

Υπόδειγμα Υπολογισμών 2^{ης} Εργαστηριακής Άσκησης

$$\text{Για } \alpha^0 = 54^0, \quad V_{L,DC} = 26,5V, \quad V_{L,AC} = 39,9V$$

$$V_m = \sqrt{2} * V_{rms} = \sqrt{2} * 75 = 106,07V$$

Μετατροπή μοίρες σε ακτίνια

$$\text{ακτίνια} = \text{μοίρες} * \frac{3,14}{180} = 54^0 * \frac{3,14}{180} = 0,942$$

$$V_{L,av} = \frac{V_m}{2\pi} (1 + \cos\alpha) = \frac{106,07}{2 * 3,14} (1 + \cos 54^0) = 26,82V$$

$$V_m = \sqrt{2} * V_{rms} = \sqrt{2} * 75 = 106,07V$$

$$\begin{aligned} V_{L,rms} &= \frac{V_m}{2} \sqrt{\frac{1}{\pi} \left((\pi - \alpha) + \frac{1}{2} \sin 2\alpha \right)} = \frac{106,07}{2} \sqrt{\frac{1}{3,14} \left((3,14 - 0,942) + \frac{1}{2} \sin(2 * 54^0) \right)} \\ &= 48,93V \end{aligned}$$

$$P_{L(\theta\epsilon\omega\rho)} = \frac{V_{L,rms}^2}{R} = \frac{48,93^2}{47} = 50,94W$$

$$V_{rms} = \sqrt{V_{L,DC}^2 + V_{L,AC}^2} = \sqrt{26,5^2 + 39,9^2} = 47,9V$$

$$P_{L(\mu\epsilon\tau\rho)} = \frac{V_{rms}^2}{R} = \frac{47,9^2}{47} = 48,81W$$