

# Latex Assignment1

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## Example:-1-13 (11.12)

1. In Fig. 1, if  $P$  is  $(2, 4, 5)$ , find the coordinates of  $F$ .

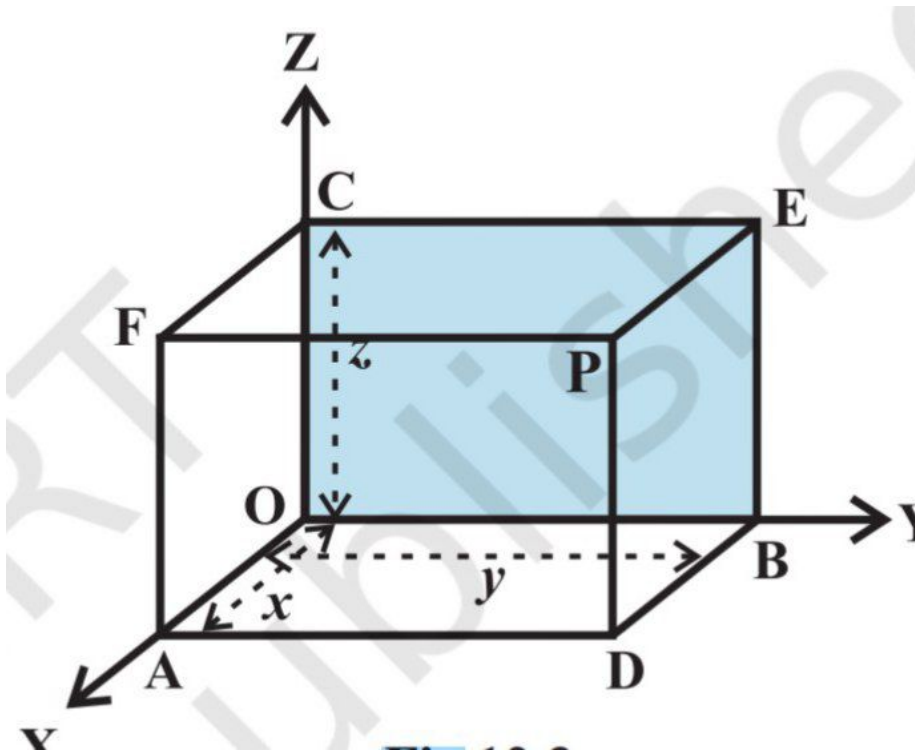


Figure 1: 12.3

2. Find the octant in which the points  $(-3, 1, 2)$  and  $(-3, 1, -2)$  lie.
3. Find the distance between the origin  $O$  and any point  $Q(x_2, y_2, z_2)$ .

4. Show that the points  $P(-2, 3, 5)$ ,  $Q(1, 2, 3)$  and  $R(7, 0, -1)$  are collinear.
5. Are the points  $A(3, 6, 9)$ ,  $B(10, 20, 30)$  and  $C(24, -41, 5)$  the vertices of a right angled triangle?
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.
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
8. Using section formula, prove that the three points  $(-4, 6, 10)$ ,  $(2, 4, 6)$  and  $(14, 0, -2)$  are collinear.
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  $(x_3, y_3, z_3)$ .
10. Find the ratio in which the line segment joining the points  $(4, 8, 10)$  and  $(6, 10, -8)$  is divided by the  $YZ$ - plane.
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.
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.
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  $C$ .