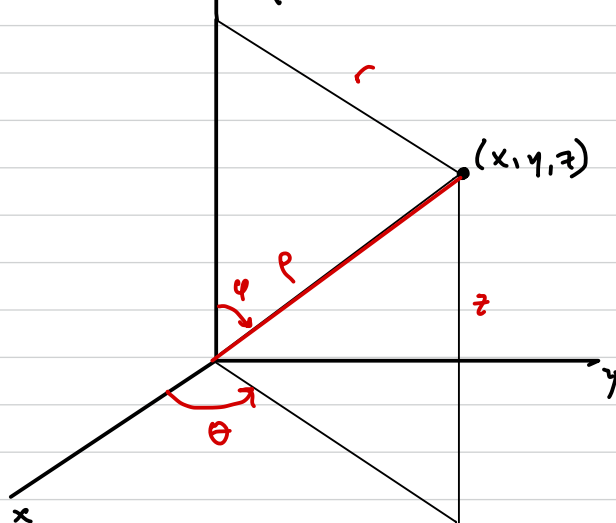


Spherical Coordinates (ρ, φ, θ)



often restrict

$$\rho \geq 0$$

$$0 \leq \varphi \leq \pi$$

$$0 \leq \theta < 2\pi$$

so pts (other than z-axis)

have unique (ρ, φ, θ) coords.

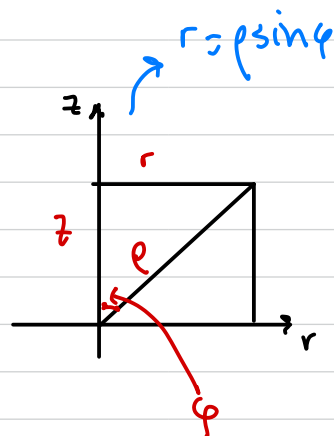
Change of coordinates formulas:

$$x = \rho \sin \varphi \cos \theta$$

$$y = \rho \sin \varphi \sin \theta$$

$$z = \rho \cos \varphi$$

$$\rho^2 = x^2 + y^2 + z^2$$



Ex Sketch the surface $\rho \sin \phi = 2$.

