

Άσκηση 8ης # (Επίλυση με τη μέθοδο των ανώτερων τάσεων) ΠΕΔΙΟ ΧΡΟΝΟΥ

Δεδομένα

$$V_1(t) = \sqrt{2} \cos \omega t \Rightarrow V_{rms1} = \frac{V_{o1}}{\sqrt{2}} = 1 \text{ Volt}$$

$$V_2(t) = 2\sqrt{2} \cos \omega t \Rightarrow V_{rms2} = 2 \text{ Volt}$$

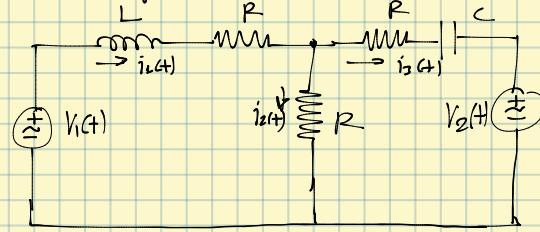
$$\omega = 1 \text{ rad/sec}$$

$$R = 1 \Omega$$

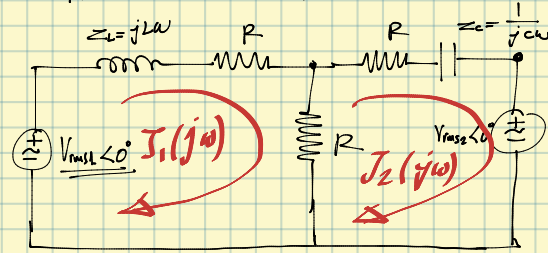
$$L = 1 \text{ H}$$

$$C = 1 \text{ F}$$

$$V_{ev} = \frac{V_o}{\sqrt{2}}$$



ΠΕΔΙΟ ΣΥΧΝΟΤΗΤΑΣ



Μέθοδος ανώτερων τάσεων:

$$\begin{cases} V_{rms1} - I_1 Z_L - I_1 R - (I_1 - I_2) R = 0 \\ -V_{rms2} - (I_2 - I_1) R - I_2 R - I_2 Z_C = 0 \end{cases} \Rightarrow$$

$$1 - I_1(j2 + 1) + I_2 = 0$$

$$-2 + I_1 + I_2(j - 1) = 0$$

$$I_1 = -0,25j = 0,25 \angle -90^\circ$$

$$I_2 = -0,75 - 0,5j = 0,9014 \angle 33,69^\circ$$

$$I_1(t) = 0,25 \sqrt{2} \cos(\omega t - 90^\circ)$$

$$I_2(t) = 0,9014 \sqrt{2} \cos(\omega t + 33,69^\circ)$$

$$\text{Άρα } i_1(t) = I_1(t)$$

$$i_2(t) = I_1(t) - I_2(t)$$

$$i_3(t) = I_2(t)$$