

Tarea 1 Física:

rect \rightarrow cyl

$$r(x, y, z) = \sqrt{x^2 + y^2 + z^2}$$

$$\theta(x, y, z) = \tan^{-1}\left(\frac{z}{r}\right)$$

$$\phi(x, y, z) = \tan^{-1}\left(\frac{y}{x}\right)$$

cyl \rightarrow cil

$$R(r, \theta, \phi) = r \sin(\theta)$$

$$\alpha(r, \theta, \phi) = \theta$$

$$z(r, \theta, \phi) = r \cos(\theta)$$

$$x(r, \theta, \phi) = r \sin(\theta) \cos(\phi)$$

$$y(r, \theta, \phi) = r \sin(\theta) \sin(\phi)$$

$$z(r, \theta, \phi) = r \cos(\theta)$$

cyl \rightarrow rect

$$R(x, y, z) = \sqrt{x^2 + y^2}$$

$$\alpha(x, y, z) = \tan^{-1}\left(\frac{y}{x}\right)$$

$$z(x, y, z) = z$$

rect \rightarrow cil

$$x(R, \alpha, z) = R \sin(\alpha)$$

$$y(R, \alpha, z) = R \cos(\alpha)$$

$$z(R, \alpha, z) = z$$

cil \rightarrow rect