

$$[0, 1] \times (-1, 1)^2$$

$$u_t = \text{arctg} \left(u_{xx} + u_{yy} + \frac{1}{2} u_{xy} + \frac{1}{2} u_{yx} \right) + u_{xx} + u_{yy} + \frac{1}{2} u_{xy} + \frac{1}{2} u_{yx} + g$$

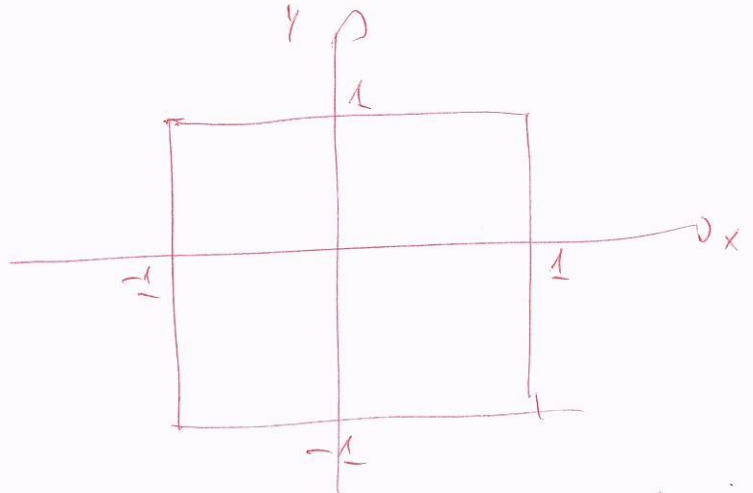
$$u|_{t=0} = 0$$

$$u(1, y) = \sin t \cos(1-y)$$

$$u(-1, y) = \sin t \cos(-1-y)$$

$$u(x, 1) = \sin t \cos(x-1)$$

$$u(x, -1) = \sin t \cos(x+1)$$



$$g(t, x, y) := (\cos t + \sin t) \cdot \cos(x-y) - \text{arctg}(-\sin t \cos(x-y))$$

$$u(t, x, y) = \sin t \cos(x-y)$$

Rozwiązanie

$$h_0, h_1 = h_2$$

$$1) h_0 = 10^{-3}, h = 10^{-1} - \text{Różnica wynosi 2 i 3 rzędy}$$

$$2) h_0 = 10^{-5}, h = 10^{-2} - \text{---} 5 \text{ rzędów}$$

$$f(t, x, y, z, p, q) := \text{arctg} \left(\varphi_{11} + \varphi_{22} + \frac{1}{2} \varphi_{12} + \frac{1}{2} \varphi_{21} \right) + \varphi_{11} + \varphi_{22} + \frac{1}{2} \varphi_{12} + \frac{1}{2} \varphi_{21} + g(t, x, y, z, p, q)$$

$$\tilde{A} = \left[\begin{array}{cc} \frac{1}{2} \left(1 + \frac{1}{1 + (\varphi_{11} + \varphi_{22} + \frac{1}{2} \varphi_{12} + \frac{1}{2} \varphi_{21})^2} \right) & \frac{1}{2} \left(1 + \frac{1}{1 + (\varphi_{11} + \varphi_{22} + \frac{1}{2} \varphi_{12} + \frac{1}{2} \varphi_{21})^2} \right) \\ \frac{1}{2} \left(1 + \frac{1}{1 + (\varphi_{11} + \varphi_{22} + \frac{1}{2} \varphi_{12} + \frac{1}{2} \varphi_{21})^2} \right) & 1 + \frac{1}{1 + (\varphi_{11} + \varphi_{22} + \frac{1}{2} \varphi_{12} + \frac{1}{2} \varphi_{21})^2} \end{array} \right]$$

skokowo
- obrotowo
($\Rightarrow T_1$ paraboliczna)

$$\text{Kodei: } \left[\frac{h_0}{h^2} \leq \frac{1}{6} \right] \text{ CFL}$$