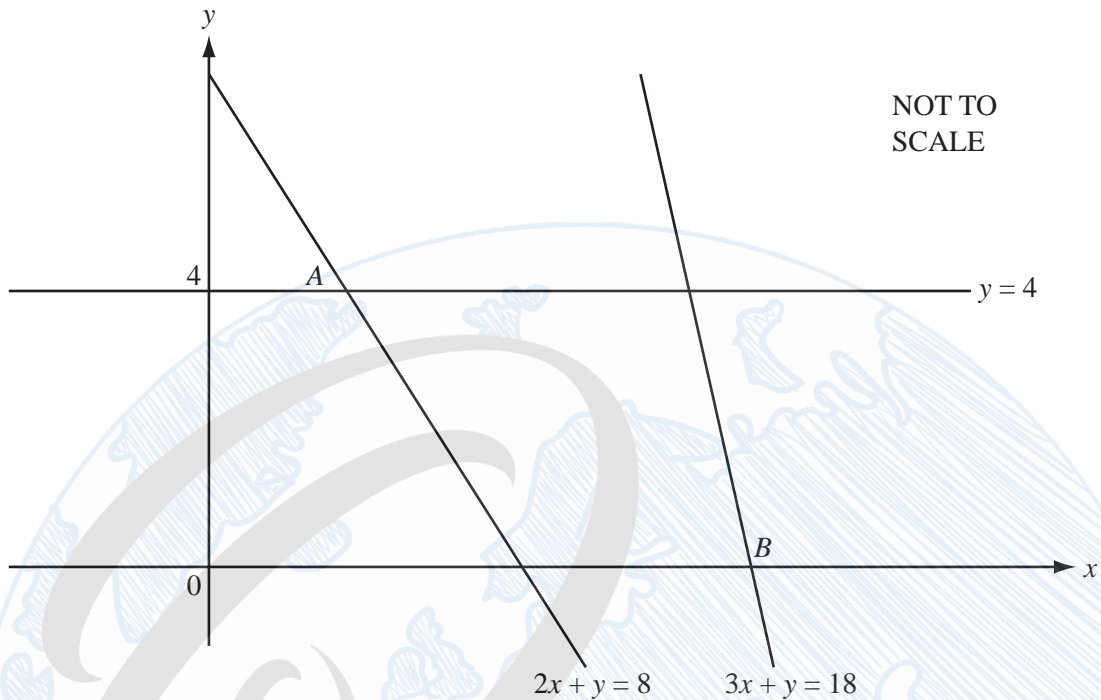
Answer(b) [2]

(c) Find the equation of the line parallel to the line in **part (b)** passing through $(5, 4)$.

Answer(c) [3]

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- (a) The line $y = 4$ meets the line $2x + y = 8$ at the point A .
Find the co-ordinates of A .

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

- (b) The line $3x + y = 18$ meets the x axis at the point B .
Find the co-ordinates of B .

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

- (c) (i) Find the co-ordinates of the mid-point M of the line joining A to B .

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Answer(c)(i) M (..... ,) [1]

- (ii) Find the equation of the line through M parallel to $3x + y = 18$.

Answer(c)(ii) [2]

22 (a) The line $y = 2x + 7$ meets the y -axis at A .

Write down the co-ordinates of A .

Answer(a) $A = (\dots\dots\dots , \dots\dots)$ [1]

(b) A line parallel to $y = 2x + 7$ passes through $B(0, 3)$.

(i) Find the equation of this line.

Answer(b)(i) [2]

(ii) C is the point on the line $y = 2x + 1$ where $x = 2$.

Find the co-ordinates of the midpoint of BC .

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

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17 (a) Find the co-ordinates of the midpoint of the line joining $A(-8, 3)$ and $B(-2, -3)$.

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

(b) The line $y = 4x + c$ passes through $(2, 6)$.

Find the value of c .

Answer(b) $c =$ [1]

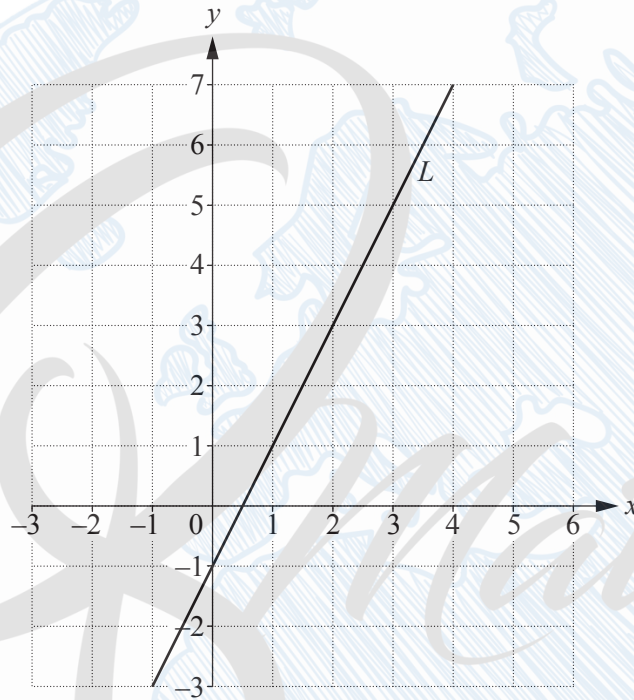
(c) The lines $5x = 4y + 10$ and $2y = kx - 4$ are parallel.

Find the value of k .

Answer(c) $k =$ [2]

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18

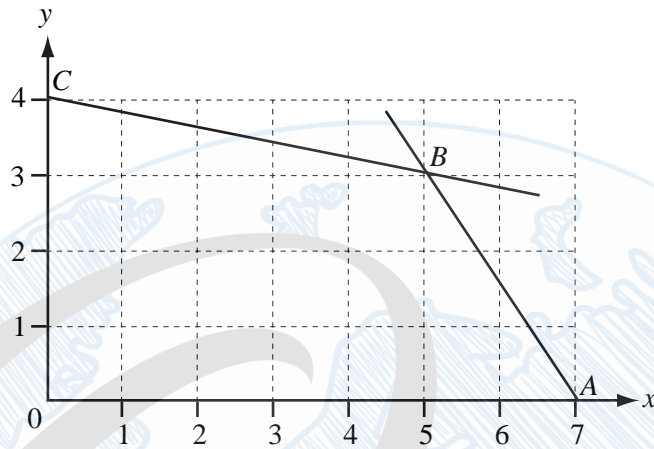


(a) Work out the gradient of the line L .

..... [2]

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

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The lines AB and CB intersect at B

(a) Find the co-ordinates of the midpoint of AB .

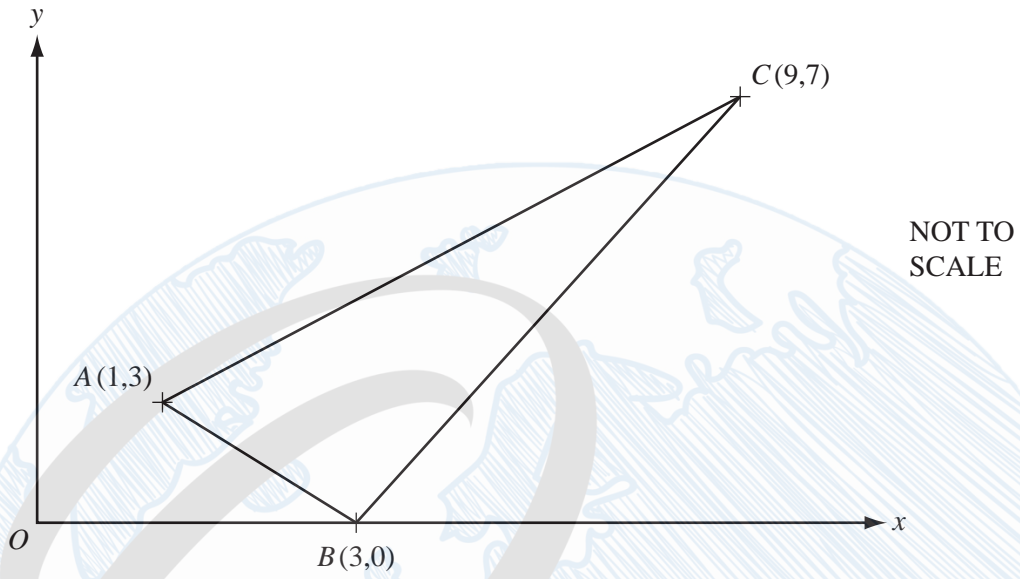
Answer(a) (..... ,) [1]

(b) Find the equation of the line CB .

Answer(b) [3]

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The co-ordinates of A , B and C are shown on the diagram, which is not to scale.

(a) Find the length of the line AB .

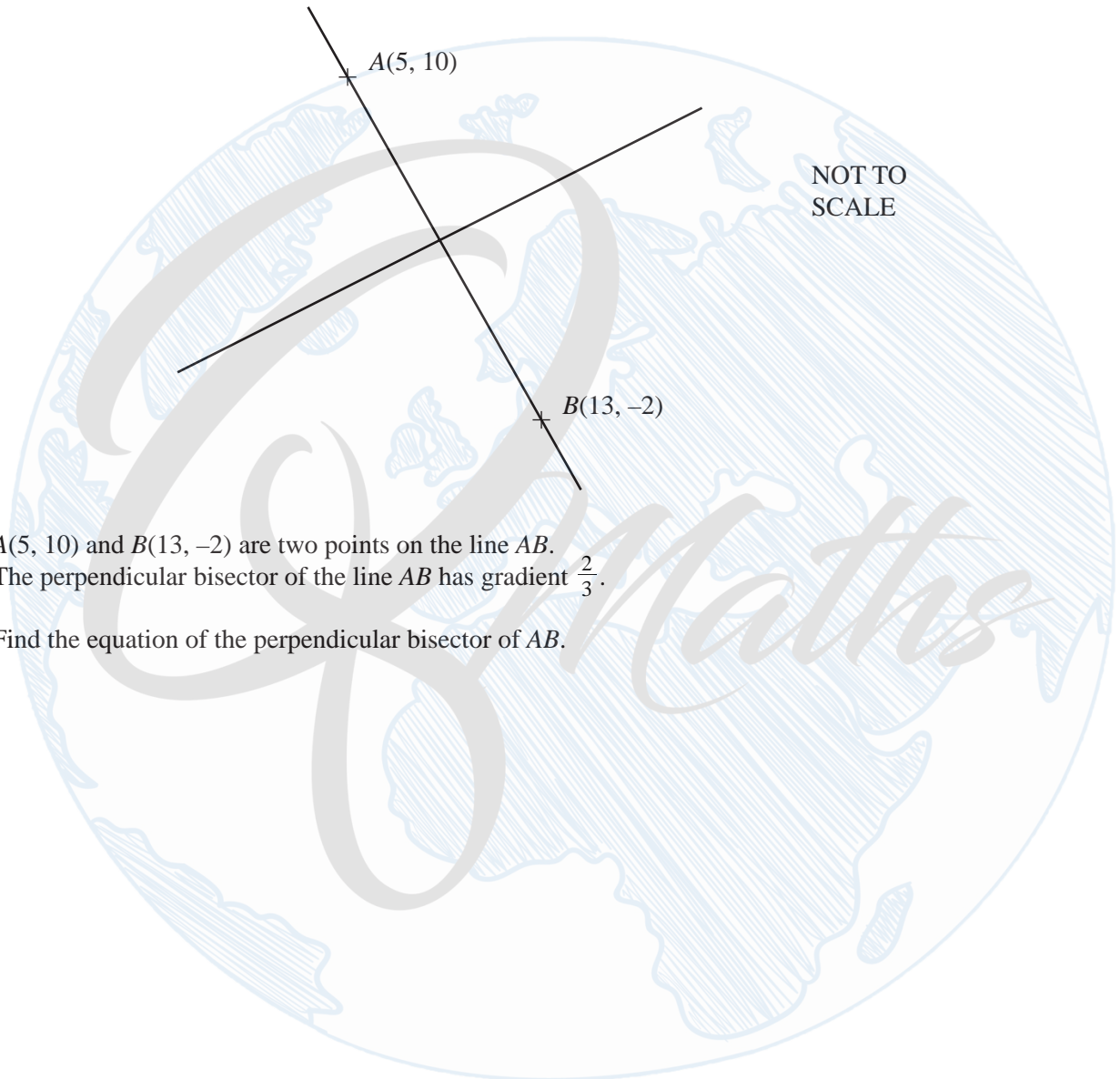
Answer(a) $AB =$ [3]

(b) Find the equation of the line AC .

Answer(b) [3]

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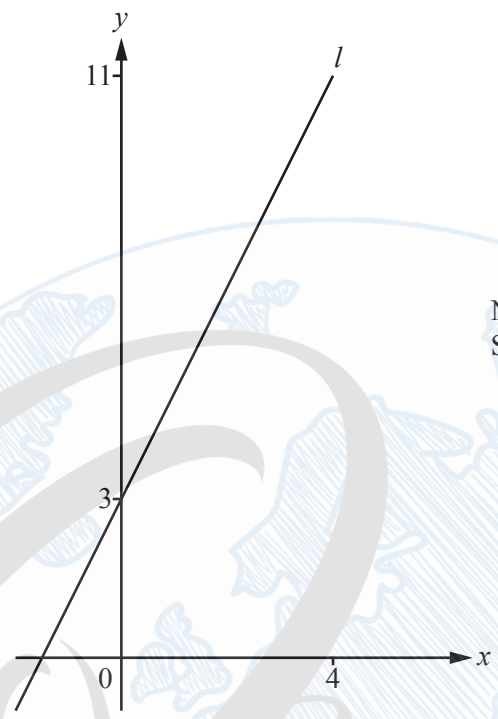


$A(5, 10)$ and $B(13, -2)$ are two points on the line AB .
The perpendicular bisector of the line AB has gradient $\frac{2}{3}$.

Find the equation of the perpendicular bisector of AB .

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Answer [4]



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The diagram shows the straight line, l , which passes through the points $(0, 3)$ and $(4, 11)$.

(a) Find the equation of line l in the form $y = mx + c$.

Answer(a) $y = \dots\dots\dots$ [3]

(b) Line p is perpendicular to line l .

Write down the gradient of line p .

Answer(b) $\dots\dots\dots$ [1]

14 Find the equation of the line that

- is perpendicular to the line $y = 3x - 1$
- and
- passes through the point $(7, 4)$.

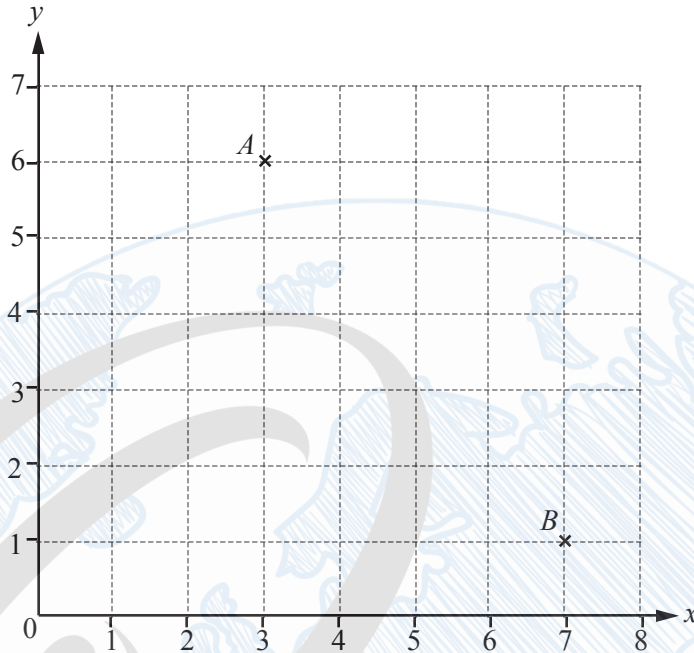
Answer [3]

25 A is the point $(4, 1)$ and B is the point $(10, 15)$.

Find the equation of the perpendicular bisector of the line AB .

..... [6]

20



Point A has co-ordinates $(3, 6)$.

(a) Write down the co-ordinates of point B .

(.....,) [1]

(b) Find the gradient of the line AB

..... [2]

(c) Find the equation of the line that

- is perpendicular to the line AB
- and
- passes through the point $(0, 2)$.

..... [3]

17 A is the point $(8, 3)$ and B is the point $(12, 1)$.

Find the equation of the line, perpendicular to the line AB , which passes through the point $(0, 0)$.

..... [3]

24 (a) Point A has co-ordinates $(1, 0)$ and point B has co-ordinates $(2, 5)$.

Calculate the angle between the line AB and the x -axis.

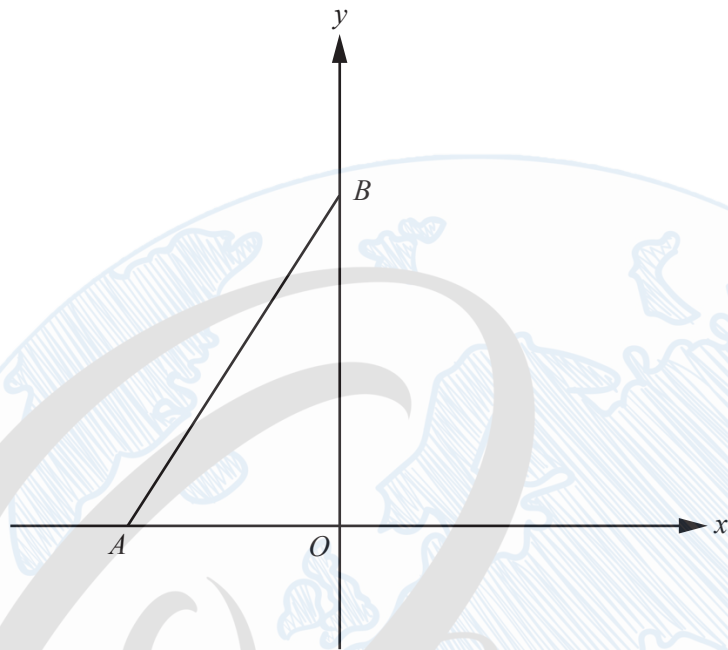
..... [3]

(b) The line PQ has equation $y = 3x - 8$ and point P has co-ordinates $(6, 10)$.

Find the equation of the line that passes through P and is perpendicular to PQ .
Give your answer in the form $y = mx + c$.

$y =$ [3]

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A is the point $(-2, 0)$ and B is the point $(0, 4)$.

(a) Find the equation of the straight line joining A and B .

..... [3]

(b) Find the equation of the perpendicular bisector of AB .

..... [4]

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25 P is the point $(16, 9)$ and Q is the point $(22, 24)$.

- (a) Find the equation of the line perpendicular to PQ that passes through the point $(5, 1)$.
Give your answer in the form $y = mx + c$.

$y = \dots\dots\dots$ [4]

- (b) N is the point on PQ such that $PN = 2NQ$.

Find the co-ordinates of N .

$\dots\dots\dots$ [2]

21 (a) Differentiate $6 + 4x - x^2$.

..... [2]

(b) Find the coordinates of the turning point of the graph of $y = 6 + 4x - x^2$.

(..... ,) [2]

24 A line from the point $(2, 3)$ is perpendicular to the line $y = \frac{1}{3}x + 1$.
The two lines meet at the point P .

Find the coordinates of P .

(..... ,) [5]

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