Group-A

Unit-I

Tutorial-1

1. Convert the rectangular coordinates (-1, 1, $\sqrt{6}$) to both spherical and cylindrical coordinates.

2. Describe (draw) the surfaces with the given spherical equations:
   (a) $\theta=5\pi/6$
   (b) $\phi=\pi/3$
   (c) $r=6$
   (d) $r=\sin\theta\sin\phi$
   (r, θ, ϕ, are the co-ordinates in spherical system as described in the class)

3. Describe the surface with given cylindrical equations:
   (a) $\phi=\pi/4$
   (b) $z=3$
   (c) $s^2+z^2=25$
   (d) $s=z$

   (s, θ, ϕ, are the co-ordinates in cylindrical systems as described in the class)

4. Plot the below points in spherical coordinates? What is the expression in Cartesian and Cylindrical coordinates?
   (a) $(8, \pi/6, \pi/3)$
   (b) $(2, \pi/6, -5\pi/6)$

5. Convert the rectangular coordinates (1, -3, 5) to cylindrical coordinates.

6. Plot the point in cylindrical coordinates $(4, 2\pi/3, -2)$ and express its location in rectangular coordinates