



MATHS

BOOKS - V PUBLICATION

INTRODUCTION TO THE DIMENSIONAL GEOMETRY

Question Bank

1. In the figure if 'P' is '(2,4,5)' find the
coordinate of

F. '(##VPU_HSS_MAT_XIC₁₂E01₀₀₁ – Q01##)



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2. Find the octant in which the point '(-3,1,2)'

and

'(-3,1,-2)'

lie.'(##VPU_HSS_MAT_XI_C12_E01_002_Q01##)'



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3. A point is on the x-axis. What are its y - coordinate and z-coordinates?



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4. A point is in the XZ plane. What can you say about its y -coordinate?



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



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



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



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9. Find the distance between the following pair of points:

$(-3, 7, 2)$ and $(2, 4, -1)$



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



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11. Verify the following:

$(0, 7, -10)$, $(1, 6, -6)$ and $(4, 9, -6)$ are the

vertices of an isosceles triangle.



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



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



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14. Find the coordinates of the point which divides the line segment joining the point '(1,-2,3)' and '(3,4,-5)' in the ratio '2: 3'

Q1)internally

Q2)externally.



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





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16. Write the coordinate 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)



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17. Consider a point $A(4, 8, 10)$ in space. Find the ratio in which the line segment joining the point A and B $(6, 10, -8)$ is divided by YZ-plane.



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18. Find the coordinates of the point which divides the line segment joining the points $(-2, 3, 5)$ and $(1, -4, 6)$ in the ratio

Q1) $2:3$ internally

Q2) $2: 3$ externally.



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19. 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 .



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20. Find the ratio in which the YZ -plane divides the line segment formed by joining the points $(-2, 4, 7)$ and $(3, -5, 8)$.



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21. 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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22. 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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23. 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.



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



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25. 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 .



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26. 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



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



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28. 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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29. 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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30. Find the equation of set of point P such that $PA^2 + PB^2 = 2k^2$, where A and B are the points (3,4,5) and (-1,3,-7), respectively.



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31. Find the distance between the points $P(-2, 4, 1)$ and $Q(1, 2, -5)$.



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32. Prove by using distance formula that the

$A(1, 2, 3), B(-1, -1, -1)$ and $C(3, 5, 7)$

are collinear.



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33. Determine the point in XY plane which is equidistant from three point

$A(2, 0, 3), B(0, 3, 2)$ and $C(0, 0, 1)$



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34. Find the locus of the point which is equidistant from the point $A(0, 2, 3)$ and $B(2, -2, 1)$



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35. Show that the point $A(0, 1, 2)$, $B(2, -1, 3)$ and $C(1, -3, 1)$ are vertices of an isosceles right angled triangle.



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36. Find the coordinates of a point equidistant from the four points $O(0, 0, 0)$, $A(a, 0, 0)$, $B(0, b, 0)$ and $C(0, 0, c)$.



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37. Find the coordinates of a point which divides the join of $P(2, -1, 4)$ and $Q(4, 3, 2)$ in the ratio $2:3$ externally.



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38. Find the coordinates of a point which divides the join of $P(2,-1,4)$ and $Q(4,3,2)$ in the ratio 2: 3 internally.



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39. Find the ratio in which the line joining the points $(1, 2, 3)$ and $(-3, 4, -5)$ is divided by the xy -plane.



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



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



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



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43. 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.



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44. Find the coordinates of the points which trisect the line segment AB , given that $A(2, 1, -3)$ and $B(5, -8, 3)$



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45. Let P and Q be any two points. Find the coordinates of the point R which divides PQ externally in the ratio $2:1$ and verify that Q is the mid point of PR .



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