

Homework Section 15.7

- Plot the following points on the same graph. The points are in cylindrical coordinates.
 - $(2, \pi/6, 3)$
 - $(3, 3\pi/4, -2)$
- Convert the points from number 1 to rectangular coordinates.
- Convert from rectangular to cylindrical coordinates: $(1, -\sqrt{3}, 5)$
- Identify the surface by converting from cylindrical to rectangular coordinates.
 - $r = 4$
 - $\theta = \pi/6$
 - $r = 2 \sin \theta$
 - $r^2 - z^2 = 1$
- Plot the following points on the same graph in spherical coordinates:
 - $(2, \pi/4, \pi/6)$
 - $(3, 3\pi/2, \pi/4)$
- Convert the points from number 5 to rectangular coordinates.
- Convert from rectangular to spherical coordinates: $(1, -1, \sqrt{3})$
- Describe the surface in words.
 - $\rho = 4$
 - $\phi = \pi/4$
- Identify the surface by converting from spherical to rectangular coordinates.
 - $\rho \sin \phi = 4$
 - $\rho = \sin \phi \cos \theta$
- Convert the given equations from rectangular to both cylindrical and spherical coordinates.
 - $z = 2x^2 + 2y^2$
 - $x^2 + y^2 + z^2 = 16$
 - $x^2 + y^2 = 3y$