MATHS

BOOKS - S CHAND IIT JEE FOUNDATION

CO-ORDINATE GEOMETRY

Solved Examples

1. Find the distance between the points $(a\cos 60^\circ, 0)$ and $(0, a\sin 60^\circ)$.

2. Find the vaue of x if the distance between the points (2, -11) and (x, -3) is 10 unit.

3. Show that the ponts (1, -1), (5, 2) and (9, 5) are collinear.

4. If P(2, -1), Q(3, 4), R(-2, 3) and S(-3, -2) are four points in a plane, show that PQRS is a rhombus but not a square. Also find its area.

5. Find a point on the x-axis, which is equidistant from the points (7, 6) and (-3, 4).

6. If A(-1, 3), B(1, -1) and C(5, 1) are the vertices of triangle ABC, find the length of the median passing through the vertex through A.

7. If the points A(a, -10), B(6, b), C (3, 16), D (2, -1) are the vertices of a parallelogram ABCD, find the values of a and b.

8. Two vertices of a triangle are A(1, 1), B (2, -3).

If its centroid is (2, 1) find the third vertex.

Question Bank

1. The distance between the points

$(\cos\theta, \sin\theta)$ and $(\sin\theta, -\cos\theta)$ is

A. $\sqrt{3}$

B. $\sqrt{2}$

C. 1

D. 0

Answer: B

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2. If y is a positive integer such that the distance between the points (-6, -1) and (-6, y) is 12 units, then y=

A. 5

B. 8

C. 11

D. 1

Answer: C

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3. If A (x, y) is equidistant from P (-3, 2) and Q (2,-3), then

A. $2x = y$

B. $x = -y$

C. $x = 2y$

D. $x = y$

Answer: D

4. The nearest point from the origin is

A. (2, -3)

B. (6,0)

C. (-2,-1)

D. (3,5)

Answer: C

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5. The vertices of a triangle are A (3,-2), B (-2, 1) and C (5,2). Then the length of the median through B is

A. $\sqrt{67}$ units

B. $\sqrt{37}$ units

C. $\sqrt{35}$ units

D. 6 units

Answer: B

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6. The points (a, a), (–a, –a) and $\left(-\sqrt{3}a, \sqrt{3}a \right)$ are the vertices of

A. right triangle

B. scalene triangle

C. equilateral triangle

D. isosceles triangle

Answer: C

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7. The co-ordinates of the vertices of a side of square are (4, -3) and (-1,-5). Its area is

A. $2\sqrt{29}$ sq. units

B. $\dfrac{\sqrt{89}}{2}$ sq. units

C. 89 sq. units

D. 29 sq. units

Answer: D

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8. The quadrilateral with vertices P(-3, 2), Q(-5,-5), R(2, -3) and S (4,4) is a

A. rectangle

B. square

C. rhombus

D. kite

Answer: C

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9. The value of p for which the points (-1, 3), (2, p) and (5,-1) are collinear is

A. -1

B. 2

C. $\dfrac{1}{3}$

D. 1

Answer: D

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10. The centre of a circle is (x - 2, x+1) and it passes through the points (4,4). Find the value (or values) of x, if the diameter of the circle is of length $2\sqrt{5}$ units.

A. 1 or 3

B. -1 or 4

C. 5 or 4

D. 3 or -2

Answer: C

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11. Find the area of a rectangle whose vertices

are A(-2, 6), B (5,3), C (-1,-11) and D(-8,-8)

A. $4\sqrt{29}$ sq. units

B. 116 sq. units

C. $29\sqrt{5}$ sq. units

D. $58\sqrt{2}$ sq. units

Answer: B

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12. If the points P (12,8), Q (-2, a) and R (6,0) are the vertices of a right angled triangle PQR, where $\angle R = 90°$, the value of a is

A. 6

B. -2

C. -4

D. -6

Answer: A

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13.

$A(-2, -1), B(a, 0), C(4, b) and D(1, 2)$

are the vertices f a parallelogram, find the values of a and b.

A. 3, 1

B. $-3, 1$

C. 1, 3

D. $-1, -3$

Answer: C

14. The co-ordinates of one end-point of a circle are (-3, 1) and the co-ordinates of the centre of the circle are (2, 4). The co-ordinates of the other end-point of the diameter are

A. $\left(\dfrac{-1}{2}, \dfrac{-3}{2} \right)$

B. $(- 7, 9)$

C. $(7, 9)$

D. $\left(\dfrac{1}{2}, \dfrac{3}{2} \right)$

Answer: C

15. If three consecutive vertices of a parallelogram are $(1, \ -2), \ (3, \ 6)$ and $(5, \ 10)$, find its fourth vertex.

A. (2,-3)

B. (-2,-3)

C. (3,2)

D. (3,-2)

Answer: C

16. The point on the x-axis which is equidistant

from the points (7,6) and (-3, 4) is

    A. (0, 3)

    B. (3, 0)

    C. (-3, 0)

    D. (0, -3)

Answer: B

17. What is the perimeter of the parallelogram JKLM, whose co-ordinates are J(-5,2), K (-2, 6), L (5,6), M(2, 2).

A. 30 units

B. 24 units

C. 28 units

D. 21 units

Answer: B

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18. Find the area of the right angled triangle whose vertices are (2,-2), (-2, 1) and (5,2).

    A. $5\sqrt{2}$ sq. units

    B. $\dfrac{25}{2}$ sq. units

    C. $15\sqrt{2}$ sq. units

    D. 10 sq. units

Answer: B

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19. The points (3,4), (11, 10) and (5, 11/2) are

A. collinear

B. vertices of an equilateral triangle

C. vertices of isosceles triangle

D. vertices of scalene triangle.

Answer: A

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20. The co-ordinates of vertices P and Q of an equilateral ΔPQR are $(1, \sqrt{3})$ and $(0, 0)$. Which of the following could be co-ordinates of R ?

A. $(1, 2)$

B. $(2, 0)$

C. $\left(1, \dfrac{\sqrt{3}}{2}\right)$

D. $(\sqrt{3}, 1)$

Answer: B

Self Assessment Sheet

1. The distance between the points (a, b) and (-a, -b)

    A. 0

    B. 1

    C. $\sqrt{ab}$

    D. $2\sqrt{a^2 + b^2}$

Answer: D

2. Show that the points (a, 0), (0, b) and (1, 1) are collinear, if $\dfrac{1}{a} + \dfrac{1}{b} = 1$

A. -1

B. 1

C. 0

D. 2

Answer: B

3. If Q (0, 1) is equidistant from P (5,-3) and R (x, 6) , then positive value of x is

    A. 5

    B. 4

    C. 2

    D. 8

Answer: B

4. The quadrilateral formed by the points (-1, -2), (1,0), (-1, 2) and (-3,0) is a

A. rectangle

B. square

C. rhombus

D. none of these

Answer: B

5. The third vertex of a triangle, whose two vertices are (-4,1) and (0, -3) and centroid is at the origin is

A. (3, 1)

B. (-4,1)

C. (4,2)

D. (-1,2)

Answer: C

6. (3, 2), (-3, 2) and $\left(0, 2\sqrt{3}\right)$ are, the vertices of

................triangle of area ....

A. isosceles, 81 sq. units

B. scalene, $9\sqrt{3}$ sq. units

C. equilateral, $9\sqrt{3}$ sq. units

D. right angled, 81 sq. units

Answer: C

7. The mid-point of the line segment joining

(2a, 4) and (-2, 2b) is (1, 2a + 1). The values of a

and b are

    A. a = 3, b = -1

    B. a = 2,b = -3

    C. a = 3, b = -2

    D. a = 2, b = 3

Answer: D

8. If A (1,0), B (5,3), C(2,7) and D (x, y) are vertices of a parallelogram ABCD, the co-ordinates of D are

    A. (-2, -3)

    B. (-2, 4)

    C. (2, -3)

    D. (3, 5)

Answer: B

9. If the point (x, y) is equidistant from the points (a+b, b-a) and (a-b, a+b), then prove that bx=ay.

A. $bx + ay = 0$

B. $bx - ay = 0$

C. $ax + by = 0$

D. $ax - by = 0$

Answer: B

10. The centre of the circle is at the origin and its radius is 10. Which of the following points lies inside the circle?

A. (6,8)

B. (0, 11)

C. (-10,0)

D. (7,7)

Answer: D

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