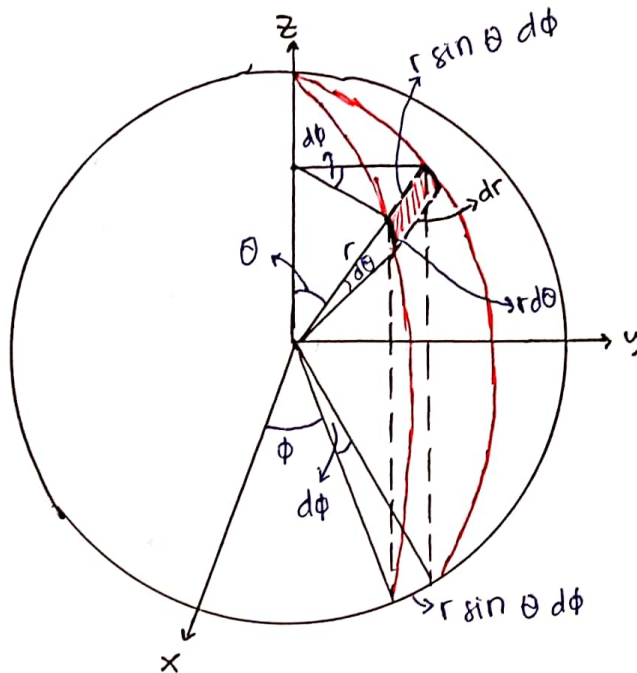


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Koordinat Bola



$$x = r \sin \theta \cos \phi$$

$$y = r \sin \theta \sin \phi$$

$$z = r \cos \theta$$

$$d\vec{V} = r^2 \sin \theta \, dr \, d\theta \, d\phi$$

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

$$\Rightarrow d\vec{r} = \hat{r}_2 \, dr + \hat{\theta}_2 \, r \, d\theta + \hat{\phi}_2 \, r \sin \theta \, d\phi$$

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

$$\text{- Gradiennya} \Rightarrow \nabla t = \hat{r}_0 \frac{\partial t}{\partial r} + \hat{\theta}_0 \left(\frac{1}{r} \frac{\partial t}{\partial \theta} \right) + \hat{\phi}_0 \left(\frac{1}{r \sin \theta} \frac{\partial t}{\partial \phi} \right)$$

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