Pri.: $\iiint_M (x^2+y^2)\,dx\,dy\,dz$

$$M = \{[x,y,z] \in \mathbb{R}^3 : x^2+y^2 \le 1,\ |z| \le 1-x\}$$

VÁLC. SOUŘ.

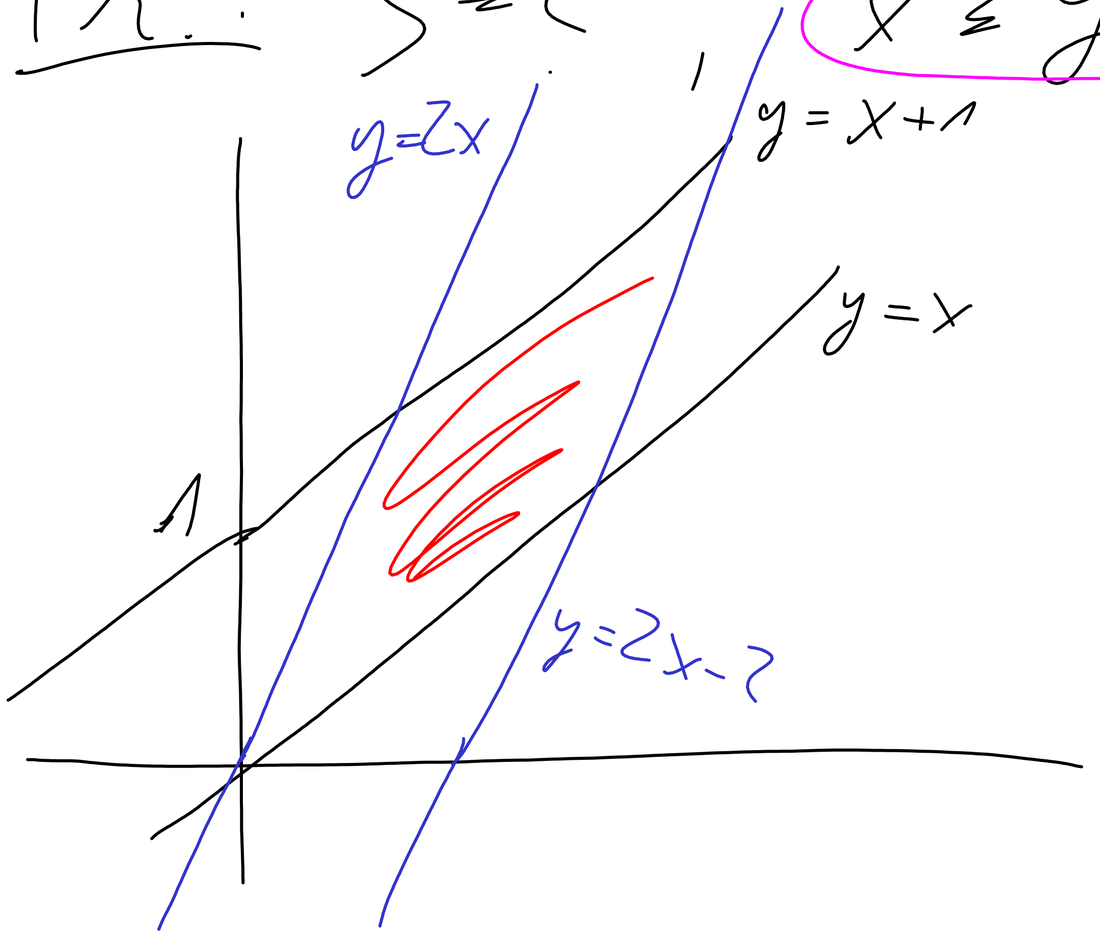
$$\rho \in [0,1], \quad \varphi \in [0, 2\pi]$$

$$\int_0^1 \int_0^{2\pi} \int_{\rho\cdot\cos\varphi - 1}^{1-\rho\cdot\cos\varphi} \rho^2 \cdot \rho \, dz \, d\varphi \, d\rho =$$

$$z \in [x-1, \; 1-x] = [\rho\cdot\cos\varphi - 1, \; 1-\rho\cdot\cos\varphi]$$

Pri.: $S = 2$

$x \le y \le x+1$, $2x-2 \le y \le 2x$



$0 \le y-x \le 1$

u

$u = y-x$, $u \in [0,1]$

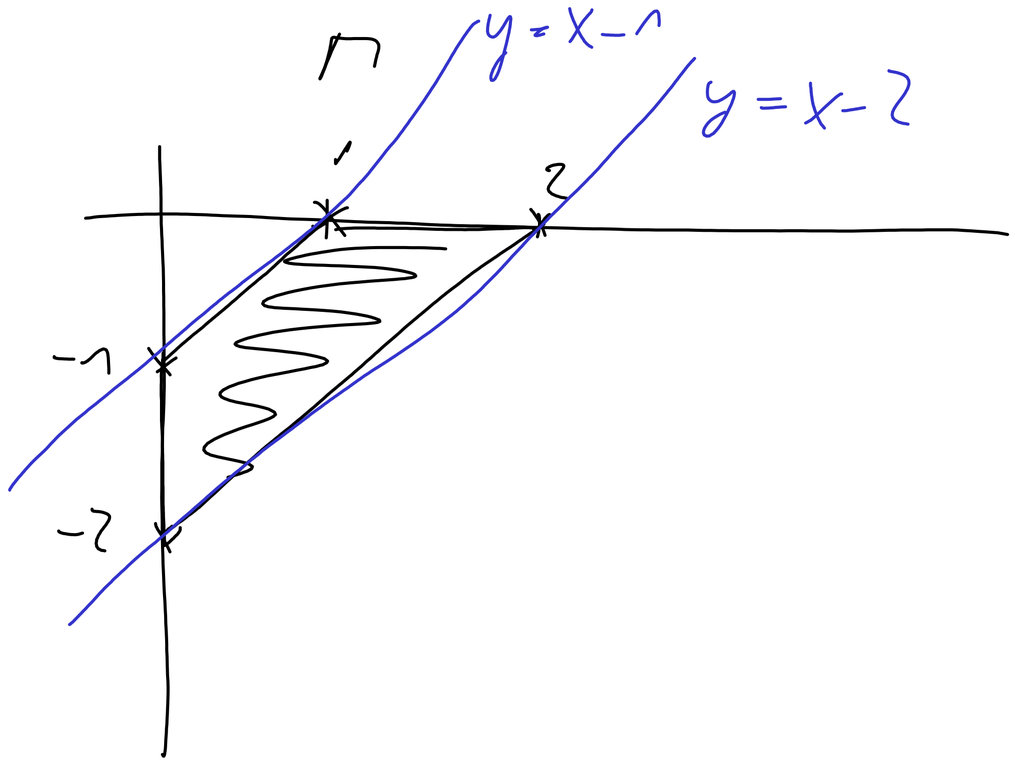
$-2 \le y-2x \le 0$

v

$v = y-2x$, $v \in [-2,0]$

$$S = \iint_{\Pi} 1 \, dx \, dy = \int_{0}^{1} \int_{-2}^{0} 1 \cdot 1 \, dx \, du = 2$$

Př.: $\iint e^{\frac{x+2}{x-y}}\,dx\,dy$, M = úsečky s vrcholy $[1,0],[2,0],[0,-2],[0,-1]$



$y = x-1 \Rightarrow y - x = -1$

$y = x-2 \Rightarrow y - x = -2$

$$-2 \le y - x \le -1$$

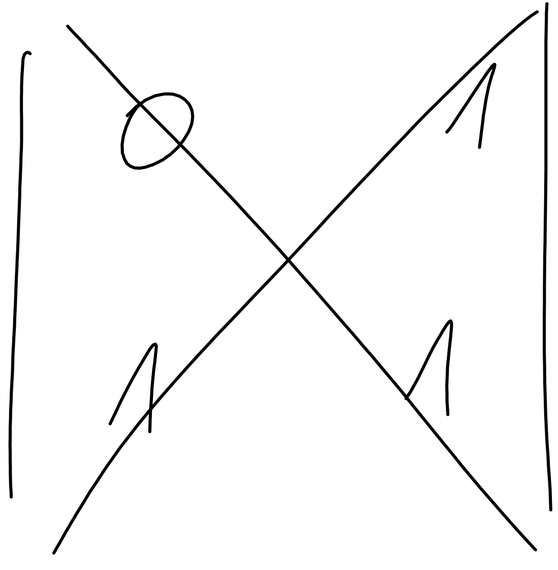
M

$u = y - x \quad , \quad u \in [-2, -1]$

$v = x \quad , \quad v \in [0, -u]$

$x = v$

$y = u + x = u + v$

$\Rightarrow \quad J(u, v) =$ 

$= -1$

Pri:

$$\iint_D x^2 \cdot y^2 \, dx\,dy = ?$$