1. Calcule la siguiente integral $\int_0^\pi \int_0^1 \int_0^{\sqrt{1-y^2}} y senx dz dy dx$

$$\int_{0}^{\pi} \int_{0}^{1} \int_{0}^{1-y^{2}} y \operatorname{sen} \times dz dy dx$$

U = 1- 42

du = -2 y dy

 $dy = \frac{du}{2y}$

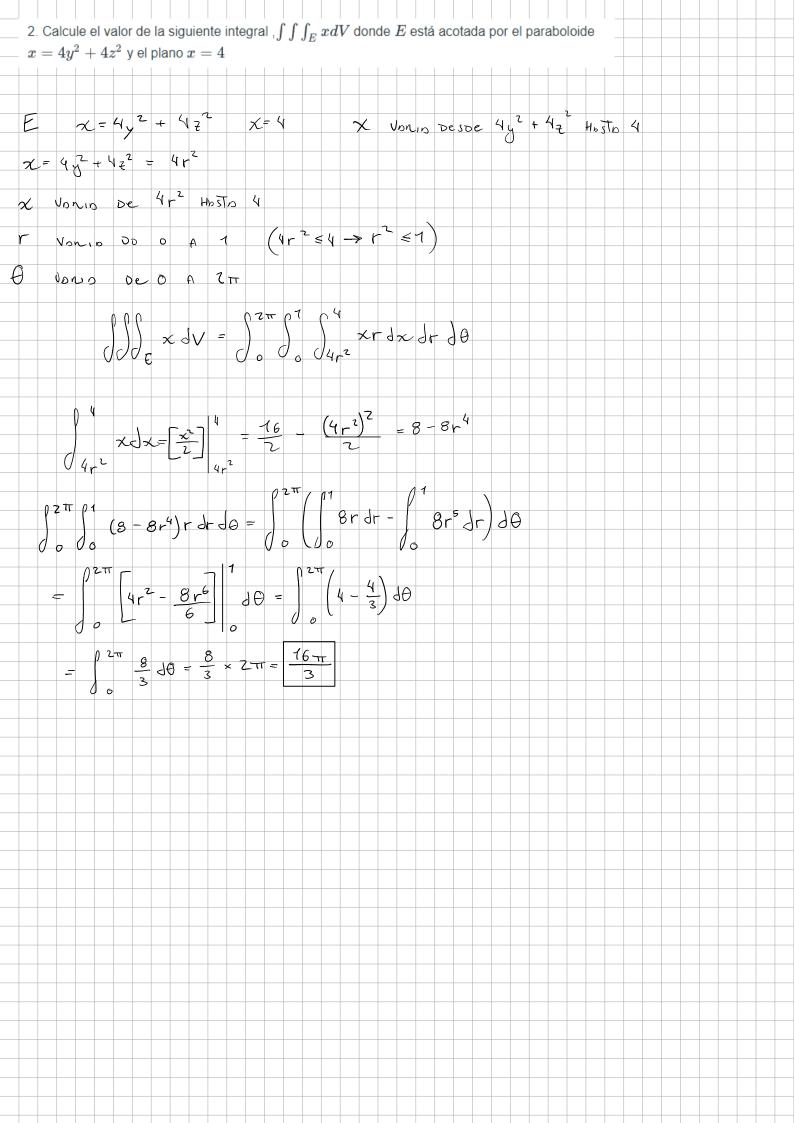
$$\int_{0}^{\sqrt{1-y^2}} dz = \sqrt{1-y^2}$$

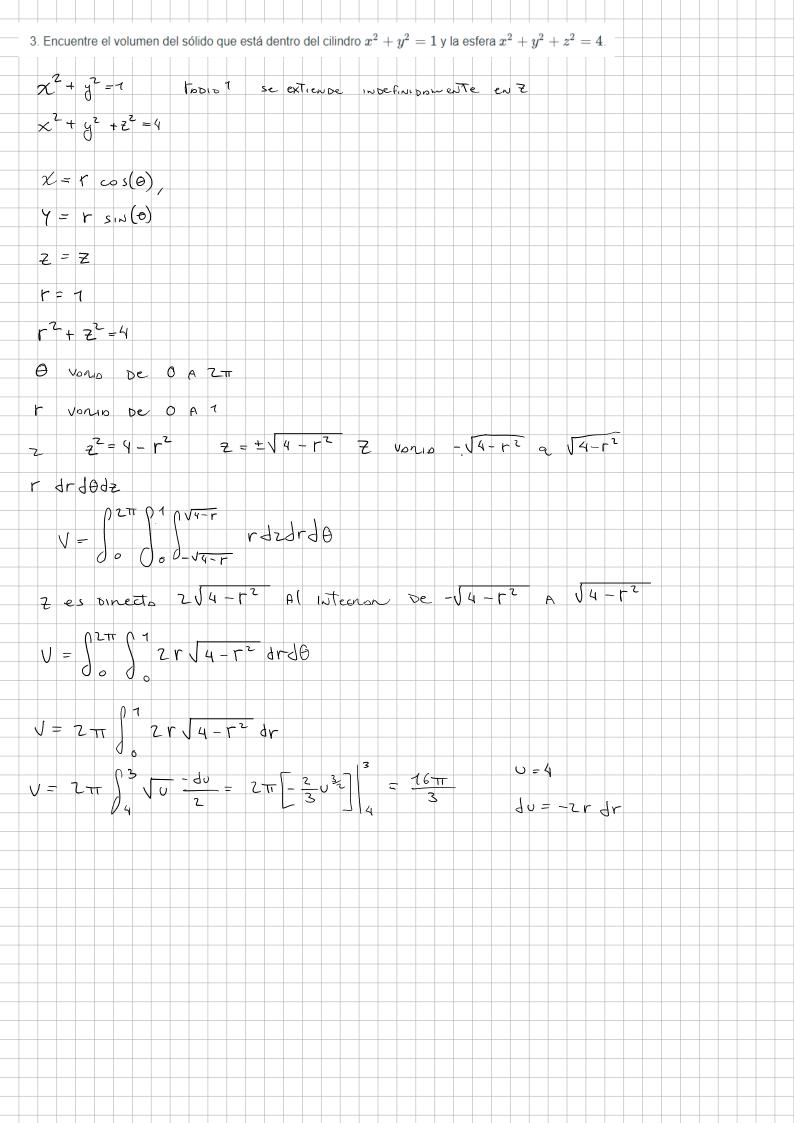
$$\int_{0}^{17} \int_{0}^{1} y \approx x \times \sqrt{1-y^{2}} dy dx$$

$$\int_{1}^{0} y \int_{0}^{1} \left(-\frac{dv}{2y}\right) = \int_{0}^{1} \frac{\int_{0}^{1} \sqrt{v}}{2} dv$$

$$\frac{1}{7} \int_{0}^{1} \sqrt{\frac{1}{2}} \int_{0}^{1} = \frac{1}{7} \left[\frac{1}{3} \sqrt{3} / 2 \right]_{0}^{1} = \frac{1}{3}$$

$$\left[-\cos\chi\right]\left[\begin{array}{c}\pi\\-\cos(\pi)+\cos(\phi)=2\end{array}\right]$$







5. La integral $\int_0^{2\pi} \int_0^{\pi/4} \int_0^{\cos\phi} \rho^2 sen\phi d\rho d\phi d\theta$, representa el volumen que yace arriba del cono $z=\sqrt{x^2+y^2}$ y debajo de la esfera $x^2+y^2+z^2=z$ lim O vorio de O A ZTI of vorus de O A 4 p vonio de 0 A cos o 2 = Vx2 + y2 esfeno $x^{2} + y^{2} + z^{2} = z = x^{2} + y^{2} + z^{2} - z = 0$ $\chi^{2} + y^{2} + (z - \frac{1}{z})^{2} = \frac{1}{4}$ centro en $(0, 0, \frac{1}{z})$ y $r = \frac{1}{z}$ X = P SIN O COS O 4 = P SIN & SIN Q 7 = 0010 12π η η ρ cos φ 10 0 0 0 0 P² SIN Φ 2 P 2 Φ 2 Θ $\int_{0}^{\frac{1}{4}} \frac{1}{3} (\cos \phi)^{3} \sin \phi d\phi$ 90 = -21N \$90 $U = \cos(0) = 7 \quad A \quad U = \cos\left(\frac{\pi}{4}\right) = 2$ $\int_{1}^{\sqrt{2}} \frac{1}{3} \int_{3}^{\sqrt{2}} \left(-\frac{1}{3}\right) = \frac{1}{16}$ $\int_{-\frac{1}{16}}^{2\pi} \frac{1}{16} d\theta = \frac{1}{16} \cdot 2\pi = \frac{\pi}{8}$