

Exercise 14

Express the plane $z = x$ in (a) cylindrical, and (b) spherical coordinates.

Solution

In cylindrical coordinates (r, θ, z) the plane is

$$z = r \cos \theta,$$

whereas in spherical coordinates (ρ, θ, ϕ) the plane is

$$\rho \cos \phi = \rho \sin \phi \cos \theta$$

$$1 = \tan \phi \cos \theta.$$