Για το N :

έχουμε: $\dfrac{1}{\sqrt{1+\varepsilon^2}} = 0.89125 \Rightarrow \sqrt{1+\varepsilon^2} = \dfrac{1}{0.89125} \Rightarrow$

$$\varepsilon^2 + 1 = \left(\dfrac{1}{0.89125}\right)^2 \Rightarrow \varepsilon = \sqrt{\left(\dfrac{1}{0.89125}\right)^2 - 1}$$

$$\dfrac{1}{A} = 0.17783 \Rightarrow A = \dfrac{1}{0.17783}$$

$$K_{\varepsilon} = \dfrac{\varepsilon}{\sqrt{A^2 - 1}} \quad , \quad K = \dfrac{\Omega_p}{\Omega_s}$$

$$K_1 = \dfrac{\sqrt{\left(\frac{1}{0.89125}\right)^2 - 1}}{\sqrt{\left(\frac{1}{0.17783}\right)^2 - 1}} \qquad K = \dfrac{\Omega_s}{\Omega_p} = \dfrac{0.3}{0.2}$$

$$\boxed{N = \dfrac{\log_{10}\left(\frac{1}{K_1}\right)}{\log_{10}\left(\frac{1}{k}\right)}}$$

Για το $\Omega_c$ με N = 6

$$1 + \left(\dfrac{0.2\pi}{\Omega_c}\right)^{2\cdot 6} = \left(\dfrac{1}{0.89125}\right)^2 \Leftrightarrow \dfrac{0.2\pi}{\Omega_c} = \sqrt[12]{\left(\dfrac{1}{0.89125}\right) - 1} \Leftrightarrow$$

$$\boxed{\Omega_c = \dfrac{0.2\pi}{\sqrt[12]{\frac{1}{0.89125} - 1}}}$$

Ασκηση 2

11)    Για το N :

-πρωτη λυση βιβλιου :

$$N = \frac{\log\left[\left(\left(\frac{1}{0.17783}\right)^2 - 1\right)\Big/\left(\left(\frac{1}{0.94125}\right)^2 - 1\right)\right]}{2\log\left[\tan(0.15\pi)\big/\tan(0.1\pi)\right]}$$

-δευτερη λυση παρομοια με το invariance :

$$Q_c = \frac{\tan(0.15\pi)}{2\cdot\left(-\frac{1}{2}\sqrt{\left(\frac{1}{0.17783}\right)^2 - 1}\right)}$$