[redacted]

10. $z(x) = \underbrace{\cos(\overbrace{2{,}8x + \sqrt{1+x}}^{\varphi})}_{u}\ \underbrace{\operatorname{arctg}(1{,}5x + 0{,}2)}_{v}$

$x = 0{,}1\,(0{,}01)\,0{,}2$

$z(x) = f(u,v) = u \cdot v$

$\Delta z = \Delta f^* + \sum B_i \Delta_i = \Delta f^* + B_1\Delta_1 + B_2\Delta_2 = B_u\Delta u + B_v\Delta v$

$B_u\Delta u = B_v\Delta v$, тогда $\Delta u = \dfrac{\Delta z}{2B_u}$ $\Delta v = \dfrac{\Delta z}{2B_v}$

$B_u = \sup\left|\dfrac{\partial f}{\partial u}\right| = \bar{v} \approx 0{,}46$ $B_v = \sup\left|\dfrac{\partial f}{\partial v}\right| = \bar{u} \approx 0{,}24$

$\Delta u = \dfrac{10^{-6}}{2 \cdot 0{,}46} \approx 1{,}09 \cdot 10^{-6}$

$\Delta v = \dfrac{10^{-6}}{2 \cdot 0{,}24} \approx 2{,}08 \cdot 10^{-6}$

$u = \cos\varphi$

$\Delta u = \Delta u^* + \sum_{i=1}^{n} B_i\Delta_i = \Delta u^* + B_1\Delta_1 = \Delta u^* + B_\varphi\Delta\varphi$

$\Delta u^* = B_\varphi\Delta\varphi$, $\Delta\varphi = \dfrac{\Delta u}{2B_\varphi}$ $\Delta u^* = \dfrac{\Delta u}{2}$

$B_\varphi = \sup\left|\dfrac{du}{d\varphi}\right| = |-\sin\bar{\varphi}| \approx 0{,}996 \approx 1$

$\Delta\varphi = \dfrac{1{,}09 \cdot 10^{-6}}{2 \cdot 1} = 0{,}545 \cdot 10^{-6}$

$\Delta u^* = \dfrac{1{,}09 \cdot 10^{-6}}{2} = 0{,}545 \cdot 10^{-6}$