№ 12 (Darya Minakova)

$z(x) = \sqrt{1+x^2}(\sin(3x+0.1)+\cos(2x+0.3))$

$x \in [0.2; 0.3], \quad \text{step } 0.01$

$$u(x) = \sqrt{1+x^2}$$
$$v(x) = \sin(3x+0.1)$$
$$t(x) = \cos(2x+0.3)$$

$\varepsilon = 10^{-6}$

$$1.0198 \le u \le 1.04403$$

$$f(u,v,t) = u(v+t)$$

$$\sin(0.7) \le v \le \sin(1) \approx 0.84$$

$$\cos(0.7) \le t \le \cos(0.9) \approx 0.62$$

$$\Delta f = \frac{\partial f}{\partial u}\Delta u + \frac{\partial f}{\partial v}\Delta v + \frac{\partial f}{\partial t}\Delta t$$

$$\left|\frac{\partial f(u,v,t)}{\partial u}\right| = v + t < 1.46 \qquad \Delta u = \frac{10^{-6}}{4 \cdot 1.46} \approx 1.71 \cdot 10^{-7}$$

$$\left|\frac{\partial f(u,v,t)}{\partial v}\right| = u < 1.04403 \qquad \Delta v = \frac{10^{-6}}{4 \cdot 1.044} \approx 2.403 \cdot 10^{-7}$$

$$\left|\frac{\partial f(u,v,t)}{\partial t}\right| = u < 1.04403 \qquad \Delta t = \frac{10^{-6}}{4 \cdot 1.04} \approx 2.403 \cdot 10^{-7}$$