

EE332 Introduction to Power Systems Engineering

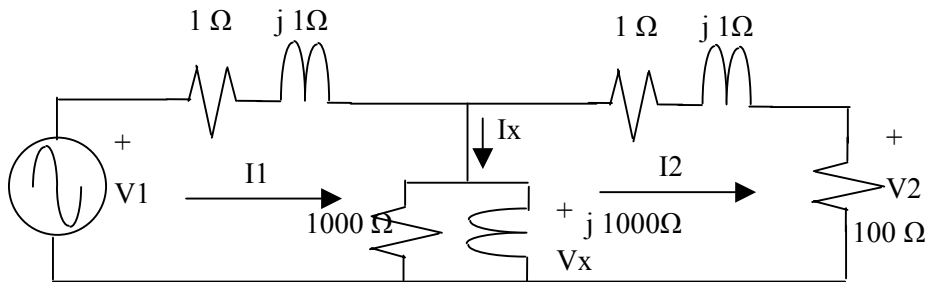
Homework is assigned each lecture but collect Fridays at the start of class. Feel free to bring up homework questions in class.

Homework 1

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

Given $V_2 = 120/0^\circ$ V RMS, 60 Hz

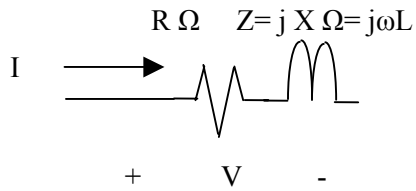
Find I_2 , I_x , I_1 and V_1



Ans: $V_1 = 122.27/1.12^\circ$ $I_1 = 1.328/-5.19^\circ$

Corrected 8/24

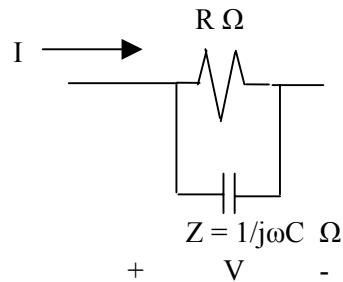
2. In the circuits below assume that voltages and currents are 60 Hz ac. The Values given are in RMS (root mean square) Determine component values (R and L or C)



$V = 120/0^\circ$ V

$I = 12/-30^\circ$ A

Ans: $R = 8.66$ ohm



$V = 120/0^\circ$ V

$I = 12/+30^\circ$ A

Ans: $C = 132.6$ uF

3. Look at your (or a friends) electric bill

What is the monthly energy use?

What is the rate?

What are the components of the rate?

Are there surcharges?

4. The NM transmission system is part of WECC

Do a web search to answer the following questions

- What is the generation capacity (MW) in WECC
- What is the generation mix (% nuclear, hydro, etc.)
- What is the highest transmission line voltage in WECC
- Where do EHV (345 kV) lines serving the Las Cruces originate

A very good site to look at is <http://www.eia.doe.gov/>

Homework 2

Text Chapter 2 Problems	2.1	$P=600 \text{ W}$	$Q=1039 \text{ VAR}$	$Z=6 + j 10.39 \text{ ohm}$
	2.2	$P=707 \text{ W}$	$Q=707 \text{ Var}$	