

IG-Maths:
0580

Coordinate Geometry
Exercise
Paper - 4

Suresh Goel
(Disector)
Alliance World School,
Noida, India.

Q1 A line joins the points A(-3,8) and B(2,-2).

(a) Find the coordinates of the midpoint of AB. ---[2]

(b) Find the equation of the line through A and B.

Give your answer in the form $y = mx + c$ ---[3]

(c) Another line is parallel to AB and passes through the point (0,7).

Write down the equation of this line. ---[2]

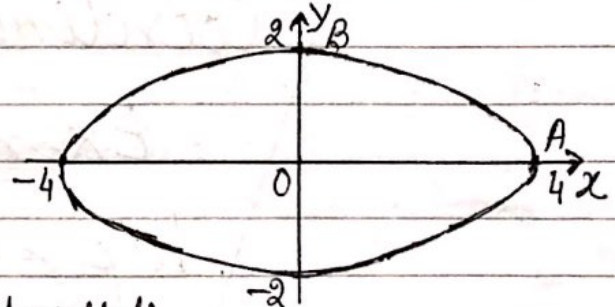
(d) Find the equation of the line perpendicular to AB, which passes through the point (1,5). Give your answer in the form,

$ax + by + c = 0$ where a, b and c are integers. ---[4]

S-17/41/Q7

Q2 The diagram show a curve

with equation: $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$



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

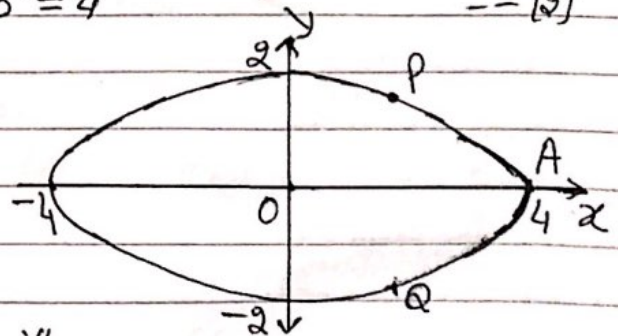
(i) Find the equation of the straight line that passes through A and B. Give your answer in the form: $y = mx + c$. ---[3]

(ii) Show that $a^2 = 16$ and $b^2 = 4$ ---[2]

(b) P(2,k) and Q(2,-k) are points on the curve $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

(i) Find the value of k. ---[3]

(ii) Calculate angle POQ ---[3]



(c) The area enclosed by a curve with equation $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is πab .

S-16/41/Q9

(i) Find the area enclosed by the curve $\frac{x^2}{16} + \frac{y^2}{4} = 1$

Give your answer as a multiple of π . ---[1]

(ii) A curve mathematically similar to the one in the diagrams, intersects the x-axis at (12,0) and (-12,0). Work out the area enclosed by this curve, giving your answer as a multiple of π . ---[2]

Q3 A line joins the points $A(-2, -5)$ and $B(4, 13)$.

- (a) Calculate the length AB . --- [3]
- (b) Find the equation of line through A and B . Give your answer in the form $y = mx + c$. --- [3]
- (c) Another line is parallel to AB and passes through the point $(0, -5)$. Write down the equation of this line. --- [2]
- (d) Find the equation of the perpendicular bisector of AB . --- [5]

S-16/42/Q9

Q4 Line A has equation $y = 5x - 4$ and line B has equation $3x + 2y = 18$

- (a) Find the gradient of (i) line A --- [1]
(ii) line B --- [1]
- (b) Write down the co-ordinates of the point where line A crosses the x -axis. --- [2]
- (c) Find the equation of the line perpendicular to line A which passes through the point $(10, 9)$. Give your answer in the form $y = mx + c$. --- [4]
- (d) Work out the co-ordinates of the point of intersection of line A and line B . --- [3]
- (e) Work out the area enclosed by line A , line B and the y -axis. --- [3]

W-17/43/Q8

Q5 A line AB joins the points $A(3, 4)$ and $B(5, 8)$

- (a) Write down the co-ordinates of the midpoint of the line AB . --- [2]
- (b) Calculate the distance AB . --- [3]
- (c) Find the equation of the line AB . --- [3]
- (d) A line perpendicular to AB passes through the origin and through the point $(6, z)$. Find the value of z . --- [3]

W-15/42/Q8

Q6 A straight line joins the points $(-1, -4)$ and $(3, 8)$.

- (i) Find the mid point of this line. --- [2]
- (ii) Find the equation of this line. Give your answer in the form $y = mx + c$.

W-14/43/Q8(a) [3]

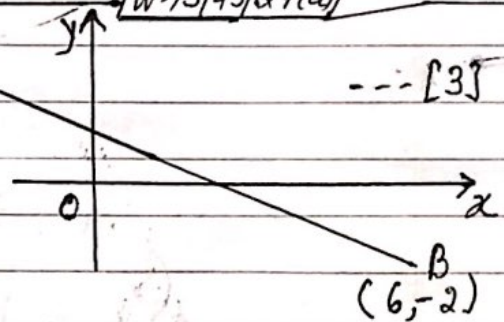
Q 7(a) The co-ordinates of P are $(-4, -4)$ and the co-ordinates of Q are $(8, 14)$.

- (i) Find the gradient of the line PQ. --- [2]
- (ii) Find the equation of the line PQ. --- [2]
- (iii) Write \vec{PQ} as a column vector. --- [1]
- (iv) Find the magnitude of \vec{PQ} . --- [2]

W-13/43/Q7(a)

Q 8(a) Calculate the length of AB.

A $(-3, 4)$



(b) The point P has co-ordinates $(10, 12)$ and the point Q has co-ordinates $(2, -4)$. Find

- (i) the co-ordinates of the mid point of the line PQ. --- [2]
- (ii) the gradient of line PQ. --- [2]
- (iii) the equation of a line perpendicular to PQ and passing through the point $(2, 3)$. --- [3]

M.18/42/Q10

Answers

Q1. (a) $(-0.5, 3)$ (b) $y = -2x + 2$
(c) $y = -2x + 7$ (d) $x - 2y + 9 = 0$

Q6 (i) $(1, 2)$ (ii) $y = 3x - 1$

Q2 (a) (i) $y = -\frac{1}{2}x + 2$
(ii) $\frac{16}{a^2} + 0 = 1$ and $0 + \frac{2^2}{b^2} = 1$
 $\therefore a^2 = 16$ and $b^2 = 4$

Q7 (i) $\frac{7}{2}$ (ii) $y = \frac{7}{2}x + 2$
(iii) $\begin{pmatrix} 12 \\ 18 \end{pmatrix}$ (iv) 21.6

(b) (i) $k = \sqrt{3}$ (ii) 81.8

Q8. (a) 10.8

(c) (i) 8π (ii) 72π

(b) (i) $(6, 4)$ (ii) 2

(iii) $y = -\frac{1}{2}x + 4$

Q3. (a) 19 (b) $y = 3x + 1$
(c) $y = 3x - 5$ (d) $y = -\frac{1}{3}x + \frac{13}{3}$

← X — X →

Q4 (a) (i) 5 (ii) $-\frac{3}{2}$
(b) $(\frac{4}{3}, 0)$ (c) $y = -0.2x + 11$
(d) $(2, 6)$ (e) 13

Q5. (a) $(4, 6)$ (b) 4.47
(c) $y = 2x - 2$ (d) -3