

EE332 Introduction to Power Systems Engineering Homework 3

Assigned 8/28/08 Due 9/3/08 Read posted notes

1. The circuit below is a 'circuit model' for a power transformer.

Given $V_2 = 120\angle 0$ V RMS, 60 Hz and your answers from HW1 (posted)

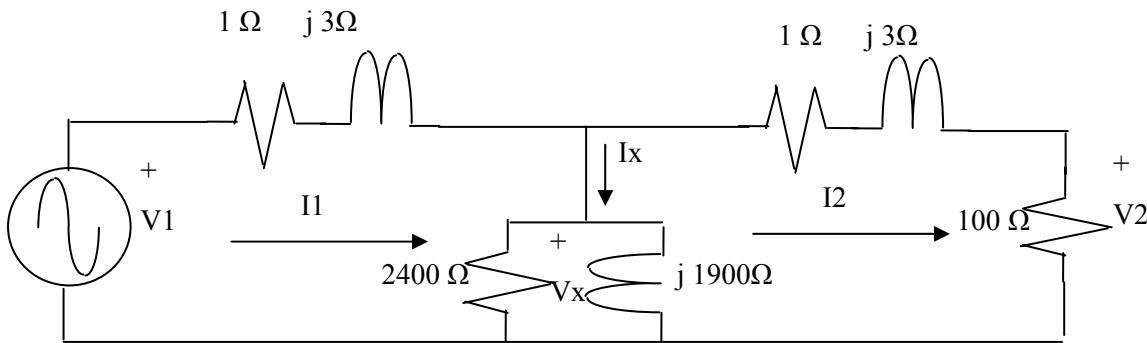
Find

Complex power delivered to the 100 ohm "Load"

Complex power delivered by the source V_1

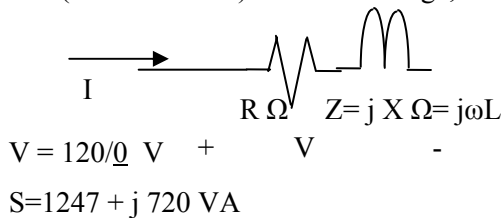
The efficiency

$$\eta = 100 * (\text{Real power delivered to Load} / \text{Real power delivered by source}) \%$$

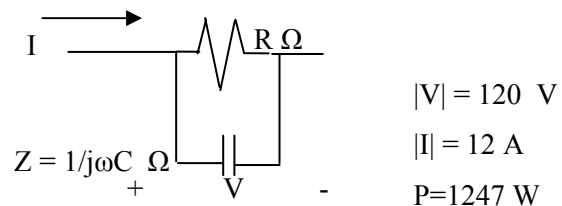


Ans: Source supplies $153.14 + j 16.78$ VA

2. In the circuits below assume that voltages and currents are 60 Hz ac. Determine component values (R and L or C) from the voltage, current and power information given.



Ans: $R = 8.66$ ohm



Ans: $C = 132.6$ uF

3. Text Problems Chapter 2, Problems 10, 12, 15, 16