927.j.

$$\begin{cases} x^2 + y^2 = a^2 \\ x^2 + z^2 = a^2 \end{cases}, \quad a > 0$$

$$V = \iiint_K dxdydz$$

$$V = \iint_{D_{xy}} \left(\int_{z=-\sqrt{a^2 - x^2}}^{\sqrt{a^2 - x^2}} dz \right) dxdy = 2 \iint_{D_{xy}} \sqrt{a^2 - x^2}\, dxdy$$

$$V = 2 \int_{x=-a}^{a} \left(\int_{y=-\sqrt{a^2 - x^2}}^{\sqrt{a^2 - x^2}} \sqrt{a^2 - x^2}\, dy \right) dx = 8 \int_{x=0}^{a} (a^2 - x^2) dx = \frac{16a^3}{3}$$

927.m.

$$\begin{cases} z^2 = x^2 + y^2 \\ x^2 + y^2 + z^2 = 2, \quad z \geq 0 \end{cases}$$

$$V = \iiint\limits_K dxdydz$$

$$\begin{cases} x = r\sin\theta\cos\varphi \\ y = r\sin\theta\sin\varphi \\ z = r\cos\theta \end{cases}$$

$$K_{r\theta\varphi} = \left\{ (r,\theta,\varphi) : 0 \leq r \leq \sqrt{2}, \ 0 \leq \theta \leq \frac{\pi}{4}, \ 0 \leq \varphi < 2\pi \right\}$$

$$dxdydz = \left| \det\left(\frac{d(x,y,z)}{d(r,\theta,\varphi)}\right) \right| dr\,d\theta\,d\varphi = r^2 \sin\theta\,dr\,d\theta\,d\varphi$$

$$V = \iiint_{K_{r\theta\varphi}} r^2 \sin\theta\,dr\,d\theta\,d\varphi$$

$$V = 2\pi \int_{r=0}^{\sqrt{2}} r^2\,dr \int_{\theta=0}^{\frac{\pi}{4}} \sin\theta\,d\theta$$

$$V = 2\pi \frac{2\sqrt{2}}{3}\left(1 - \frac{1}{\sqrt{2}}\right) = \frac{4\pi}{3}\left(\sqrt{2} - 1\right)$$