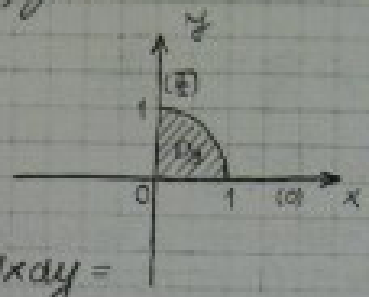
Γ_2: $\underline{x=0}$ (квадрат)

$dx=0$

$$\oint_{\Gamma_2} xz\,\overset{0}{dy} + x^2y\,\overset{0}{dx}\,dz + y^2z\,\overset{0}{dx}\,dy = 0 \quad \Rightarrow \quad \boxed{I_2=0}$$

Γ_3: $\underline{z=x^2+y^2}$ ($\frac{1}{4}$ параболоида)

- Пројектујемо га на xoy раван и добијамо 1/4 круга:



$$p=\frac{\partial z}{\partial x}=2x \quad , q=\frac{\partial z}{\partial y}=2y$$

→ вратимо у почетну

$$I=\iint_{D_3}\left(x\cdot(x^2+y^2),\ x^2y,\ y^2\cdot(x^2+y^2)\right)\cdot(-2x,-2y,1)\,dx\,dy =$$

(Пошто рачунамо површину са унутрашње стране параболоида нормале унутрашње стране параболоида иду у правцу z-осе, па је ⊕)

$$=\iint_{D_3}(-2x^4-2x^2y^2-2x^2y^2+x^2y^2+y^4)\,dx\,dy =$$

$$=\iint_{D_3}(-2x^4-3x^2y^2+y^4)\,dx\,dy = \begin{pmatrix} x=\rho\cos\varphi & 0\le\varphi\le\frac{\pi}{2} \\ y=\rho\sin\varphi & \\ J=\rho & 0\le\rho\le 1\end{pmatrix} =$$

$$=\int_0^{\pi/2}d\varphi\cdot\int_0^1(-2\rho^4\cos^4\varphi-3\rho^4\cos^2\varphi\sin^2\varphi+\rho^4\sin^4\varphi)\cdot\rho\,d\rho =$$

$$=\int_0^{\pi/2}d\varphi\cdot(\sin^4\varphi-2\cos^4\varphi-3\sin^2\varphi\cos^2\varphi)\cdot\int_0^1\rho^5\,d\rho =$$

$$=\frac{1}{6}\int_0^{\pi/2}(\sin^4\varphi-2\cos^4\varphi-3\sin^2\varphi\cos^2\varphi)\,d\varphi =$$

$$=\frac{1}{6}\int_0^{\pi/2}\left(\frac{1}{8}(3-4\cos2\varphi+\cos4\varphi)-\frac{1}{4}(3+4\cos2\varphi+\cos4\varphi)-\frac{3}{4}(1-\cos2\varphi)\cdot(1+\cos2\varphi)\right)d\varphi$$

$$=\frac{1}{24}\int_0^{\pi/2}\left(\frac{3}{2}+\underline{2\cos2\varphi}+\frac{1}{2}\cos4\varphi-3-\underline{4\cos2\varphi}-\cos4\varphi-3\cdot(1-\cos^2 2\varphi)\right)d\varphi =$$

$$=\frac{1}{24}\int_0^{\pi/2}\left(-\frac{3}{2}-2\cos2\varphi-\frac{1}{2}\cos4\varphi-3+\frac{3}{2}(1+\cos4\varphi)\right)d\varphi$$

$$=\frac{1}{24}\int_0^{\pi/2}(-3-2\cos2\varphi+\cos4\varphi)\,d\varphi=\frac{1}{24}(-3\varphi-2\sin2\varphi+\sin4\varphi)\Big|_0^{\pi/2}=$$

$$=\frac{1}{24}\cdot\left(-\frac{3\pi}{2}\right)=-\frac{\pi}{16} \quad \Rightarrow \quad \boxed{I_3=-\frac{\pi}{16}}$$