doubtnut
India's Number 1 Education App

# MATHS

## BOOKS - RS AGGARWAL MATHS (HINGLISH)

## THREE-DIMENSIONAL GEOMETRY

**Example**

**1.** In which octant does the given point lie?

(i) (-2,4,3) (ii) (3,-2,-5) (iii) (-6,3,-4)

(iv) (-3,-1,4) (v) (1,-3,6) (vi) (4,7,-2)

Watch Video Solution

**2.** If a point lies on the $y$ - axis then what are its $x$ - coordinate and $z$ - coordinate?

Watch Video Solution

**3.** If a point lies in $xy$ - plane then what is it $z$ - coordinate?

A.

B.

C.

D.

**Answer:**

Watch Video Solution

**4.** In which plane does the point $(0, 5, -4)$ lie ?

Watch Video Solution

**5.** Find the distance between the following points-pairs $(i)(-2, 1, -3)$ and $(4, 3, -6)$

Watch Video Solution

**6.** Show that the points $(0, 7, 10), (-1, 6, 6)$ and $(-4, 9, 6)$ form a right angled isosceles triangle.

Watch Video Solution

**7.** Prove that the points $A(3, -2, 4), B(3, -2, 4), B(1, 1, 1)$ and $C(-1, 4, -2)$ are

collinear.

Watch Video Solution

**8.** Find the equation of the set of points P which moves so that its distances from the points $A(3, 4, -5)$ and $B(-2, 1, 4)$ are equal.

Watch Video Solution

**9.** Find the equation of the set of points P, the sum of whose distances from $A(4, 0, 0)$ and $B(4, 0, 0)$ is equal to 10.

A. $9x^2 + 25y^2 + 25z^2 - 225 = 0$

B. $9x^2 + 5y^2 + 25z^2 - 225 = 0$

C. $9x^2 - 25y^2 + 25z^2 - 225 = 0$

D. $9x^2 + 25y^2 + 25z^2 + 225 = 0$

**Answer: A**

Watch Video Solution

**10.** Find the coordinates of the point which divides the join of the points $P(5, 4, -2)$ and $Q(-1, -2, 4)$ in the ratio $2:3$

Watch Video Solution

**11.** Find the coordinates of the point which divides the join of the points $A(2, -1, 3)$ and $B(4, 31)$ externallyb in the rartio 3:4

Watch Video Solution

**12.** Find the ratio in which the join of the points $P(2, -1, 3)$ and $Q(4, 3, 1)$ is divided by the point $\left(\frac{20}{7}, \frac{5}{7}, \frac{15}{7}\right)$

Watch Video Solution

**13.** Find the ratio in which the line segment, joining the points, $P(2, 3, 4)$ and $Q(-3, 5, -4)$ is divided by the yz-plane. Also, find the points of intersection.

Watch Video Solution

**14.** Find the ratio in which the join the $A(2, 1, 5) and B(3, 4, 3)$ is divided by the plane $2x + 2y - 2z = 1$. Also, find the coordinates of the point of division.

Watch Video Solution

**15.** Three vertices of a parallelogram ABCD are $A(3, -1, 2), B(1, 2, -4) and\ C(-1, 1, 2)$. Find the coordinates of the fourth vertex.

Watch Video Solution

**16.** The mid-points of the sides of a triangle are $(1, 5, -1), (0, 4, -2) and (2, 3, 4)$. Find its vertices.

Watch Video Solution

**17.** Using the section formula, prove that the three points $A(-2, 3, 5), B(1, 2, 3)$ and $C(7, 0, -1)$ are collinear.

Watch Video Solution

## Exercise 26 A

**1.** If the point P lies on Z - axis , then coordinates of p are of the form .....

Watch Video Solution

**2.** If a point lies on yz-plane then what is its x-coordinate?

Watch Video Solution

**3.** In which of plane does the point (4,-3,0) lie ?

Watch Video Solution

**4.** In which octant does each of the given point lie ?

(i) (-4,-1,-6) (ii) (2,3,-4) (iii) (-6,5,-1)

(iv) (4,-3,-2) (v) (-1,-6,5) (vi) (4,6,8)

Watch Video Solution

## Exercise 26 B

**1.** Find the distance between(i) A(5, 1, 2) and B(4, 6, -1) (iii) R(1, -3, 4) and S (4,-2, -3)

Watch Video Solution

**2.** show that the points A(1,-1,-5), B(3,1,3) and C(9,1,-3) are the vertices of an equilateral triangle.

Watch Video Solution

**3.** Show that the points A(4,6,-5), B(0,2,3) adn C(-4,-6,-1) from the vertices of an isoscleles triangle.

Watch Video Solution

**4.** Show that the points (2,-1,3), (0,1,2) and (1,-3,1) are the vertices of an isosceles right angled triangle.

Watch Video Solution

**5.** Show that the points A(1,1,1), B(-2,4,1) , C(1,-5,5) and D(2,2,5) are the vertices of a square.

Watch Video Solution

**6.** Show that the points $A(,1,2,3), B(-1,-2,-1), C(2,3,2)$ and $D(4,7,6)$ are the vertices of a parallelogram ABCD but it is not a rectangle.

Watch Video Solution

**7.** Show that the points A(2,3,5),B(-4,7,-7),C(-2,1,-10) and D(4,-3,2) are the vertices of a rectangle.

Watch Video Solution

**8.** Show that the points $A(1, 3, 4),\ B(-1, 6, 10),\ C(-7, 4, 7) and\ D(-5, 1, 1)$ are have vertices of a rhombus.

Watch Video Solution

**9.** Show that the points $A(-1,\ 4,\ -3),\ B(3,\ 2,\ -5),\ C(-3,\ 8,\ -5) and\ D(-3,\ 2,\ 1)$ are coplanar.

Watch Video Solution

**10.** Find the equation of the set of points which are equidistant from the ponts $(1, 2, 3)$ and $(3, 2, -1)$.

Watch Video Solution

**11.** Find the point on $y - a\xi s$ which is equidistant from the points $(3, 1, 2) and (5, 5, 2)$.

Watch Video Solution

**12.** Find the point of the z -axis which is equidistant from the points A(1,5,7) and B(5,1,-4)

Watch Video Solution

**13.** Find the point which equisdistant from points $O(0, 0, 0), A(a, 0, 0)B(0, b, 0)$ and $(0, 0, c)$

Watch Video Solution

**14.** Determine the points in i. xy-plan e ii. yz-plane and iii zx-plane which re equidistant from the points $A(1, -1, 0), B(2, 1, 2), and\, C(3, 2, -1)$

Watch Video Solution

**15.** Find the coordinates of the point which divides the join of A(3,2,5) and B(-4,2,-2) in the ratio $4:3$

Watch Video Solution

## Exercise 26 C

**1.** Find the coordinates of the point which divides the join of A(3,2,5) and B(-4,2,-2) in the ratio $4:3$

Watch Video Solution

**2.** Let A(2,1-3) and B(5,-8,3) be two given points. Find the coordinats of the points of trisection of the line segment AB.

Watch Video Solution

**3.** Find the ratio in which the $y-z$ plane divides the join of the points $(-2,4,7) and (3,-5,8)$.

Watch Video Solution

**4.** Find the ratio in which the point R(5,4,-6) divides the join of the A(3,2,-4) and B(9,8,-10).

Watch Video Solution

**5.** Find the ratio in which the point C(5,9,-14) divided the join of A(2,-3,4) and B(3,1-2)

Watch Video Solution

**6.** Find the ratio in which the line segment having the end points $A(-1, -3, 4)$ and $B(4, 2, -1)$ is divided by the $xz-$ plane. Also, find the coordinates of the point of division.

A. $3:2$ & $(2, 0, 1)$

B. $3:1$ & $(2, 0, 1)$

C. $3:2$ & $(2, 1, 1)$

D. $1:2$ & $(2, 0, 1)$

**Answer: A**

Watch Video Solution

**7.** Find the coordinartes of the point where the line through $(3, 4, 1)$ and $(5, 1, 6)$ crosses xy-plane

Watch Video Solution

**8.** Find the ratio in which the plane $x - 2y + 3z = 5$ divides the jion of A(3,-5,4) and B(2,3-7). Find the coordinats of the point intersection of the line and the plane.

Watch Video Solution

**9.** $A(3, 2, 0), B(5, 3, 2), (-9, 6, -3)$ are the vertices of $\triangle ABC$ and AD is the bisector of $\angle BAC$ which meets at D. Find the coordinates of D,

Watch Video Solution

**10.** If the three consecutive vertices of a parallogram be A(3,4,-1) ,B(7,10,-3) and C(5,-3,7), find the fourth vertex D.

Watch Video Solution

**11.** Two vertices of triangle ABC are A(2,-4,3) and B(3,-1,-2) and its centroid is (1,0,3). Find its third vertex C.

Watch Video Solution

**12.** If the origin is the centroid of a triangle ABC having vertices $A(a, 1, 3),\ B(-2, b, -5) and\ C(4, 7, c)$ , find the values of $a, b, c$ .

Watch Video Solution

**13.** The mid-points of the sides of a triangle are $(1, 5, -1), (0, 4, -2) and (2, 3, 4)$. Find its vertices.

Watch Video Solution