Faculty of Engineering and Technology

Electrical and Computer Engineering Department

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CIRCUIT ANALYSIS ENEE2304

CIRCUIT ANALYSIS PROJECT

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Section: SECTION_2

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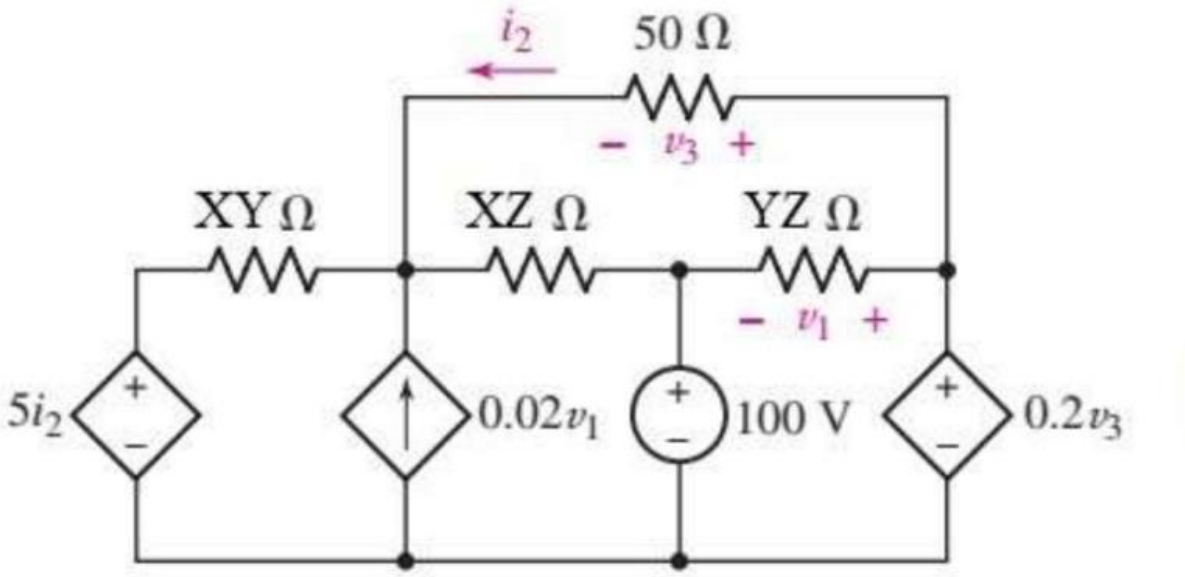
Introduction:

At first, I had to solve this project, so I went to the Internet and YouTube to learn how the program works, and then I started solving the first question, which is about:

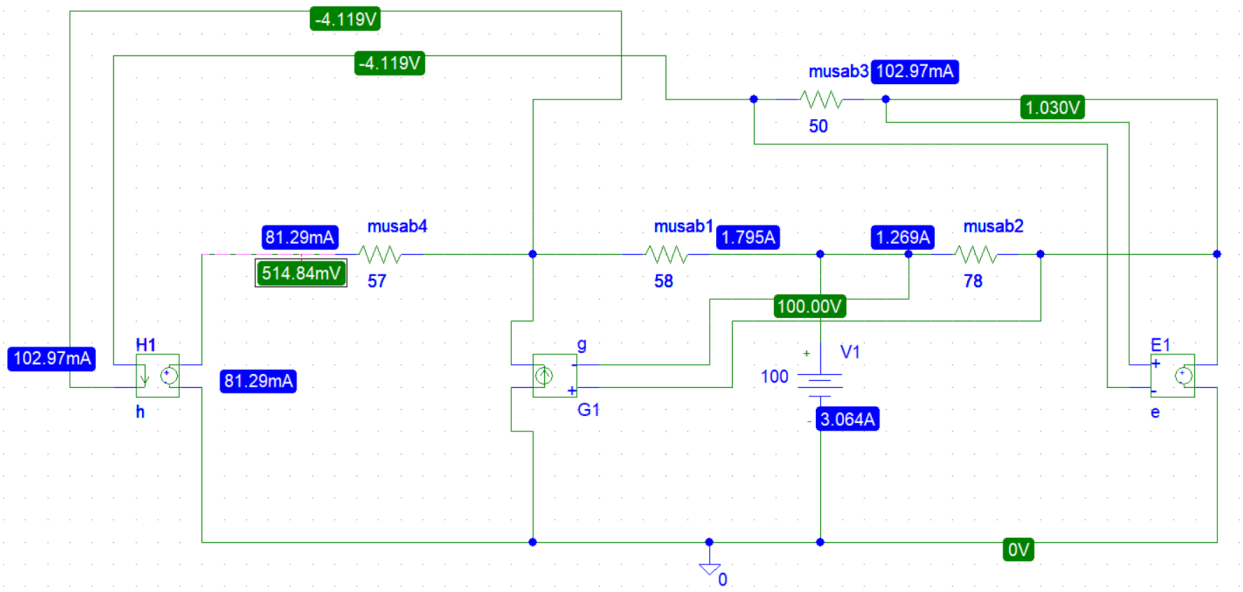
-Fitst question:

Question 1: Construct a PSPICE schematic for the circuit shown in the figure below. Simulate the schematic and show voltages at each node and current in each branch.



The drawing

Then I drew the circuit on the program and show voltages at each node and current in each branch and it looked like this:



-With this, I have finished most of the first question.

-Secouned question:

I read the text of the second question and it states the following:

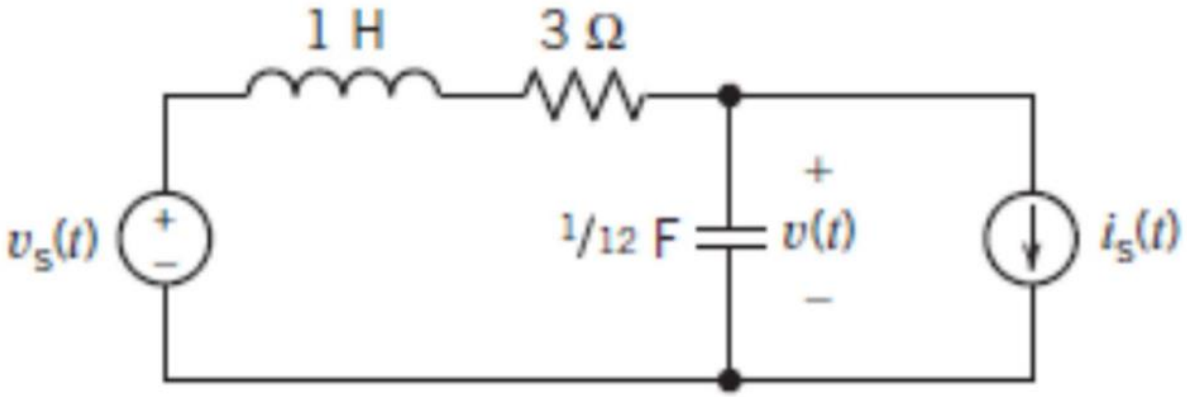
Question 2: The circuit shown in Figure below has two inputs, vs(t) and is(t), and one output, v(t). When inputs are given by Vs(t)= Vm sin 6t V and is(t)= Im A the output will be vo(t)=A sin(6t+θ) + B V 3Linearity requires that A be proportional to Vm and that B be proportional to Im. Consequently, we can write A= k1.Vm and B= k2.Im, where k1 and k2 are constants yet to be determined.

(a) Use PSpice to determine the value of k1 by simulating the circuit, using Vm =1 V and Im= 0.

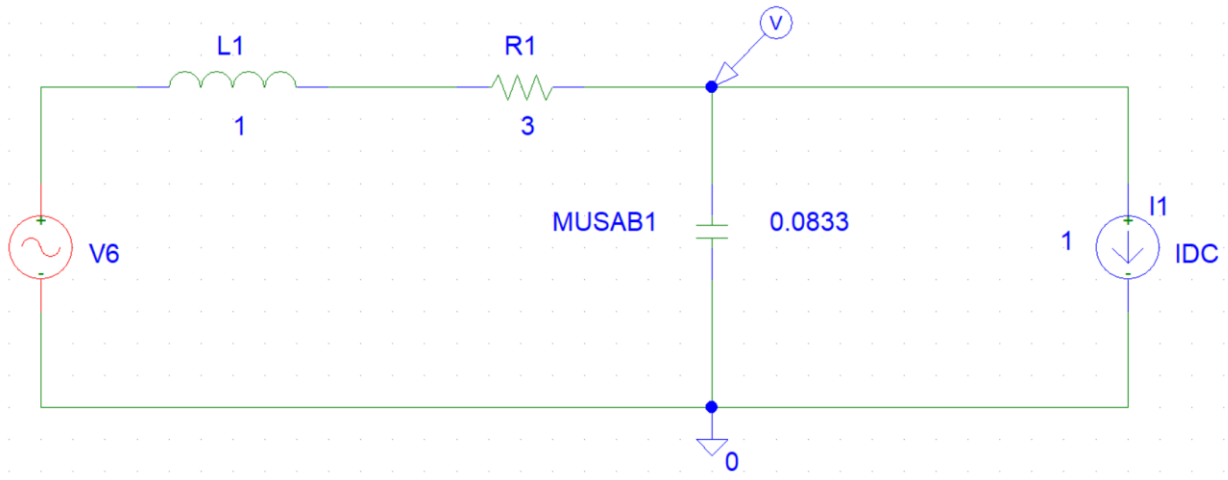
(b) Use PSpice to determine the value of k2 by simulating the circuit, using Vm =0 V and Im= 1.

(c) Knowing k1 and k2, specify the values of Vm and Im that are required to cause vo(t)=5sin(6t+θ)+5 V. Simulate the circuit, using PSpice to verify the specified values of Vm and Im.

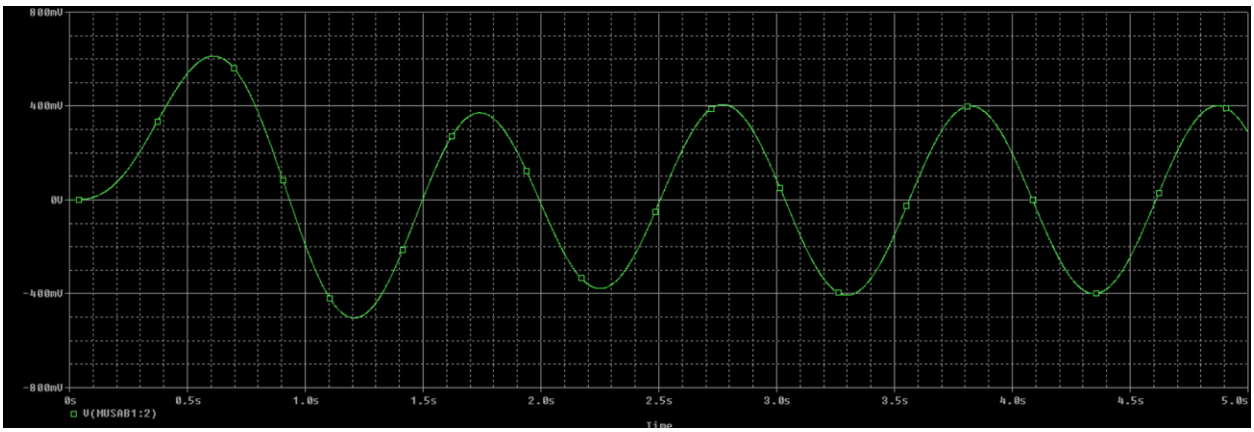
(d) Determine the average power delivered by vs(t) using Pspice.



-The Drawing:

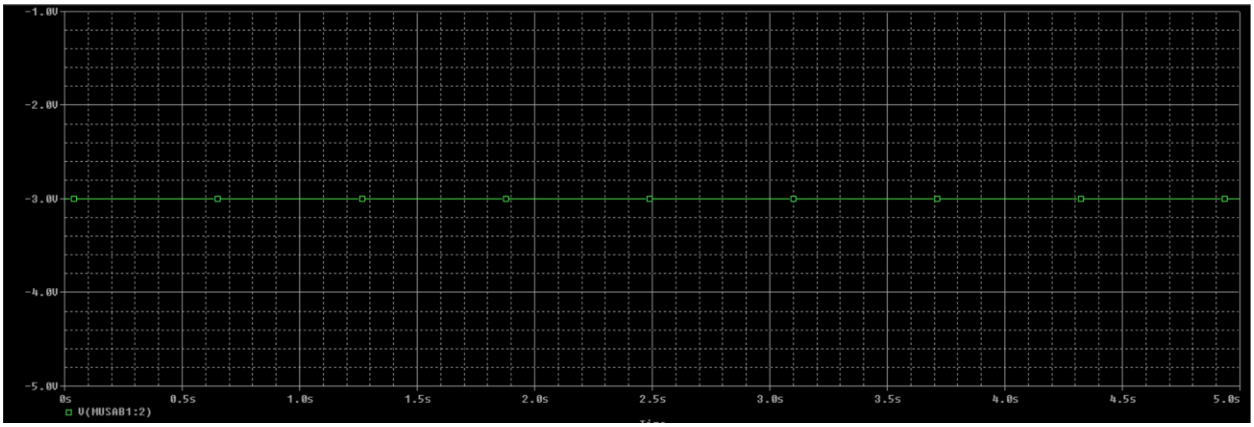


A) The same in the first branch, which was required to put the value of the current to zero and the value of the source one



K1 = A / Vm → K1 = 0.405/1 → K1 = 0.405

B) The same in the first branch, which was required to put the value of the current to one and the value of the source zero

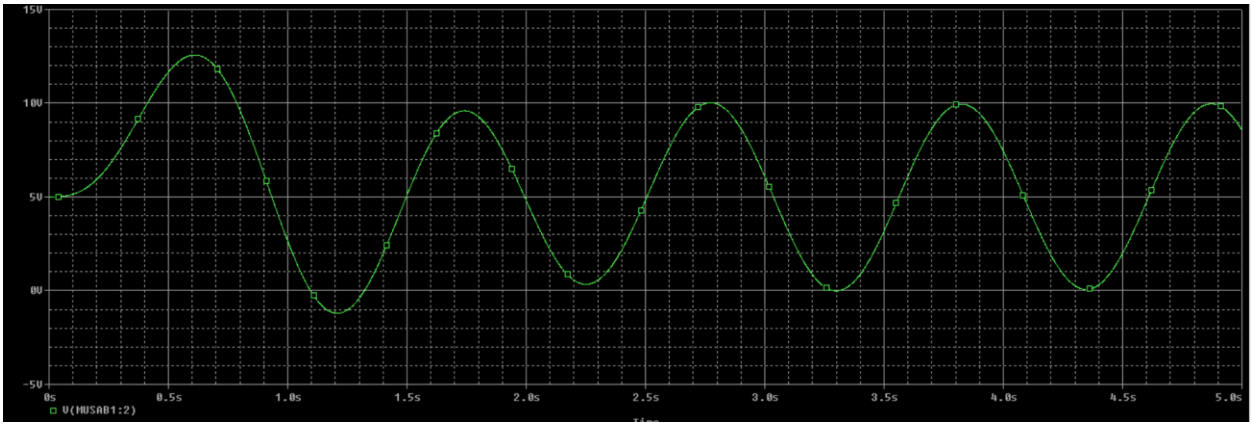


K2 = B /Im → K2 = -3/1 → K2 = -3

C) Put the values of Vm and Im:

Vm = A / k1 = 5 / 0.405 = 12.35

Im = B / k2 = 5 / -3 = -1.67



D) Find the average power delivered by vs(t) by the simulation and get the draw of the power by AVG(V1(V6) * I(V6))