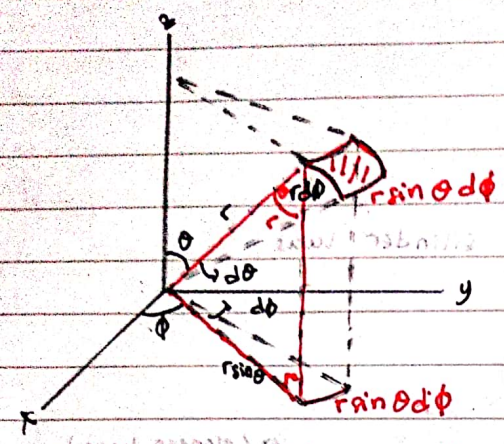
Koordinat bola luas



$$dA = (r\,d\theta)(r\sin\theta\,d\phi)$$

$$A = \int_{\theta=0}^{\pi}\int_{\phi=0}^{2\pi} r^2\sin\theta\,d\theta\,d\phi$$

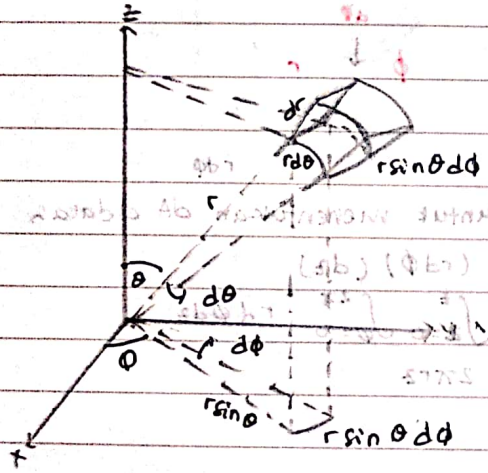
$$A = r^2(2\pi)\int_{\theta=0}^{\pi}\sin\theta\,d\theta$$

$$A = 2\pi r^2\left[-\cos\theta\right]_0^{\pi}$$

$$A = 2\pi r^2\left[-(-1-(1))\right]$$

$$A = 4\pi r^2$$

Koordinat Volume



$$dV = (r\,d\theta)(r\sin\theta\,d\phi)(dr)$$

$$V = \int_{r=0}^{r}\int_{\theta=0}^{\pi}\int_{\phi=0}^{2\pi}(r\,d\theta)(r\sin\theta\,d\phi)(dr)$$

$$V = \int_{r=0}^{r}\int_{\theta=0}^{\pi}\int_{\phi=0}^{2\pi}(r^2\,dr)(\sin\theta\,d\theta)(d\phi)$$

$$V = 2\pi\int_{r=0}^{r}\int_{\theta=0}^{\pi}(r^2\,dr)(\sin\theta\,d\theta)$$

$$V = 4\pi\int_{r=0}^{r} r^2\,dr = \frac{4}{3}\pi r^3$$