

8.11.

En kristallskål beskrivs av olikheterna

$$z \leq x^2 + y^2 - 1, \quad z \leq \sqrt{x^2 + y^2} + 1, \quad z \geq 0.$$

$$V = \int_{\text{Skål}} dx dy dz = \int_{\text{Paraboliod}} dx dy dz - \int_{\text{Kon}} dx dy dz$$

$$V = \int_{z=0}^3 (1+z) dz - \int_{z=1}^3 (z-1)^2 dz$$

$$V = \left(3 + \frac{3^2}{2}\right) - \frac{2^3}{3} = \frac{15}{2} - \frac{8}{3} = \frac{29}{6}$$

SVAR: Volymen $V = \frac{29}{6}$ v.e..