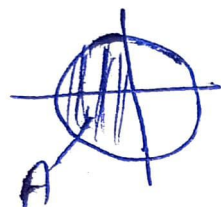
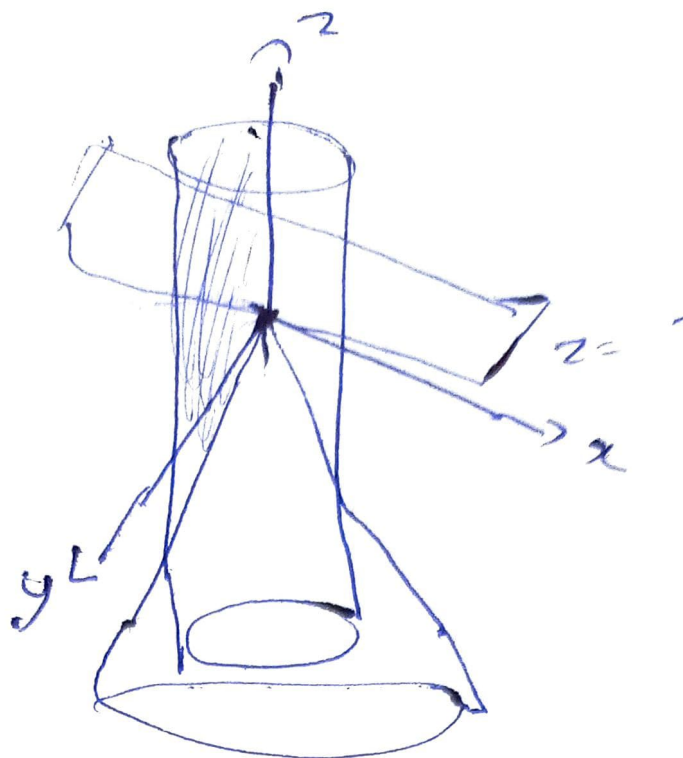


$$\text{Volume} = \int_A \int_{z = -\sqrt{4x^2+4y^2}}^{z=6-x} dz dA$$

A: half plane
of $x^2+y^2=3$



$$= \int_{\theta = -\frac{\pi}{2}}^{\frac{\pi}{2}} \int_{r=0}^{\sqrt{3}} (6 - r \cos \theta + 2r) r dr d\theta$$

$$\Rightarrow \int_{\theta = -\frac{\pi}{2}}^{\frac{\pi}{2}} \left[6 \frac{r^2}{2} - \frac{r^3}{3} \cos \theta + 2 \frac{r^3}{3} \right]_0^{\sqrt{3}} d\theta$$

$$\Rightarrow \left[(9 + 2\sqrt{3}) \theta - \sqrt{3} \sin \theta \right]_{-\frac{\pi}{2}}^{\frac{\pi}{2}}$$

$$\Rightarrow -(9 + 2\sqrt{3}) \frac{\pi}{2} + \sqrt{3} - (9 + 2\sqrt{3}) \frac{\pi}{2} + \sqrt{3}$$

$$\Rightarrow \cancel{2\sqrt{3}} \quad \boxed{\pi(9 + 2\sqrt{3}) - 2\sqrt{3}}$$