Γ_4: $\underline{y=0}$, $dy=0$ (КВАДРАТ)

$$\oiint_{\Gamma_4} xz\,\cancel{dy}^{0}dz + x^2y\,\cancel{dx}^{0}dz + y^2z\,dx\,\cancel{dy}^{0} = 0 \Rightarrow \boxed{I_4=0}$$

Γ_5: $\underline{z=0}$, $dz=0$ (½ базе цилиндра)

$$\oiint_{\Gamma_5} xz\,dy\,\cancel{dz}^{0} + x^2y\,dx\,\cancel{dz}^{0} + y^2z\,dx\,dy = 0 \Rightarrow \boxed{I_5=0}$$

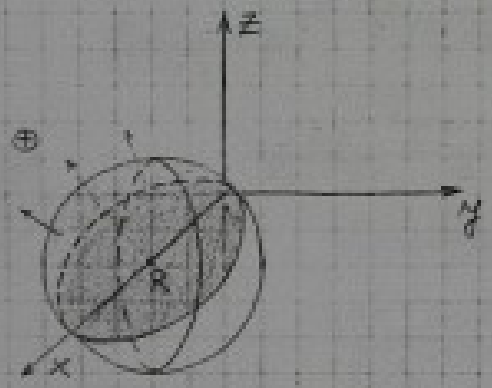
$$I = I_1+I_2+I_3+I_4+I_5 = \frac{5\pi}{16} + 0 - \frac{\pi}{16} + 0 + 0 = \frac{\pi}{8}$$

$$\boxed{I=\frac{\pi}{8}}$$

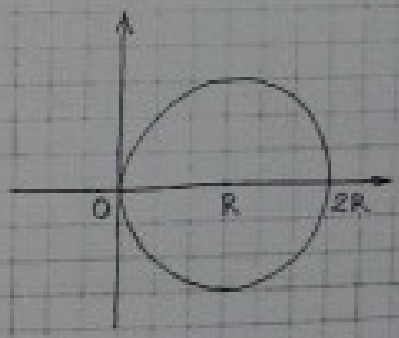
21 $$\oiint_{\Gamma} y^2\,dy\,dz + (x^2+y^2)\,dx\,dz + (x^2+y^2+z^2)\,dx\,dy$$

Γ: $x^2+y^2+z^2-2Rx=0$, $z>0$

Γ: $(x-R)^2+y^2+z^2=R^2$ - СФЕРА , $C(R,0,0)$, $r=R$



- Пројектујемо добијену на xoy раван



$$z^2 = R^2-(x-R)^2-y^2$$

$$z=\sqrt{R^2-(x-R)^2-y^2}$$

$$p=\frac{\partial z}{\partial x} = \frac{R-x}{\sqrt{R^2-(x-R)^2-y^2}} \quad , \quad q=\frac{\partial z}{\partial y} = \frac{-y}{\sqrt{R^2-(x-R)^2-y^2}}$$

→ вратимо у почетну:

$$I=\iint_D \left(y^2,\ x^2+y^2,\ x^2+y^2+R^2-(x-R)^2-y^2\right)\cdot\left(\frac{x-R}{\sqrt{R^2-(x-R)^2-y^2}}+\frac{y}{\sqrt{R^2-(x-R)^2-y^2}}-1\right)dx\,dy$$

$$=\iint_D \left(\frac{y^2\cdot(x-R)+y\cdot(x^2+y^2)}{\sqrt{R^2-(x-R)^2-y^2}}+2Rx\right)dx\,dy$$