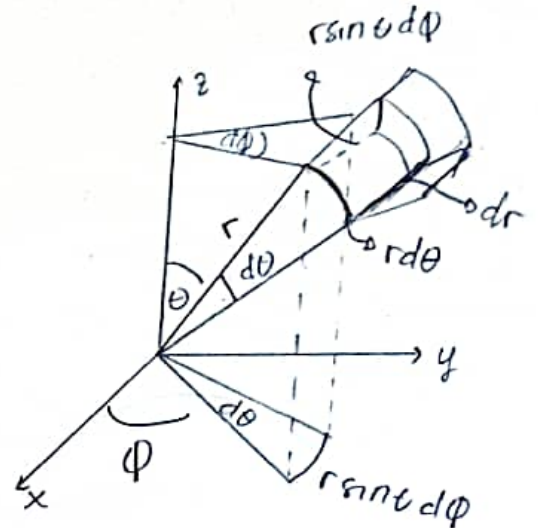
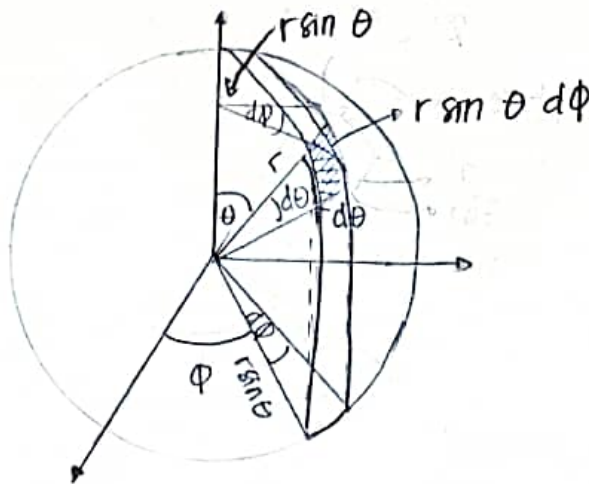


Nama : Putri Asnau Kanmah
NPM : 2013022014.

1. Koordinat bola



ket: $x = r \sin \theta \cos \phi$
 $y = r \sin \theta \sin \phi$
 $z = r \cos \theta$
 $dV = r^2 \sin \theta \, dr \, d\theta \, d\phi$

$$\begin{aligned} \vec{dS} &= \rho \times \ell \\ &= r \sin \theta \, d\phi \cdot r \, d\theta \\ &= r^2 \sin \theta \, d\theta \, d\phi \end{aligned}$$

$$\vec{dr} = \hat{r}_0 \, dr + \hat{\theta}_0 \, r \, d\theta + \hat{\phi}_0 \, r \sin \theta \, d\phi$$

$$\begin{aligned} \vec{dV} &= \rho \times \ell \times t \\ &= r \sin \theta \, d\phi \cdot r \, d\theta \cdot dr \\ &= \boxed{r^2 \sin \theta \, d\theta \, dr \, d\phi} \end{aligned}$$

ds = luas
 dr = panjang
 dV = Volume

$$\text{- Gradiennya} \Rightarrow \nabla t = \hat{r} \frac{\partial t}{\partial r} + \hat{\theta} \left(\frac{1}{r} \frac{\partial t}{\partial \theta} \right) + \hat{\phi} \left(\frac{1}{r \sin \theta} \frac{\partial t}{\partial \phi} \right)$$

$$\text{- Divergensi} \Rightarrow \nabla \cdot \vec{v} = \frac{1}{r^2} \left(\frac{\partial}{\partial r} r^2 v_r \right) + \frac{1}{r \sin \theta} \frac{\partial}{\partial \theta} (v_\theta \sin \theta) + \frac{1}{r \sin \theta} \frac{\partial v_\phi}{\partial \phi}$$