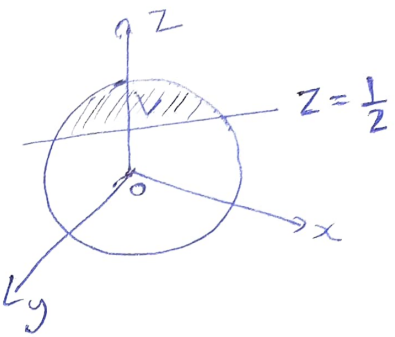
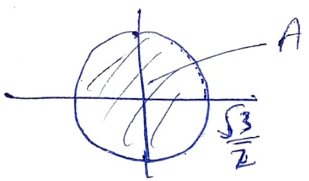
$$\text{Volume} = \iint_A \int_{z=\frac{1}{2}}^{\sqrt{1-x^2-y^2}} dz\, dA$$



$$A: \; x^2+y^2+\left(\frac{1}{2}\right)^2 = 1$$

$$A: \; x^2+y^2 = \left(\frac{\sqrt{3}}{2}\right)^2$$

$$= \iint_A \left(\sqrt{1-x^2-y^2} - \frac{1}{2}\right) dA$$



$$= \int_{\theta=0}^{2\pi} \int_{r=0}^{\frac{\sqrt{3}}{2}} \sqrt{1-r^2} \times r\, dr\, d\theta - \iint_A \frac{1}{2}\, dA$$

$$\Rightarrow \int_{\theta=0}^{2\pi} \int_{r=0}^{\frac{\sqrt{3}}{2}} \sqrt{t} \times r \times \frac{dt}{-2r}\, d\theta - \frac{1}{2} \times \pi \times \frac{3}{4} \qquad \left[\begin{array}{l} 1-r^2 = t \\ -2r = \frac{dt}{dr} \end{array}\right]$$

$$\Rightarrow -\frac{1}{2} \times \frac{2}{3} \int_{\theta=0}^{2\pi} \left[(1-r^2)^{3/2}\right]_0^{\frac{\sqrt{3}}{2}} d\theta - \frac{3\pi}{8} \Rightarrow -\frac{1}{3} \times 2\pi \left[\frac{1}{8} - 1\right] - \frac{3\pi}{8} \Rightarrow \frac{7}{12}\frac{14\pi}{24} - \frac{3\pi}{8}$$

$$\Rightarrow \frac{7\pi}{12} - \frac{3\pi}{8} \Rightarrow \frac{14\pi - 9\pi}{24}$$

$$\Rightarrow \boxed{\frac{5\pi}{24}}$$ Ans