



Homework

على الطالب بذل مجهوده الشخصي في انجاز هذا العمل و ارجاعه قبل 12 ديسمبر 2024.

Exercise

في ورقة A4

Linearize :

$$B(\theta) = \sin^3(\theta)$$

Exercise 2

Demonstrate that the effective value of the voltage $u(t)$ which has the following instantaneous value $u(t) = U_{max} \sin(\omega t)$ is:

$$U_{eff} = \frac{U_{max}}{\sqrt{2}}$$

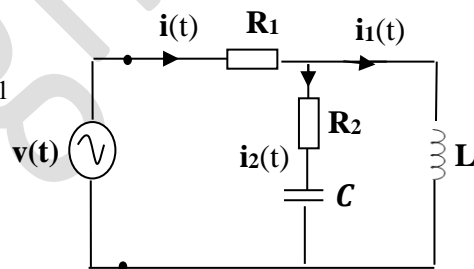
Exercise 3

The circuit in Figure 1 is supplied by a sinusoidal voltage source expressed in the domain time as:

$$v(t) = 40 \sin(3000t)$$

$$R_1 = 1.5 \text{ K}\Omega \quad C = \frac{1}{6} \mu\text{F} \quad L = \frac{1}{3} \text{ H}$$

$$R_2 = 1 \text{ K}\Omega$$



- 1) Calculate the equivalent impedance of this circuit? what is the nature of this impedance?
- 2) Determine The effective value of current I ? deduce the instantaneous value of the current $i(t)$?
- 3) Is the current $i(t)$ lagging behind the voltage, in phase or leading the voltage $v(t)$? (Justify your answer)
- 4) Determine The effective value of current I_1 ? deduce the instantaneous value of the current $i_1(t)$?
- 5) Determine The effective value of the current I_2 ? deduce the instantaneous value of the current $i_2(t)$?
- 6) Evaluate the power factor?
- 7) Determine the active and reactive power consumed by this impedance?

Good luck