EXERCISE 12.1 - Question No. 1

A point is on the xaxis. What are its ycoordinate and zcoordinates?

EXERCISE 12.1 - Question No. 2

A point is in the XZplane. What can you say about its ycoordinate?

EXERCISE 12.1 - Question No. 3

Name the octants in which the following points lie: $(1, 2, 3)$, $(4, 2, 3)$, $(4, 2, 5)$, $(4, 2, 5)$, $(4, 2, 5)$, $(4, 2, 5)$, $(3, 1, 6)$, $(2, 4, 7)$.

EXERCISE 12.1 - Question No. 4

Fill in the blanks: (i) The xaxis and yaxis taken together determine a plane known as____ (ii) The coordinates of points in the XYplane are of the form_____ (iii) Coordinate planes divide the space into ____ octants____

EXERCISE 12.2 - Question No. 1

Find the distance between the following pairs of points: (i) $(2, 3, 5)$ and $(4, 3, 1)$ (ii) $(3, 7, 2)$ and $(2, 4, 1)$ (iii) $(1, 3, 4)$ and $(1, 3, 4)$ (iv) $(2, 1, 3)$ and $(2, 1, 3)$.

EXERCISE 12.2 - Question No. 2

Show that the points $(2, 3, 5)$, $(1, 2, 3)$ and $(7, 0, 1)$ are collinear.

EXERCISE 12.2 - Question No. 3

Verify the following: (i) $(0, 7, 10)$, $(1, 6, 6)$ and $(4, 9, 6)$ are the vertices of an isosceles triangle.

EXERCISE 12.2 - Question No. 4

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

EXERCISE 12.2 - Question No. 5

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.

EXERCISE 12.3 - Question No. 1

Find the coordinates of the point which divides the line segment joining the points $(2, 3, 5)$ and $(1, 4, 6)$ in the ratio (i) $2:3$ internally, (ii) $2:3$ externally.

EXERCISE 12.3 - Question No. 2

Given that $P(3, 2, 4)$, $Q(5, 4, 6)$ and $R(9, 8, 10)$ are collinear.

Find the ratio in which Q divides PR.

EXERCISE 12.3 - Question No. 3

Find the ratio in which the YZplane divides the line segment

formed by joining the points $(2, 4, 7)$ and $(3, 5, 8)$.

EXERCISE 12.3 - Question No. 4

Using section formula, show that the points $A(2, 3, 4)$, $B(1, 2, 1)$ and $C\left(0, \frac{1}{3}, 2\right)$ are collinear.

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EXERCISE 12.3 - Question No. 5

Find the coordinates of the points which trisect the line segment joining the points $P(4, 2, 6)$ and $Q(10, 16, 6)$.

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MISCELLANEOUS EXERCISE - Question No. 1

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.

MISCELLANEOUS EXERCISE - Question No. 2

Find the lengths of the medians of the triangle with vertices $A(0, 0, 6)$, B $(0, 4, 0)$ and $(6, 0, 0)$.

MISCELLANEOUS EXERCISE - Question No. 3

If the origin is the centroid of the triangle PQR with vertices

$P(2a, 2, 6)$, $Q(4, 3b, 10)$ and $R(8, 14, 2c)$, then find the values of

a, b and c.

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MISCELLANEOUS EXERCISE - Question No. 4

Find the coordinates of a point on y axis which are at a distance of

$5\sqrt{2}$ from the point $P(3, 2, 5)$.

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MISCELLANEOUS EXERCISE - Question No. 5

A point R with xcoordinate 4 lies on the line segment joining the points $P(2, 3, 4)$ and $Q(8, 0, 10)$. Find the coordinates of the point R.

MISCELLANEOUS EXERCISE - Question No. 6

If A and B be the points $(3, 4, 5)$ and $(1, 3, 7)$, respectively, find the equation of the set of points P such that $PA^2 + PB^2 = k^2$, where k is a constant.

SOLVED EXAMPLES - Question No. 1

In Figure, if P is (2, 4, 5), find the coordinates of F.

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SOLVED EXAMPLES - Question No. 2

Find the equation of the circle with center $(?3, 2)$ and radius 4

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SOLVED EXAMPLES - Question No. 3

Find the distance between the points $P(1, 3, 4)$ and $Q(4, 1, 2)$.

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SOLVED EXAMPLES - Question No. 4

Show that the points $P(-2, 3, 5)$, $Q(1, 2, 3)$ and R $(7, 0, -1)$ are collinear.

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SOLVED EXAMPLES - Question No. 5

Are the points $A(3, 6, 9)$, $B(10, 20, 30)$ and $C(25, 41, 5)$ the vertices of a right angled triangle?

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SOLVED EXAMPLES - Question No. 6

Find the equation of set of points P such that $PA^2 + PB^2 = 2k^2$, where A and B are the points $(3, 4, 5)$ and $(1, 3, 7)$, respectively.

SOLVED EXAMPLES - Question No. 7

Find the coordinates of the point which divides the line segment joining the points $(1, 2, 3)$ and $(3, 4, 5)$ in the ratio $2:3$ (i) internally, and (ii) externally.

SOLVED EXAMPLES - Question No. 8

Using section formula, prove that the three points $(4, 6, 10)$, $(2, 4, 6)$ and $(14, 0, 2)$ are collinear.

SOLVED EXAMPLES - Question No. 9

Find the coordinates of the centroid of the triangle whose vertices are (x_1, y_1, z_1) , (x_2, y_2, z_2) and (x_3, y_3, z_3) .

SOLVED EXAMPLES - Question No. 10

Find the ratio in which the line segment joining the points

$(4, 8, 10)$ and $(6, 10, -8)$ is divided by the YZplane.

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SOLVED EXAMPLES - Question No. 11

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.

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SOLVED EXAMPLES - Question No. 12

Find the equation of the set of the points P such that its distances from the points $A(3, 4, 5)$ and B $(2, 1, 4)$ are equal.

SOLVED EXAMPLES - Question No. 13

The centroid of a triangle ABC is at the point $(1, 1, 1)$. If the coordinates of A and B are $(3, 5, 7)$ and $(1, 7, 6)$, respectively, find the coordinates of the point C.