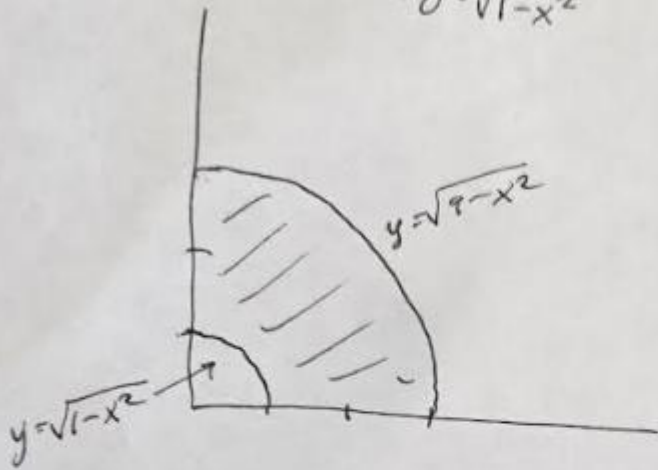


$$\int_0^1 \int_{\sqrt{1-x^2}}^{\sqrt{9-x^2}} (1+x^2+y^2) dy dx + \int_1^3 \int_0^{\sqrt{9-x^2}} (1+x^2+y^2) dy dx$$



polar: $1 \leq r \leq 3$
 $0 \leq \theta \leq \frac{\pi}{2}$

$$\int_0^{\pi/2} \int_1^3 (1+r^2) r dr d\theta$$

$$\int r + r^3 dr = \left[\frac{1}{2}r^2 + \frac{1}{4}r^4 \right]_1^3 = \frac{9}{2} + \frac{81}{4} - \left[\frac{1}{2} + \frac{1}{4} \right]$$

$$\frac{99}{4} - \frac{3}{4} = \frac{96}{4} = 24$$

$$\rightarrow \int_0^{\pi/2} 24 d\theta = 24 \left(\frac{\pi}{2} \right) = \boxed{12\pi}$$