# Coordinate Geometry

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1. **The distance between the point** $(a,b),(-a,-b)$ **is**

   $(a)\ 2\sqrt{a^2+b^2}$

   $(b)\ 2\sqrt{a^2-b^2}$

   $(c)\ \sqrt{a^2+b^2}$

   $(d)\ \sqrt{a+b}$

   **Ans.** $2\sqrt{a^2+b^2}$

2. **2. The area of triangle whose vertices are** $(1,-1),(-4,6)$ and $(-3,-5)$is
   **(a) 21**
   **(b) 32**
   **(c) 24**
   **(d) 25**

   **Ans. (c)** 24

**3. The point** $(5,-3)$ **lies in**
**(a) 1st quadrant**
**(b) 2nd quadrant**
**(c) 3rd quadrant**
**(d) 4th quadrant**

**Ans. d)** 4th quadrant

**4. The distance between the points** $(Cos\theta,\ Sin\theta)$ and $(Sin\theta,\ -\ Cos\theta)$ is
**(a)** $\sqrt{3}$
**(b) 2**
**(c) 1**
**(d)** $\sqrt{2}$

**Ans. (d)** $\sqrt{2}$

**5. If $(1,2)$ $(4,y)$, $(x,6)$ and $(3,5)$ are the vertices of a parallelogram taken in order. Then $(x,y)$ is**
**(a) (6, 2)**
**(b) (6, 3)**
**(c) (6, 4)**
**(d) (3, 4)**

**Ans.(b)** (6, 3)

**6. The coordinates of the point which divides the join of $(-1,7)$ and $(4,-3)$ in the ratio 2:3 is**
**(a) (1, 3)**
**(b) (2, 3)**
**(c) (3, 1)**
**(d) (1, 1)**

**Ans. (a)** (1, 3)

**7. The coordinates of a point A, where AB is the diameters of a circle whose centre $(2,-3)$ and B is $(1,4)$ is**
**(a) (3, -9)**
**(b) (2, 9)**
**(c) (3, -10)**
**(d) (4, 5)**

**Ans. (c)** (3, -10)

**8. If the area of a quadrilateral ABCD is zero, then the four points A, B, C, D are**
**(a) Collinear**
**(b) Not collinear**
**(c) Nothing can be said**
**(d) None of these**

**Ans. (a)** Collinear

**9. The valve of K if the points $A(2,3)$, $B(4,K)$ and $C(6,-3)$ are collinear is**
**(a) (1)**
**(b) (-1)**
**(c) (2)**
**(d) (0)**

**Ans. (d)** (0)

**10. The mid-point of the line segment joining $(2a, 4)$ and $(-2, 3b)$ is $(1, 2a+1)$. The values of a and b is**
**(a) a=2, b=2**
**(b) a=1, b=3**
**(c) a=2, b=3**
**(d) a=1, b=1**

**Ans. (a)** a=2, b=2

**11. Coordinate of A and B are $(-3, \alpha)$ and $(1, \alpha+4)$. The mid-point of AB is $(-1,1)$. The value of $\alpha$ is**
**(a) (-1)**
**(b) (2)**
**(c) (3)**
**(d) (1)**

**Ans. (a)** (-1)

**12. The distance between $P(a, 7)$ and Q $(1, 3)$ is 5. The value of a is**
**(a) (4, 2)**
**(b) (-4, -2)**
**(c) (4, -2)**
**(d) (4, 1)**

**Ans. (c)** (4, -2)

**13. On which axis point $(-4, 0)$ lie**
**(a) x-axis**
**(b) y-axis**
**(c) both**
**(d) none of these**

**Ans. (a)** x-axis

**14. The distance of the point $(-4,-6)$ from the origin is**

$(a)\ \sqrt{53}$

$(b)\ 2\sqrt{13}$

$(c)\ 2\sqrt{12}$

$(d)\ \sqrt{13}$

**Ans. (b)** $2\sqrt{13}$

**15. The coordinates of the mid-point of the line segment joining $(-5,4)$ and $(7,-8)$ is**

**(a) (1, -2)**
**(b) (1, 2)**
**(c) (1, 3)**
**(d) (-1, -2)**

**Ans. (a)** (1, -2)

**16. Two vertices of a $\Delta ABC$ are $A(1,-1)$ and $B(5,1)$. If the coordinates of its centroid be $\left(\frac{5}{3},1\right)$, then the coordinates of the third vertex C is**

**(a) (-1, -3)**
**(b) (1, 3)**
**(c) (-1, 3)**
**(d) (1, 2)**

**Ans. (c)** (-1, 3)

**17. The abscissa of every point on y-axis is**

**(a) 0**
**(b) 1**
**(c) 2**
**(d) -1**

**Ans. (a)** 0

**18. The ordinate of every point on $x$-axis is**

**(a) 1**
**(b) 2**
**(c) 0**

**(d) -1**

**Ans. (c)** 0

**19. Find the distance between the following pairs of points:**
**(i) (2, 3), (4,1)**
**(ii) (–5, 7), (–1, 3)**
**(iii) (a, b), (–a, –b)**

**Ans. (i)** Applying Distance Formula to find distance between points (2, 3) and (4,1), we get

d = $\sqrt{(4-2)^2+(1-3)^2}$

$=\sqrt{(2)^2+(-2)^2}$

$=\sqrt{4+4}=\sqrt{8}=2\sqrt{2}$ units

**(ii)** Applying Distance Formula to find distance between points (–5, 7) and (–1, 3), we get

d = $\sqrt{[-1-(-5)]^2+(3-7)^2}$

$=\sqrt{(4)^2+(-4)^2}$

$=\sqrt{16+16}=\sqrt{32}=4\sqrt{2}$ units

**(iii)** Applying Distance Formula to find distance between points (a, b) and (–a, –b), we get

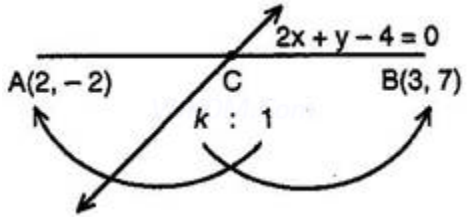
d = $\sqrt{(-a-a)^2+(-b-b)^2}$

$=\sqrt{(-2a)^2+(-2b)^2}=\sqrt{4a^2+4b^2}$

$=\sqrt{4(a^2+b^2)}=2\sqrt{a^2+b^2}$

**20. Determine the ratio in which the line 2x+y-4 = 0 divides the line segment joining the points A(2,-2) and B (3,7).**

**Ans.** Let the line $2x+y-4=0$ divides the line segment joining A $(2,-2)$ and B (3, 7) in the ratio $k:1$ at point C. Then, the coordinates of C are $\left(\frac{3k+2}{k+1}, \frac{7k-2}{k+1}\right)$.




But C lies on $2x+y-4=0$, therefore

$$2\left(\frac{3k+2}{k+1}\right)+\left(\frac{7k-2}{k+1}\right)-4=0$$

$$\Rightarrow 6k+4+7k-2-4k-4=0$$

$$\Rightarrow 9k-2=0$$

$$\Rightarrow k=\frac{2}{9}$$

Hence, the required ratio if 2 : 9 internally.

**21. Find a relation between $x$ and $y$ if the points $(x,y),(1,2)$ and $(7,0)$ are collinear.**

**Ans.** The points A $(x,y)$, B (1, 2) and C (7, 0) will be collinear if
Area of triangle = 0

$$\Rightarrow \frac{1}{2}\left[x(2-0)+1(0-y)+7(y-2)\right]=0$$

$$\Rightarrow 2x-y+7y-14=0$$

$$\Rightarrow 2x+6y-14=0$$

$$\Rightarrow x+3y-7=0$$