MATHS

BOOKS - SURA MATHS (TAMIL ENGLISH)

COORDINATE GEOMETRY

Exercise 5 1

1. Plot the following points in the coordinate system and identify the quadrants $P(-7,6), Q(7,-2), R(-6,-7) S(3,5)$ and $T(3,9)$.

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2. Plot the following points in the coordinate plane and join them. What is the your conclusion about the resulting figure ?

(i) (-5,3)(-1,3)(0,3) (5,3) (ii) (0,-4) (0,-2)(0,4) (0,5)

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3. Plot the following points in the plane . Join them in order . What type of geometircal shape is formed ?

(i) (0,0),(-4,0)(-4,-4) (ii) (-3,3) (3,3),(-6,-1)(5,-1)

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Exercise 5 2

1. Find the distance between the following pairs of points .

A. (1,2) and (4,3)

B. (3,4) and (7,2)

C. (a,b) and (c,d)

D. (3,-9) and (-2,3)

Answer:

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2. Determine whether the give set of points in each case are collinear or not.

(i) (7,-2),(5,1),(3,4) (ii) (a,-2),(a,3)(a,0)

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3. Show that the folloiwng points taken in order form an isosceles triangle .

(i) A(5,4), B (2,0),C(-2,3) (ii) A(6,4),B(-2,-4),C(2,10)

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4. Show that the following points taken in order form an equilateral triangle in each case .

(i) $A(2, 2), B(-2, -2), C-2\sqrt{3}, 2\sqrt{3})$ (ii)

$A(\sqrt{3}, 2), B(0, 1), C(0, 3)$

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5. Show that the following points taken in order form the vertices of a parallelogram.

(i) A(-3,1) , B(-6,-7) ,C(3,-9) and D(6,-1)

(ii) A(-7,-3),B(5,10),C(15,8) and D(3,-5)

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6. Verifgy that the following points taken in order form the vertices of a rhombus.

A(3,-2),B(7,6),C(-1,2) and D(-5,-6)

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7. Verifgy that the following points taken in order form the vertices of a rhombus.

A(1,1),B(2,1),C(2,2) and D(1,2)

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8. If A(-1,1) , B(1,3) and C(3,a) are points and if AB = BC , then

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9. The absicssa of point A is equal to its ordinate , and its distance form the point B(1,3) is 10 units , what are the coordinates of A ?

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10. The points (x,y) is equidistant from the points (3,4) and (-5,6) . Find a relation between x and y.

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11. Let A(2,3) and B(2,-4) be two points. If P lie on the x - axis , such that $AP = \frac{3}{7}AB$, Find the coordinate of P.

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12. Show that the point (11,2) is the centre of the circle passing through the points (1,2),(3,-4) and (5,-6).

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13. The radius of a circle with centre at origin is 30 units. Write the coordinates of the points where the circle intersects the axes. Find the distance between any two such points.

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Exercise 5 3

1. Find the mid points of the line segment joining the points .

A. (-2,3) and (-6,-5)

B. (8,-2) and (-8,0)

C. (a,b) and (a+2b,2a-b)

D. $\left(\frac{1}{2}, \frac{3}{7}\right)$ and $\left(\frac{3}{2}, \frac{-11}{7}\right)$

Answer:

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2. The centre of a cirlce is (-4,2) . If one end of the diameter of the circle is (-3,7) tehn find the other end.

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3. If the mid-point (x,y) of the line joining (3,4) and (p,7) lie on $2x + 2y + 1 = 0$ then what will be the value of P ?

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4. The midpoint of the sides of a triangle are (2,4) (-2,3) and (5,2) .Find the corrdinate of the vertices of the triangle .

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5. O(0,0) is the centre of a circle whose one chord is AB, where the points A and B are (8,6) and (10,0) respectively. OD is the perpendicular form the centre of the chord AB. Find the coordinates of the midpoint of OD.

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6. The points A(-5,4), B(-1,-2) and C(5,2) are the vertices of an isosceles right angled trinagle where the right

angle is at B. Find the corrdinates of D so that ABCD is a square .

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7. A(-3,2),B(3,2) and C(-3,-2) are the vertices of the right trinagle ,right angled at A. Show that the mid point of the hypotenus is equidistant form the vertices.

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Exercise 5 4

1. Find the coordinate of the point of the point which divides the line segment joining the points A(4,-3) and B(9,7) in the ratio 3:2.

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2. In what ratio does the point P(2,-5) divide the line segment joinig A(-3,5) and B(4,-9).

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3. Find the coordinate of a point P on the line segment joinig A(1,2) and B(6,7) in such a way that $AP = \frac{2}{5}$ AB.

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4. Find the corrdinate of the points of trisection of the line segment joining the points A (-5,6) and B(4,-3).

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5. The line segment joining A(6,3) and B(-1,-4) is doubled in length by adding half of AB to each . Find the coordinates of the new end points .

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6. Using section formula , show that the points A(7,-5),B(9,-3) and C(13,1) are colliner.

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7. A line segment AB is increased along its length by 25% by producing it to C on the side of B. If A and B have the coordinates (-2,-3) and (2,1) respectively ,then find the coordinates of C.

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Exercise 5 5

1. Find the centroid of the the triangle whose vertices are .

(2,-4),(-3,-7) and(7,2)

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2. Find the centroid of the triangle whose vertices are (-5,-5), (1,-4) and (-4,-2).

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3. If the centroide of a triangle is at (4,-2) and two of its vertices are (3,-2) and (5,2) then find the thrid

vertex of the triangle .

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4. Find the length of median through A of a triangle whose vertices are A(-1,3),B(1,-1) and C(5,1).

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5. The vertices of a triangle are (1,2),(h-3) and (-4,k) . If the centroid of the triangle is at the point (5,-1) then find value of $\sqrt{(h+k)^2+(h+3k)^2}$

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Exercise 5 6

1. If the y - coordinate of a point is zero, then the point always lies_____.

A. in the I quadrant

B. in the II quardant

C. on x - axis

D. on y -axis

Answer:

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2. The point (-5,2) and (2,-5) lie in the _____.

A. same quadrant

B. II and III quadrant respectively

C. II and IV quadrant respectively

D. IV and II quadrant respectively

Answer:

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3. On plotting the points O(0,0),A(3,-4),B(3,4) and C(0,4) and joining OA, AB ,BC and CO , which of the following figure is obtained ?

A. Square

B. Rectangle

C. Trapezium

D. Rhombus

Answer:

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4. If P(-1,1),Q(3,-4), R(1,-1),S(-2,-3) and T(-4,4) are plotted on a graph paper , then the point in the fourth quardant are _____.

A. P and T

B. Q and R

C. only S

D. P and Q

Answer:

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5. The point whose ordinate is 4 and which lies on the y - axis is _____.

A. (4,0)

B. (0,4)

C. (1,4)

D. (4,2)

Answer:

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6. The distance between the two points (2,3) and (1,4) is _____.

A. 2

B. $\sqrt{56}$

C. $\sqrt{10}$

D. $\sqrt{2}$

Answer:

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7. If the point A(2,0),B (-6,0), C(3,a-3) lie on the x-axis then the value of a is _____.

A. 0

B. 2

C. 3

D. -6

Answer:

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8. If $(x+2, 4) = (5, y-2)$ then the co - ordinates

A. (7,12)

B. (6,3)

C. (3,6)

D. (2,1)

Answer:

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9. If Q_1, Q_2, Q_3, Q_4 are the quadrants in a Cartesian plane then $Q_2 \cap Q_3$ is _____.

A. $Q_1 \cup Q_2$

B. $Q_2 \cup Q_2$

C. Null set

D. Negative x -axis

Answer:

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10. The distance between the point (5,-1) and the origin is _____.

A. $\sqrt{24}$

B. $\sqrt{37}$

C. $\sqrt{26}$

D. $\sqrt{17}$

Answer:

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11. The coordinates of the ponit C dividing the line segment joining the point P(2,4) abd Q(5,7) internally in the ratio 2 :1.

A. $\left(\frac{7}{2}, \frac{11}{2}\right)$

B. $(3, 5)$

C. $(4, 4)$

D. $(4, 6)$

Answer:

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12. If P $\left(\frac{a}{3}, \frac{b}{2}\right)$ is the mid - point of the line segment joining A(-4,3) and B(-2,4) then (a,b) is

A. $(-9, 7)$

B. $-3, \frac{7}{2}$

C. $(9, -7)$

D. $3 - \frac{7}{2}$

Answer:

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13. In what ratio does the point Q(1,6) divide the line segment joining the points P(2,7) and R(-2,3).

A. $1:2$

B. $2:1$

C. $1:3$

D. $3:1$

Answer:

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14. If the coordinate of one end of a diameter of a circle is (3,4) and the coordinates of its centre is (-3,2) then the coordinate of the other end of the diameter is .

A. (0,-3)

B. (0,9)

C. (3,0)

D. (-9,0)

Answer:

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15. The ratio in which the x-axis divides the line segment joining the points (6,4) and (1,-7) is .

A. $2:3$

B. $3:4$

C. $4:7$

D. $4:3$

Answer:

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16. If the coordinate of the mid - point of the sides AB, BC and CA of a trinagle are (3,4) (1,1) and (2,-3)

respectively , then the vertice A and B of the triangle are .

A. (3,2),(2,4)

B. (4,0),(2,8)

C. (3,4),(2,0)

D. (4,3),(2,4)

Answer:

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17. The mid-point of the line joining (-a, 2b) and (-3a, -4b) is

A. (2a,3b)

B. (-2a,-b)

C. (2a,b)

D. (-2a,-3b)

Answer:

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18. In what ratio does the y-axis divides the line joining the point (-5,1) and (2,3) internally.

A. $1:3$

B. $2:5$

C. $3:1$

D. $5:2$

Answer:

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19. If (1,-2),(3,6),(x,10) and (3,2) are the vertices of the parallelogram taken in order , then the value of x is .

A. 6

B. 5

C. 4

D. 3

Answer:

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Additional Questions And Answers Exercise 5 1 True False

1. (5,7) is a point in the IV quadrant .

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2. (-2,-7) is a point in the IIIquadrant.

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3. (8,-7) lies below the x-axis .

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4. (-2,3) lies in the II quadrant.

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5. State whether the following statement is true/false:For any point on the x-axis its y - coordinate is zero.

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Additional Questions And Answers Exercise 5 1

1. Locate the point (i) (3,5) and (5,3) (ii) (-2,-5) and (-5,-2) in the rectangular coordinate system.

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2. In which quadrant does the following points lie ?

A. (5,2)

B. (-5,-8)

C. (-7,1)

D. (8,-3)

Answer:

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3. Write down the ordinate of the following points .

A. (7,5)

B. (2,9)

C. (-5,8)

D. (7,-4)

Answer:

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Additional Questions And Answers Exercise 5 2

1. Find the distance between the following pairs of points.

(-4,0) and (3,0)

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2. Find the distance between the following pairs of points.

(-7,2) and (5,2)

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3. Show that the three points (4,2),(7,5) and (9,7) lie on a straight line .

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4. Deterime whether the points are vertices of a right triangle A(-3,-4),B(2,6) and C(-6,10).

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5. Show that the points (a,a), (-a,-a) and $\left(-a\sqrt{3}, a\sqrt{3}\right)$ form an equilateral triangle .

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6. Prove that the points (-7,-3),(5,10),(15,8) and (3,-5) taken in order are the corners of a paralleogram .

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7. Show that the following points A(3,1), B(6,4) and C(8,6) lies on a straight line .

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8. If the distance between the points (5,-2),(1,a) is 5 units . Find the value of a .

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Additional Questions And Answers Exercise 5 3

1. A,B, and C are vertice of ΔABC, D, E and F are mid point of side AB,BC and AC respectively. If the coordinates of A, D and F are (-3,5),(5,1) and (-5,-1) respectively. Find the coordinates of B,C and E.

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2. If A(10,11) and B(2,3) are the coordinates of end points of diameter of circle . The find the centre of the circle .

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3. Find the coordinates of the point which divides the line segment joining the points (3,1) and (5,13) internally in the ratio 3 :5.

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Additional Questions And Answers Exercise 5 4

1. Using section formula , show that the points A(7,-5),B(9,-3) and C(13,1) are colliner.

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2. A car travels at an uniform speed. At 2pm it is at a distance of 5 km at 6pm it is at a distance of 120Km. Using section formula, find at what distance it will reach 2 midnight.

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3. Find the coordinates of the point which divides the line segment joining the point A(3,7) and B(-11,-2) in the ratio 5 : 1.

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Additional Questions And Answers Exercise 5 5

1. Find the centroid of the triangle whose vertices are (2,-5),(5,11) and (9,9).

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2. If the centroid of a triangle is at (10,-1) and two vertices are (3,2) and (5,-11). Find the third vertex of a triangle .

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Additional Questions And Answers Exercise 5 6

1. The point (-2,7) lies is the quadrant .

A. I

B. II

C. III

D. IV

Answer:

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2. The point (x,0) where $x < 0$ lies on .

A. OX

B. OY

C. OX'

D. OY

Answer:

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3. For a point A(a,b) lying in quadrant IIII.

A. $a > 0, b < 0$

B. $a < 0, b < 0$

C. $a > 0, b > 0$

D. $a < 0, b > 0$

Answer:

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4. The diagonal of a squar formed by the points (1,0), (0,1) and (-1,0) is

A. 2

B. 4

C. $\sqrt{2}$

D. 8

Answer:

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5. The triangle obtained by joining the points A(-5,0), B(5,0) and C(0,6) is

A. an isoceles trinagle

B. right triangle

C. scalene triangle

D. an equilateral triangle

Answer:

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Unit Test Section A

1. The coordinates of the ponit C dividing the line segment joining the point P(2,4) abd Q(5,7) internally in the ratio 2 :1.

A. $\left(\frac{7}{2}, \frac{11}{2}\right)$

B. $(3, 5)$

C. $(4, 4)$

D. $(4, 6)$

Answer: D

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2. The point whose ordinate is 4 and which lies on the y -axis is _____.

A. (4,0)

B. (0,4)

C. (1,4)

D. (4,2)

Answer: B

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3. The ratio in which the x- aixs divides the line segment joining the points (6,4) and (1,-7) is

A. $2:3$

B. $3:4$

C. $4:7$

D. $4:3$

Answer: C

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4. The distance between the two points (2,3) and (1,4) is _____.

A. 2

B. $\sqrt{56}$

C. $\sqrt{10}$

D. $\sqrt{2}$

Answer: D

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5. The ratio in which the x-axis divides the line segment joining the points $A(a_1, b_1)$ and $B(a_2, b_2)$ is

A. $b_1 : b_2$

B. $-b_1 : b_2$

C. $a_1 : a_2$

D. $-a_1 : a_2$

Answer: B

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Unit Test Section B

1. Plot the following points in the coordinate plane and join the m . What is your conclusion about the resulting figure ?

(i) (5-,3) (-1,3) (0,3) (5,3)

(ii) (0,-4) (0,-2)(0,4) (0,5)

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2. Determine whether the given set of points in each case are colliner or not .

(7,-2),(5,1),(3,4).

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3. Determine whether the given set of points in each case are colliner or not .

(-2,-8),(2,-3),(6,2).

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4. If A,B,C are points (-1,1),(1,3) and (3,a) respectively and if AB=Bc, then find 'a'.

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5. In which quadrant does the following point lie ?

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6. Find the mid-point of the line segment joning the points (-2,3) and (-6,-5).

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7. In what ratio does the point P(2,-5) divide the line segment joining A(-3,5) and B(4,-9).

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8. Find the centroid of the triangle whose vertices are (2,-4),(-3,-7) and (7,2).

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Unit Test Section C

1. Locate the point (i) (3,5) and (5,3) (ii) (-2,-5) and (-5,-2) in the rectangular coordinate system.

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2. Plot the following points in the coordinate plane . Join them in order. What type of geometrical shape is formed ?

(i) `(0,0) (-4,0) (-4,-4) (0,-4)

(ii) (-3,3) (2,3) (-6,-1) (5,-1).

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3. Prove that the points (-7,-3),(5,10),(15,8) and (3,-5) taken in order are the corners of a paralleogram .

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4. If the centroid of a triangle is at (4,-2) and two of its vertices are (3,-2) an (5,2) then find the third vertex of the triangle .

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