T_2: $\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}=4$ (велики еліпсоїд)

$$\frac{a^2\cdot\rho^2\cdot\cos^2\varphi\cdot\cos^2\theta}{a^2}+\frac{b^2\cdot\rho^2\sin^2\varphi\cdot\cos^2\theta}{b^2}+\frac{c^2\cdot\rho^2\sin^2\theta}{c^2}=4$$

$$\rho^2\cdot\cos^2\theta\cdot(\overset{1}{\cos^2\varphi+\sin^2\varphi})+\rho^2\sin^2\theta=4$$

$$\rho^2(\overset{1}{\cos^2\theta+\sin^2\theta})=4$$

$$\rho^2=4 \Rightarrow \boxed{\rho_2=2}\ ,\ * \Rightarrow \boxed{1\leq\rho\leq 2}$$

T_3: $\frac{x^2}{a^2}+\frac{y^2}{b^2}\leq\frac{z^2}{c^2}$ (конус)

$$\frac{a^2\rho^2\cos^2\varphi\cos^2\theta}{a^2}+\frac{b^2\cdot\rho^2\cdot\sin^2\varphi\cdot\cos^2\theta}{b^2}=\frac{c^2\cdot\rho^2\cdot\sin^2\theta}{c^2}$$

$$\rho^2\cdot\cos^2\theta\cdot(\overset{1}{\cos^2\varphi+\sin^2\varphi})=\rho^2\cdot\sin^2\theta$$

$$\cos^2\theta=\sin^2\theta \quad /:\cos^2\theta$$

$$\frac{\sin^2\theta}{\cos^2\theta}=1 \Rightarrow tg^2\theta=1 \Rightarrow \operatorname{arctg}1=\theta \Rightarrow \boxed{\theta=\frac{\pi}{4}} \Rightarrow \frac{\pi}{4}$$

$$V=\iiint_T dx\,dy\,dz=\int_0^{2\pi}d\varphi\cdot\int_{\frac{\pi}{4}}^{\frac{\pi}{2}}d\theta\cdot\int_1^2 a\cdot b\,c\cdot\rho^2\cdot\cos\theta\,d\rho=$$

$$=\int_0^{2\pi}d\varphi\cdot\int_{\frac{\pi}{4}}^{\frac{\pi}{2}}d\theta\cdot\left(abc\cos\theta\cdot\frac{\rho^3}{3}\Big|_1^2\right)=\int_0^{2\pi}d\varphi\cdot\int_{\frac{\pi}{4}}^{\frac{\pi}{2}}d\theta\cdot abc\cos\theta\cdot\frac{7}{3}=$$

$$=\int_0^{2\pi}d\varphi\cdot\frac{7}{3}abc\int_{\frac{\pi}{4}}^{\frac{\pi}{2}}\cos\theta\,d\theta=\int_0^{2\pi}d\varphi\cdot\frac{7}{3}abc\left(\sin\theta\Big|_{\frac{\pi}{4}}^{\frac{\pi}{2}}\right)=$$

$$=\int_0^{2\pi}\frac{7}{3}\left(1-\frac{1}{\sqrt{2}}\right)abc\cdot d\varphi=$$

$$=abc\cdot\left(\frac{7}{3}-\frac{7\sqrt{2}}{6}\right)\cdot\int_0^{2\pi}d\varphi$$

$$=abc\cdot\left(\frac{7}{3}-\frac{7\sqrt{2}}{6}\right)2\pi$$

$$=\frac{7}{3}\cdot abc\cdot\left(1-\frac{1}{\sqrt{2}}\right)\cdot 2\pi$$

$$\Rightarrow \boxed{V=abc\cdot\frac{14\pi}{3}\cdot\left(1-\frac{1}{\sqrt{2}}\right)}$$