# MATHS

## BOOKS - DEEPTI MATHS (TELUGU ENGLISH)

## COORDINATE SYSTEM (3D)

**Solved Examples**

**1.** If $A(1, 2, 3), B(0, 1, 2)$ and $C(2, 1, 0)$ are vertices of a triangle , then the length of the median through A is

A. $\sqrt{5}$

B. $2\sqrt{5}$

C. 5

D. 10

**Answer: A**

**2.** If $A(1, 2, 3), B(4, 3, 2)$ and $C(5, 2, 7)$ are three vertices of a tetrahedron for which the centroid is $(4, 5/2, 5)$, the fourth vertex is

A. $(6, 5, 8)$

B. $(6, 4, 8)$

C. $(5, 4, 8)$

D. $(6, 4, 5)$

**Answer: B**

**3.** The points $(2, 5, -4), (4, 7, -6), (1, 4, -3)$ are

A. collinear

B. vertices of a right angled triangle

C. vertices of an equilateral triangle

D. vertices of an isosceles triangle

**Answer: A**

**4.** The point which divides the line segment the points $(-2, 3, 5), (1, 2, 3)$ in the ratio 2 : 3 externally is

A. $(-4/5, 13/5, 21/5)$

B. $(13/7, 2/7, 15/7)$

C. $(-3/2, 1/2, 9)$

D. $(-8, 5, 9)$

**Answer: D**

**5.** $A(5, 3, 2), B(-1, 0, -4), C(1, 1, -2)$ are collinear , then the ratio in which B divides $\overline{AC}$ is

A. $1:3$

B. $2:3$

C. $3:-1$

D. $1:2$

**Answer: C**

▶ Watch Video Solution

**6.** If H,G,S, I are respectively othercentre centroid , circumcentre and incentre of a triangle formed by the points (1,2,3), (2,3,1) and (3,1,2) . Then H + G + S + I =

A. (2,2,2)

B. (4,4,4)

C. (6,6,6)

D. (8,8,8)

**Answer: D**

▶ Watch Video Solution

7. The shortest distance between $(0, 0, 0)$ and $(2 \sin t, 2 \cos t, 3t)$ is :

A. 4

B. 3

C. 2

D. 1

**Answer: C**

▶ Watch Video Solution

**8.** If L and M are the feet of the perpendiculars from the point (2,4,5) to the planes XY and YZ, then distance LM is :

A. $\sqrt{20}$

B. $\sqrt{29}$

C. $3\sqrt{2}$

D. $4\sqrt{2}$

**Answer: B**

▶ **Watch Video Solution**

**9.** The line $\dfrac{x-2}{3} = \dfrac{y+1}{2} = \dfrac{z-1}{-1}$ intersects the curve $xy = c^2, z = 0$ if c =

A. $\pm\sqrt{7}$

B. $\pm\sqrt{5}$

C. $\pm\sqrt{5}$

D. $\pm 1$

**Answer: B**

> ▶ **Watch Video Solution**

**1.** The distance the points (-1,2,-3) ,(5,4,-6) is

A. 1

B. 3

C. 6

D. 7

**Answer: D**

> ▶ **Watch Video Solution**

**2.** The distance the points $(\sin\alpha, \cos\alpha, 0)$, $(\cos\alpha, -\sin\alpha, 0)$ is

A. 1

B. $\sqrt{2}$

C. 2

D. $\tan\alpha$

**Answer: B**

▶ **Watch Video Solution**

---

**3.** The distance between the points (-1,2,3) and P is 13. Then P =

A. $(2, 6, -9)$

B. $(-2, 6, 9)$

C. $(2, 6, 9)$

D. $(-2, -6, -9)$

**Answer: A**

4. The distance between the points (5,-1,7) and (c,5, 1) is 9 then c =

A. 8

B. 4

C. $-8$

D. $-4$

**Answer: A**

5. The distance of point (7,-8,15) from the x -axis is

A. 17

B. $\sqrt{34}$

C. $\sqrt{25}$

D. $\sqrt{20}$

**Answer: A**

▶ **Watch Video Solution**

**6.** The distance of point P (1,2,3) from the coordinate axes are

A. $\sqrt{13}, \sqrt{10}, \sqrt{5}$

B. $\sqrt{11}, \sqrt{10}, \sqrt{5}$

C. $\sqrt{13}, \sqrt{20}, \sqrt{15}$

D. $\sqrt{23}, \sqrt{10}, \sqrt{5}$

**Answer: A**

▶ **Watch Video Solution**

**7.** The perimeter of the triangle with vertices at (1, 0,0 ), (0,1,0 ) and (0,0,1 ) is :

A. 3

B. 2

C. $2\sqrt{2}$

D. $3\sqrt{2}$

**Answer: D**

▶ **Watch Video Solution**

**8.** The points (3,2,-4 ),( 5,4,-6 ) , (9,8,-10 )are

A. collinear

B. vertices of a right angled triangle

C. vertices of an equilateral triangle

D. vertices of an isosceles triangle

**Answer: A**

**9.** The points (-2, 3, 5 ) (1,2,3 ) (7,0,-1 ) are

A. collinear

B. vertices of a right angled triangle

C. vertices of an equilateral triangle

D. vertices of an isosceles triangle

**Answer: A**

**10.** The point collinear with (1, -2 -3 ) and (2, 0, 0 ) among the following is

A. (0,4,6)

B. (0,-4,-5)

C. (0,-4,-6)

D. (0,-4,6)

**Answer: C**

▶ **Watch Video Solution**

**11.** The points (1,2,3 ), (2,3,1 ), (3,1,2 ) from

A. isosceles triangle

B. equilateral triangle

C. right angled triangle

D. right angled isosceles triangle

**Answer: B**

▶ **Watch Video Solution**

**12.** The points ( 3,4,5) (2,3,1 ), (-1,6,1 ) from

    A. equilateral triangle

    B. isosceles triangle

    C. right angled triangle

    D. right angled isosceles triangle

**Answer: D**

▶ **Watch Video Solution**

**13.** The points (1,1 ,1 ) ,(1,2,3 ),(2-1, 1 ) form

    A. isosceles triangle

    B. equilateral triangle

    C. right angled triangle

    D. right angled isosceles triangle

**Answer: A**

---

**14.** The centroid of the triangle formed by the points $(1, 2, 3), (3, -1, 5), (4, 0, -3)$ is

A. right angled triangle

B. isosceles triangle

C. equilateral triangle

D. right angled isosceles triangle

**Answer: A**

---

**15.** If (1,2,3 ), (2,3,1 ) are two vertices of an equilateral triangle then its third vertex is

A. $(3, 1, 2)$

B. $(3, -1, 2)$

C. $(-3, 1, 2)$

D. $(-3, -1, 2)$

**Answer: A**

> ▶ Watch Video Solution

**16.** The coplanar points (3,2,1 ), (5,6,5),(2,1,2 )(0,-3,-2 ) from a

A. square

B. rectangle

C. rhombus

D. parallelogram

**Answer: D**

> ▶ Watch Video Solution

**17.** The coplanar points (1,2,2 ) ,(2,-1 , 0) ,(1,1,3 ),(0,4,5, ) from a

    A. parallelogram

    B. rectangle

    C. square

    D. rhombus

**Answer: D**

▶ **Watch Video Solution**

**18.** The coplanar points (1,2,4 ),(-2,2,1 ), (2,4,-3 ) ,(5,4,0) form

    A. parallelogram

    B. square

    C. rhombus

D. rectangle

**Answer: D**

▶ Watch Video Solution

---

**19.** The coplanar points (3,2,5) , (2,1,1),(-1,4,1 ),(0,5,5) form a

    A. parallelogram

    B. square

    C. rhombus

    D. rectangle

**Answer: B**

▶ Watch Video Solution

---

**20.** The midpoint of the line segment joining (2,3,-1 ), (4,5,3,) is

A. (3,4,1)

B. (4,1,3)

C. (3,-4,-1)

D. (-4,1,3)

**Answer: A**

▶ Watch Video Solution

---

**21.** If (2,3,-1 ), is the midpoint of $\overline{AB}$ Where A = (-1,5,3 ) then B =

A. (5,-1,5)

B. (5,1,-5)

C. (-5,1,5)

D. (5,-1,-5)

**Answer: A**

▶ Watch Video Solution

**22.** The points which divides the join of (3,-2,1 ) and (-2,3,11 ) in the ratio 2 : 3 is :

A. (1,1,4)

B. (1,0,5)

C. (2,3,5)

D. (0,6,-1)

**Answer: B**

**23.** The point which divides the line segment joining the points (1,2,3 ), (3,-2,1 )in the ratio 3 : 4 is

A. (8/5,-1,13/5)

B. (13/7,2/7,15/7)

C. (-3/2,1/2,9)

D. (4,-7,6)

**Answer: B**

**24.** The point which divides the line segment joining the points (1,-1,2 ) , (2,3,7 )in the ratio - 2 : 3 is

A. (-1,-9,-8)

B. (13/7,2/7,15/7)

C. (-3/2,1/2,9)

D. (4,-7,6)

**Answer: A**

**25.** The coordinates of the point which divides the line joining the points

(2,3,4 ) and (3,-4, 7 ) in the ratio : 2 :4 externally is

A. (10,1,1)

B. (1,10,1)

C. (10,-10,10)

D. (1,1,10)

**Answer: B**

▶ Watch Video Solution

**26.** If the line joining A (1,3, 4 )and B is divided by the point (-2, 3,5 )in the

ratio 1:3, then B is

A. $( - 11, 3, - 8)$

B. $( - 8, 12, 20)$

C. $(13, 6, - 13)$

D. $(-11, 3, 8)$

**Answer: D**

> ▶ Watch Video Solution

---

**27.** The points of trisection of line segment joining (2,-3,5 ) ,(3,1,-2 ) are

A. $(8/3, \ -1/3, 1/3), (7/3, \ -5/3, 8/3)$

B. $(7/3, 4, 13/3), (8/3, 3, 14/3)$

C. $(-8/3, \ -1/3, 1/3), (7/3, \ -5/3, 8/3)$

D. $(-7/3, 4, 13/3), (8/3, 3, 14/3)$

**Answer: A**

> ▶ Watch Video Solution

**28.** The ratio in which (5, 4,-6 ) divides the line segment joining (3,2,-4 ) , (9,8,-10 ) is

A. $2:1$

B. $1:2$

C. $2:3$

D. $3:2$

**Answer: B**

▶ **Watch Video Solution**

**29.** If A (3,2,-4 ), B (5,4 -6 ),C (9,8,10 )are collinear then the ratio in which B divides $\overline{AC}$ is

A. $1:2$

B. $2:3$

C. $2:1$

D. $1:1$

**Answer: A**

---

**30.** If X-coordinate of a point P on the line joining the points Q (2,2,1 ) and R(5,1,-2 ) is 4, then the z-coordinate of P is

A. $-2$

B. $-1$

C. 1

D. 2

**Answer: B**

**31.** The ratio in which xy- plane divides the line segment joining (-2,3,1 ) ,( 3,5,2,) is

   A. $1: -2$

   B. $2:1$

   C. $2:3$

   D. $3:2$

**Answer: A**

▶ **Watch Video Solution**

---

**32.** The ratio in which yz-plane divides the line segment joining (3,4,5 ) (2,-3,1 )is

   A. $1:2$

   B. $2:1$

   C. $1:3$

D. $3: - 2$

**33.** The ratio in which yz-plane divides the line segment joining (-3,4,2 ), (2,1,3 ) is

A. $- 4: 1$

B. $3: 2$

C. $- 2: 3$

D. $1: 4$

**34.** XOZ plane divides the join of (2,3,1 ) and (6,7,1 ) in the ratio

A. $3:7$

B. $2:7$

C. $-3:7$

D. $-2:7$

**Answer: C**

▶ Watch Video Solution

**35.** The ratio in which the line segment joining the points $A(-2, 3, 7), B(6, -1, 2)$ is divided by the yz - plane is

A. $1:3$

B. $5:4$

C. $5: -4$

D. $3:1$

Answer: A

36. The line segment joining points A (2,4,5) , B(3,5,-4) intersects xy -plane

at the point

A. (0,19/5,4/5)

B. (0,4,5)

C. (23/9,41/9,0)

D. (0,0,0)

Answer: C

37. The line joining the points (2,3,4) and (4,10,7) intersects the line

joining (2,-1,5) and (4,-30,17) . Then the coordinates of the point of

intersection are

A. (6/4,-8/9,33/9)

B. (16/9,20/9,33/9)

C. (16/4,38/9,13/9)

D. (0,2,3)

Answer: B

▶ View Text Solution

38. The line passing through the points (5,1,a) and (3,b,1) cross the yz - plane at the point (0,17/2,-13/2) .Then

A. $a = 4, b = 6$

B. $a = 6, b = 4$

C. $a = 8, b = 2$

D. $a = 2, b = 8$

**Answer: B**

**39.** The harmonic conjugate of (2,3,4) w.r.t the points $(3, -2, 2), (6, -17, -4)$ is

A. $(18/5, -5, 4/5)$

B. (11,-16,2)

C. (1/2,1/3,1/4)

D. (0,0,0)

**Answer: A**

**40.** Find the fourth vertex of the parallelogram whose consecutive vertices are $(2, 4, -1), (3, 6, -1)$ and $(4, 5, 1)$.

A. (3 ,3 ,1)

B. $(4, \ -2, \ -4)$

C. (2,2/3,2)

D. (5,0,1)

**Answer: A**

▶ **Watch Video Solution**

---

**41.** The fourth vertex of the square whose consecutive vertices are

$(4, 5, 1), (2, 4, \ -1), (3, 6, \ -3)$ is

A. (-4,2,4)

B. (4,-2,-4)

C. $(5, 7, \ -1)$

D. (5,0,1)

**Answer: C**

**42.** The centroid of the triangle formed by the points $(2, 3, -1), (5, 6, 3), (2, -3, 1)$ is

A. (2,-1,3)

B. (-2,1,3)

C. (2,1,-3)

D. (3,2,1)

**Answer: D**

**43.** If the origin is the centroid of the triangle for which $(2, -3, 5), (-1, 2, -2)$ are two vertices then the third vertex is

A. (1,2,9)

B. $( - 1, 1, - 3)$

C. $( - 1, - 2, - 9)$

D. $(1, - 2, - 9)$

**Answer: B**

**44.** If (2,1,1) is the centroid of the triangle for which (3,2,-1) ,(2,-2,5) are two vertices then the third vertex is

A. (1,2,9)

B. (10,4,-9)

C. (1,-5,-2)

D. (1,3,-1)

**Answer: D**

**45.** If the centroid of the triangle formed by

$(a, 1, 3), ( - 2, b, - 5)$ and $(4, 7, c)$ is the origin then (a,b,c) =

A. (2,8,2)

B. (2,8,-2)

C. (-2,-8,2)

D. (2,-8,2)

**Answer: C**

▶ Watch Video Solution

---

**46.** The centroid of the tetrahedron formed by the points (3,2,5) ,(-3,8,-5) ,

(-3,2,1) ,(-1,4,-3) is

A. (0,-1,5/2)

B. (5/4 , 3/4, 7/4)

C. $( - 1, 4, - 1/2)$

D. (5,-1,10)

**Answer: C**

**47.** If the origin is the centroid of the tetrahedron for which (2,-1,3) ,(-1,3,1) , (3,4,-2) are three vertices then the fourth vertex is

A. (4,6,2)

B. $( - 4, - 6, - 2)$

C. $( - 4, 6, - 2)$

D. (4,-6,2)

**Answer: B**

**48.** If (2,3,4) is the centroid of the tetrahedron for which $(2, 3, -1), (3, 0, -2), (-1, 4, 3)$ are three vertices then fourth vertex is

A. (4,5,16)

B. (3,2,4)

C. (2,3,4)

D. (2,2,12)

**Answer: A**

▶ **Watch Video Solution**

---

**49.** The centroid of the tetrahedron ABCD divides the line joining the vertex A to the centroid of $\triangle ABC$ in the ratio

A. $1:2$

B. $2:1$

C. $1:3$

D. $3:1$

**Answer: D**

> ▶ View Text Solution

**50.** The centroid of the triangle formed by the points $(1, 2, 3), (3, -1, 5), (4, 0, -3)$ is

A. $(2, 1/2, 4)$

B. $(7/2, -1/2, 1)$

C. $(5//2, 1, 0)$

D. $(8/3, 1/3, 5/3)$

**Answer: D**

> ▶ Watch Video Solution

**51.** The centroid of the triangle formed by the points $(1, 2, 3), (2, 3, 1), (3, 1, 2)$ is

A. (2,2,2)

B. (1,1,1)

C. (2,-2,1)

D. (-1,2,2)

**Answer: A**

▶ Watch Video Solution

**52.** The centroid of the triangle formed by the points $(2, -1, 1), (1, -3, -5), (3, -4, -4)$ is

▶ Watch Video Solution

**53.** The centroid of the triangle formed by the points $(2, 1, 5), (3, 2, 3), (4, 0, 4)$ is

A. (2,1,5)

B. (3,2,3)

C. (4,0,4)

D. (3,1,4)

**Answer: D**

▶ Watch Video Solution

**54.** If the orthocentre and the circucentre of are (-3,5,2) ,(6,2,5) then its centroid is

A. (3,3,4)

B. (3/2,7/2,7/2)

C. (-9/2,7/2,-3/2)

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

55. If the orthocentre and the circucentre of a triangle are $(-3, 5, 1), (3, 3, -1)$ then the centroid is

A. (1,11/3,-1/3)

B. (0,2,0)

C. (6,-2,-2)

D. (-6,2,2)

Answer: A

▶ Watch Video Solution

**56.** The incentre of the triangle formed by (0,0,0),(3,0,0),(0,4,0) is

A. (1,1,0)

B. (1,0,1)

C. (0,1,1)

D. (1,1,1)

**Answer: A**

▶ **Watch Video Solution**

---

**57. A :** If $(2, 1, -3), (-2, 3, 4), (1, 2, 2)$ are the midpoints of $\overline{BC}, \overline{CA}, \overline{AB}$ of $\triangle ABC$ then $A = (-3, 4, 9)$

R : If $(\alpha_1, \beta_1, \gamma_1), (\alpha_2, \beta_2, \gamma_2), (\alpha_3, \beta_3, \gamma_3)$ are the midpoints of the

sides $\overline{BC}, \overline{CA}, \overline{AB}$ of $\triangle ABC$ then

$A = (\alpha_2 + \alpha_3 - \alpha_1, \beta_2 + \beta_3 - \beta_1, \gamma_2 + \gamma_3 - \gamma_1)$

A. (0,5/2,5/3)

B. (5,0,-5)

C. (-1,2,-1)

D. (1,6,3)

**Answer: A**

▶ Watch Video Solution

**58.** The points D,E,F are the midpoints of the sides $\overline{BC}, \overline{CA}, \overline{AB}$ of $\triangle ABC$ respectively.

If $A = ( - 2, 3, 4), D = (1, - 4, 2), E = ( - 5, 2, 3)$ then F =

A. (-8,9,1)

B. (4,-3,3)

C. (-2,-5,-5)

D. (-6,1,3)

**Answer: B**

**59.** $D(2, 1, 0), E(2, 0, 0), F(0, 1, 0)$ are midpoints of the sides BC,CA,AB of $\triangle ABC$ respectively. The, the centroid of $\triangle ABc$ is

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

B. $\left(\dfrac{4}{3}, \dfrac{2}{3}, 0\right)$

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

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

**Answer: B**

**60.** In $\triangle ABC$ the mid-point of the sides AB,BC and CA are respectively (l,0,0),(0,m,0) and (0,0,n). Then $\dfrac{AB^2 + BC^2 + CA^2}{l^2 + m^2 + n^2} =$

A. 2

B. 4

C. 8

D. 16

**Answer: C**

> ▶ **Watch Video Solution**

---

**61.** If the extremities of a diagonal of square are $(1, \; - \; 2, 3), (2, \; - \; 3, 5)$

then the length of its side is

A. $\sqrt{6}$

B. $\sqrt{3}$

C. $\sqrt{5}$

D. $\sqrt{7}$

**Answer: B**

> ▶ **Watch Video Solution**

**62.** If (5,7,10),(1,9,6) are the extremities of the hypotenuse of a right angled isosceles

A. (4,6,6)

B. (4,7,-7)

C. (7,4,7)

D. (4,7,7)

**Answer: A**

**63.** The circumradius of the triangle formed by the points (2,-1,1),(1,-3,-5) , (3,-4,-4) is

A. $\dfrac{1}{2}\sqrt{6}$

B. $\dfrac{1}{2}\sqrt{35}$

C. $\dfrac{1}{2}\sqrt{41}$

D. $\sqrt{41}$

**Answer: C**

▶ Watch Video Solution

---

**64.** The distance between the circumcentre and the orthocentre of the triangle formed by (1,2,3),(3,-1,5),(4,0,-3) is

A. $\dfrac{1}{2}\sqrt{17}$

B. $\dfrac{1}{2}\sqrt{66}$

C. $\dfrac{7}{2}$

D. $\dfrac{1}{2}\sqrt{7}$

**Answer: B**

▶ Watch Video Solution

**65.** The distance between the circumcentre and the orthocentre of the triangle formed by the points (2, 1, 5), (3, 2, 3) and (4, 0, 4) is

A. $\sqrt{6}$

B. $\dfrac{1}{2}\sqrt{6}$

C. 3

D. 0

**Answer: D**

▶ Watch Video Solution

**66.** If the points (3,2,-4) ,(5,4k),(9,8-10)are collinear then k =

A. 6

B. 3

C. $-6$

D. $-3$

**Answer: C**

**67.** If (k,1,5) ,(1,0,3),(7,-2,1) are collinear then `(k,-1)=

A. $(-2, -1)$

B. (2,1)

C. $(-2, 1)$

D. (2,-1)

**Answer: A**

**68.** The locus of a point which is at a distance of 5 unit from (2,1,-3) is

A. $x^2 + y^2 + z^2 + 2x + 4z + 5 = 0$

B. $x^2 + y^2 + z^2 + 2x - 4z - 20 = 0$

C. $x^2 + y^2 + z^2 - 2x - 4z + 5 = 0$

D. $x^2 + y^2 + z^2 - 4x - 2y + 6z - 11 = 0$

**Answer: D**

▶ **Watch Video Solution**

---

**69.** The locus of a point which is at a distance of 2 unit from yz - plane is

A. $x^2 - 4 = 0$

B. $x^2 - 25 = 0$

C. $x^2 + 15 = 0$

D. $x^2 - 15 = 0$

**Answer: A**

▶ **Watch Video Solution**

**70.** The locus of the point which is equidistant from xy plane and yz - plane is

A. $y^2 - z^2 = 0$

B. $z^2 - x^2 = 0$

C. $x^2 - y^2 = 0$

D. $x^2 + y^2 + z^2 = 0$

**Answer: B**

▶ Watch Video Solution

**71.** The locus of point which is equidistant from the points (-2,2,3),(3,4,5) is

A. $10x + 4y + 4z - 33 = 0$

B. $10x - 5y + 2z = 0$

C. $10x - 5y - 2z = 0$

D. $10x + 5y - 2z = 0$

**Answer: A**

72. The locus of a point for which the sum of the squares of the distances from the coordinate planes is 5 unit is

A. x + y + z = 4

B. x + y + z = 2

C. $x^2 + y^2 + z^2 = 4$

D. `x^2 + y^2 + z^2 = 5/2

**Answer: D**

73. The locus of a point P from which the distance to the point (1,1,1) is double the distance from P to the yz - plane is

A. $3x^2 - 3y^2 + z^2 - 4x + 6y - 8z + 29 = 0$

B. $3x^2 - y^2 - z^2 + 2x + 2y + 2z - 3 = 0$

C. $3x^2 - 3y^2 + z^2 - 4x - 6y - 8z - 29 = 0$

D. $3x^2 - 3y^2 + z^2 + 4x + 6y + 8z + 39 = 0$

**Answer: B**

▶ Watch Video Solution

**74.** The locus of a point P from which the distance to the point (2,3,-1) is trible the distance from P to the xy - plane is

A. $x^2 + y^2 - 8z^2 - 4x - 6y + 2z + 14 = 0$

B. $x^2 + 3y^2 - z^2 - 4x - 2y + 8z - 3 = 0$

C. $x^2 - 3y^2 + z^2 + 4x - 6y + 8z - 29 = 0$

D. $x^2 + 3y^2 + z^2 + 4x + 6y + 8z + 29 = 0$

**Answer: A**

75. The locus of a point P such that distances from P to the points (2,3,5), (1,2,-1) are in the ratio 5 : 2 is

A. $21x^2 + 21y^2 + 21z^2 - 34x - 76y + 90z - 2 = 0$

B. $21x^2 - 21y^2 + 21z^2 - 34x - 76y + 90z - 2 = 0$

C. $21x^2 + 21y^2 + 21z^2 - 34x + 76y + 90z + 2 = 0$

D. $21x^2 - 21y^2 - 21z^2 - 34x - 76y + 90z - 2 = 0$

Answer: A

76. The locus of a point P such that 3PA = 2PB where A = (2,3,4) B=(-3,2,5) is

A. $5(x^2 + y^2 + + z^2) + 34x + 8y - 54z + 70 = 0$

B. $x^2 + y^2 + z^2 + 34x - 8y + 54 + 70 = 0$

C. $5(x^2 + y^2 + + z^2) - 60x - 38y - 32z + 109 = 0$

D. $x^+ y^2 + z^2 + 34x - 8y + 54z - 70 = 0$

**Answer: C**

▶ **Watch Video Solution**

77. The locus of the point if the join of the points $(-4, 2, 3), (2, -1, 5)$ subtends a right angle at P is

A. $x^2 + y^2 - z^2 + 2x - y - 8z + 5 = 0$

B. $x^2 + y^2 - z^2 + 2x - y - 8z - 5 = 0$

C. $x^2 + y^2 + z^2 + 2x - y - 8z + 5 = 0$

D. $x^2 - y^2 - z^2 - 2x - y - 8z - 5 = 0$

**Answer: C**

▶ **Watch Video Solution**

**78.** The ends of the hypotenuse of a right angled triangle are $(2, 0, -3), (0, 4, 1)$ then the locus of the third vertex is

A. $x^2 + y^2 + z^2 - 2x - 4y + 2z - 3 = 0$

B. $x^2 + y^2 - z^2 - 2x + 4y + 2z + 3 = 0$

C. $x^2 - y^2 - z^2 - 2x - 4y + 2z - 3 = 0$

D. $x^2 + y^2 + z^2 + 2x + 4y + 2z + 3 = 0$

**Answer: A**

▶ Watch Video Solution

---

**79.** The locus of the point P such that PA + PB = 4 where $A = (2, 3, 4), B = (-2, 3, 4)$ is

A. $y^2 + z^2 + 6y + 8z + 25 = 0$

B. $y^2 - z^2 + 6y + 8z - 25 = 0$

C. $y^2 + z^2 - 6y - 8z + 25 = 0$

D. $y^2 + z^2 - 6y - 8z - 25 = 0$

**Answer: C**

---

**80.** The locus of point P such that PA - PB = 5 where $A = (3, 2, -1), B = (3, -4, 2)$ is

A. $25x^2 - 11y^2 + 16z^2 + 36yz - 150x - 40y + 20z + 325 = 0$

B. $25x^2 + 11y^2 - 16z^2 + 36yz - 150x - 40y + 20z + 325 = 0$

C. $25x^2 - 11y^2 + 16z^2 + 36yz - 150x + 40y - 20z - 325 = 0$

D. $25x^2 + 11y^2 + 16z^2 + 36yz - 150x + 40y + 20z + 325 = 0$

**Answer: A**

**81.** The locus of the point P such that $PA^2 + PB^2 = 10$ where A=(2,3,4), B=(2,3,4) is

A. $x^2 + y^2 + z^2 - x + y - 4z + 12 = 0$

B. $x^2 + y^2 + z^2 - 5x + y - 6z + 24 = 0$

C. $2(x^2 + y^2 + z^2) - x + y - 4z + 12 = 0$

D. $x^2 + y^2 + z^2 - x - y - 4z - 12 = 0$

**Answer: B**

▶ Watch Video Solution

---

**82.** The locus of the point P such that $PA^2 + PB^2 = 2PC^2$ where $A = (1, 3, 2), B = (2, 4, -3), C = (-2, 1, 3)$ is

A. $x^2 + y^2 + z^2 - x + y - 4z + 12 = 0$

B. $x^2 + y^2 + z^2 - 5x + y - 6z + 29 = 0$

C. $2(x^2 + y^2 + z^2) - x + y - 4z + 12 = 0$

D. $14x + 10y - 14z - 15 = 0$

**Answer: D**

> ▶ **Watch Video Solution**

---

**83.** The locus of the point $(r \cos \alpha \cos \beta, r \cos \alpha \sin \beta, r \sin \alpha)$ is

A. $x^2 - y^2 - z^2 = r^2$

B. $x^2 + y^2 + z^2 = r^2$

C. $x^2 + y^2 - z^2 = r^2$

D. $x^2 - y^2 + z^2 = r^2$

**Answer: B**

> ▶ **Watch Video Solution**

---

**84.** The locus of the point $(2 \sec \alpha \cos \beta, 2 \sec \alpha \sin \beta, 2 \tan \alpha)$ is

A. $x^2 + y^2 - z^2 = 4$

B. $x^2 + y^2 + z^2 = 4$

C. $x^2 + y^2 - z^2 = r^2$

D. $x^2 - y^2 + z^2 = r^2$

**Answer: A**

▶ **Watch Video Solution**

**85.** The coordinates of the point (3,-7,5) in the new system when the origin

is shifted to $( - 1, - 1, - 1)$ is

A. (4,-6,6)

B. (4,6,6)

C. (6,6,6)

D. (4,4,4)

**Answer: A**

**86.** The transformed equation of $2x^2 + 3y^2 - z^2 - 8x + 18y + 2z + 9 = 0$ when the axes are translated to the point (2,-3,1) is

A. $2X^2 + 3Y^2 - Z^2 = 25$

B. $2X^2 + 3Y^2 + Z^2 = 25$

C. $2X^2 - 3Y^2 - Z^2 = 25$

D. $2X^2 + 3Y^2 - Z^2 = 50$

**Answer: A**

**87.** The point to which the axes should be translated to eliminate first degree terms in the equation $2x^2 - 2y^2 + z^2 - 4x + 8y + 2z - 5 = 0$ is

A. (1,2,1)

B. (1,2,-1)

C. (-1,2,1)

D. (1,-2,1)

**Answer: B**

▶ **Watch Video Solution**

**Exercise 2 Special Type Questions Set 1**

**1.** I : The points (-2,3,5 ), (1,,2,3 ),(7,0,-1 ) are collinear.

II: The points (2 ,-1,1 ) (1-3-5 ), (3,-4,-4 ) form an equilateral triangle.

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II are true

**Answer: A**

**2.** I: The ratio in which xy-plane divides the line segment joining (3,-2,2 ), (6,-17,-4 ) is 1: 4 externally

T II : The ratio in which xy-plane divides the line segment joining (2,4,5 ), (3,5,-4) is 5: 4

**3.** A (3,4,5 ),B (2,3,1 ),C(-1,6,1 ) are the vertices of a triangle then

I: The circumcenter of triangle ABC is (1,5,3 )

II: the orthocenter of triangle ABC is (2,3,1 )

**Exercise 2 Special Type Questions Set 2**

**1.** The descending order of the distances between the points

A) (0,0,0) , (cos , sin ,1) B) (1,2,3) , (-1,2,3) C) (0,0,0) , (3,4,0) D) (1,2,3),(2,3,1)

A. A,B,C,D

B. C,D,B,A

C. C,B,D,A

D. B,C,D,A

**Answer: B**

**2.** In $\triangle ABC$, A(4,5,6), B(3,2,1), C(5,4,3). If p,q,r are lengths of the medians through A,B,C then increasing order of p,q, r is

A. p,q,r

B. q,p,r

C. r,p,q

D. r,q,p

**Answer: B**

---

**3.** A(0,2,3), B(2,-1,5),C(3,0, -3) are vertices of $\triangle ABC$. If a,b,c are HG, GS, SH then their increasing order is (H,G, S are orthocentre, centroid and circumcentre)

A. a,b,c

B. c,b,a

C. b,a,c

D. b,c,a

**Answer: C**

**1.** Match the following

I.      The distance of the point (7,-8,15) from the x - axis is       a)   5

II.     The distance of the point (-5,2,12) from the y - axis is       b)   13

III.    The distance of the point (3,-4,5) from the z - axis is        c)   17

A. b , c, a

B. c , a , b

C. c , b , a

D. a , b, c

**Answer: C**

▶ **Watch Video Solution**

**2.** Match the following

| Given points | Triangle formed |
|---|---|
| I.   (1,2,3),(2,3,1),(3,1,2) | a) equilateral triangle |
| I.   (0,7,10),(-1,6,6),(-4,9,6) | b) isosceles triangle |
| III.  (1,1,1),(1,2,3),(2,-1,1) | c) right angled triangle |
| IV.  (1,2,3),(3,-1,5),(4,0,-3) | d) right angled isosceles  triangle |

A. d , a , b , a

B. a , b , c , d

C. d , c , b , a

D. a , d , b , c

**Answer: D**

▶ Watch Video Solution

---

**3.** Match the following

| | | |
|---|---|---|
| I.   | The points $(3,2,1),(5,6,5),(2,1,2),(0,-3,-2)$ form | a) square |
| II.  | The points $(1,2,2),(2,-1,0),(1,1,3),(0,4,5)$ form | b) rectangle |
| III. | The points $(1,2,4),(-2,2,1),(2,4,-3),(5,4,0)$ form | c) rhombus |
| IV.  | The points $(-2,4,1),(-1,5,5),(2,2,5),(1,1,1)$ form | d) parallelogram |

A. d, a , b ,c

B. a , b, c, d

C. d, c , b ,a

D. a , c, d , b

**Answer: C**

▶ Watch Video Solution

---

**4.** Match the following

I.    Centroid of the triangle formed by $(2,3,-1),(5,6,3),(2,-3,1)$    a)$(1,$

II.   Circumcentre of the triangle formed by $(1,2,3),(2,3,1),(3,1,2)$    b) $(3$

III.  Orthocentre of the triangle formed by $(2,1,5),(3,2,3),(4,0,4)$    c)$(2,$

IV.   Incentre of the triangle formed by $(0,0,0),(3,0,0),(0,4,0)$    d)$(3,$

A. d, a , b ,c

B. a,b,c,d

C. d,c,b,a

D. a,c,d,b

**Answer: C**

## Exercise 2 Special Type Questions Set 4

**1.** A: The distance of the (1,2,3) from the coordinate axes are $\sqrt{13}, \sqrt{10}, \sqrt{5}$

R : The distance of P (x,y,z) from the coordinate are $\sqrt{y^2 + z^2}, \sqrt{x^2 + z^2}, \sqrt{x^2 + y^2}$

A. both A and R are true and R is the correct explanation of A

B. both A and R are true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: A**

**2.** A : If $(2, 1, -3), (-2, 3, 4), (1, 2, 2)$ are the midpoints of $\overline{BC}, \overline{CA}, \overline{AB}$ of $\triangle ABC$ then $A = (-3, 4, 9)$

R : If $(\alpha_1, \beta_1, \gamma_1), (\alpha_2, \beta_2, \gamma_2), (\alpha_3, \beta_3, \gamma_3)$ are the midpoints of the sides $\overline{BC}, \overline{CA}, \overline{AB}$ of $\triangle ABC$ then $A = (\alpha_2 + \alpha_3 - \alpha_1, \beta_2 + \beta_3 - \beta_1, \gamma_2 + \gamma_3 - \gamma_1)$

A. both A and R are true and R is the correct explanation of A

B. both A and R are true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: A**

▶ Watch Video Solution

**3.** Assertion (A) : P(3,5,4), Q(6,5,7) are the vertice of a triangle whose orthocentre is (5,7,5)

Reason ( R ) : In a right angled triangle right vertex is orthocentre

A. both A and R are true and R is the correct explanation of A

B. both A and R are true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: A**

▶ **Watch Video Solution**