$\Gamma_1: \; y = \sqrt{1-(2x-1)^2}$

$S_1: \; y = \sqrt{1-4\cdot(x-\frac{1}{2})^2}$ – пресметување по хог ровови

$p = \frac{\partial y}{\partial x} = \frac{-8\cdot(x-\frac{1}{2})}{\sqrt{1-4\cdot(x-\frac{1}{2})^2}}$

$q = 0$

$$\Pi_1 = \oint_{S_1} = \oiint_{S_1} (2y-z)\,dy\,dz - y\,dx\,dz + z\,dx\,dy =$$

$$= \iint_D \left(\left(2\sqrt{1-4(x-\tfrac{1}{2})^2} - z,\; -\sqrt{1-4\cdot(x-\tfrac{1}{2})^2},\; z\right)\cdot\left(\frac{8\cdot(x-\frac{1}{2})}{\sqrt{1-4(x-\frac{1}{2})^2}},\; 1,\; 0\right)\right. =$$

$$= \iint_D \left(16\cdot(x-\tfrac{1}{2}) - \frac{8z\cdot(x-\frac{1}{2})}{\sqrt{1-4\cdot(x-\frac{1}{2})^2}} - \sqrt{1-4(x-\tfrac{1}{2})^2} + 0\right) dx\,dz$$

$$\Pi_2 = \oint_{S_2} = \oiint_{S_2} (2y-z)\,dy\,dz - y\,dx\,dz + z\,dx\,dy =$$

$S_2: \; y = -\sqrt{1-4\cdot(x-\frac{1}{2})^2}$

$$= \iint_D \left(-2\sqrt{1-4(x-\tfrac{1}{2})^2} - z,\; \sqrt{1-4\cdot(x-\tfrac{1}{2})^2},\; z\right)\cdot\left(\frac{-4\cdot(x-\frac{1}{2})}{\sqrt{1-4(x-\frac{1}{2})^2}},\; 1,\; 0\right) dx\,dz$$

многу да трајам грешку!

$$= \iint_D \left(-8\cdot(x-\tfrac{1}{2}) - \frac{4z\cdot(x-\frac{1}{2})}{\sqrt{1-4(x-\frac{1}{2})^2}} - \sqrt{1-4\cdot(x-\tfrac{1}{2})^2}\right) dx\,dz$$

$$\Pi = \oiint_S = \oiint_{S_1} + \oiint_{S_2}$$

$$\Pi = -2\iint_D \left[\frac{4z\cdot(x-\frac{1}{2})}{\sqrt{1-4(x-\frac{1}{2})^2}} + \sqrt{1-4(x-\tfrac{1}{2})^2}\right] dx\,dy$$

D: проекција пресека на хог ровови:

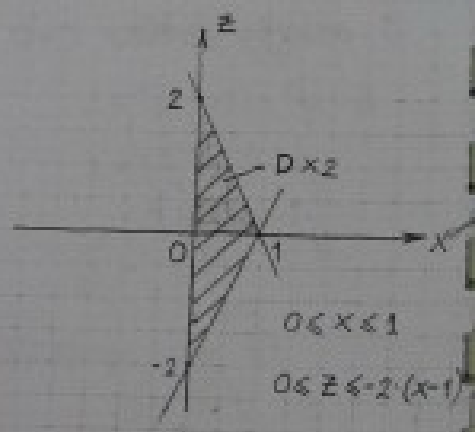
$$\left.\begin{aligned} \Gamma_1:\; & \frac{y^2}{2} + 2x^2 - 2x = 0 \\ \Gamma_2:\; & x^2 + \frac{y^2}{2} + \frac{z^2}{4} = 1 \end{aligned}\right\} \; D:\; x^2 + (2x - 2x^2) + \frac{z^2}{4} = 1$$

$$2x - x^2 + \frac{z^2}{4} = 1$$

$$\frac{z^2}{4} = (x-1)^2$$

$$\frac{z}{2} = \pm(x-1)$$

$$\boxed{z = \pm 2\cdot(x-1)}$$



$0 \le x \le 1$

$0 \le z \le -2\cdot(x-1)$

$$\Pi = -4\cdot\int_0^1 dx \cdot \int_0^{-2(x-1)} \left(\frac{4z\cdot(x-\frac{1}{2})}{\sqrt{1-4\cdot(x-\frac{1}{2})^2}} + \sqrt{1-4(x-\tfrac{1}{2})^2}\right) dz$$

$$= -4\cdot\int_0^1 \left(\frac{8\cdot(x-1)^2\cdot(x-\frac{1}{2})}{\sqrt{1-4\cdot(x-\frac{1}{2})^2}} - 2\cdot(x-1)\cdot\sqrt{1-4(x-\tfrac{1}{2})^2}\right) dx$$

$$= -4\cdot\int_0^1 \frac{8\cdot(x-1)^2\cdot(x-\frac{1}{2}) - 2\cdot(x-1)\cdot(1-4\cdot(x-\frac{1}{2})^2)}{\sqrt{1-4(x-\frac{1}{2})^2}}\, dx =$$