Lecture 22
questions

How does the orientation of the inductors affect transformer characteristics?
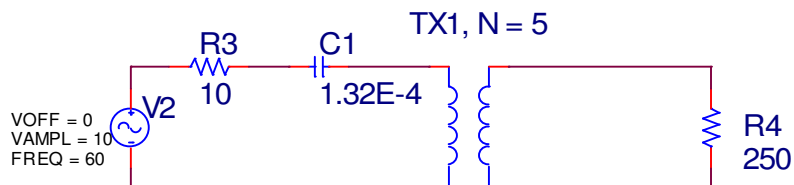What is mutual inductance?
What is the coupling coefficient, k?
What is the Tee model of mutual inductance?
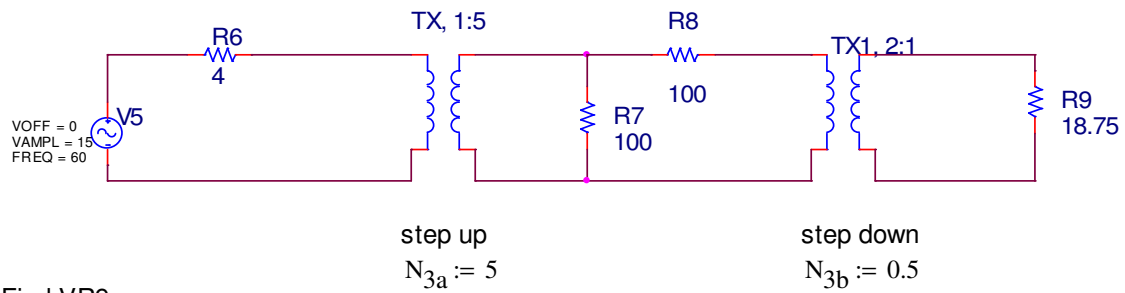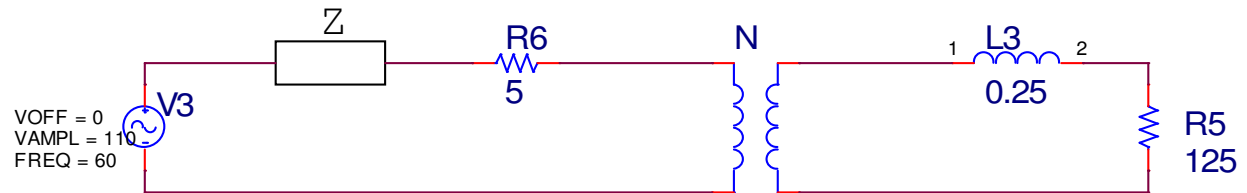How do real transformers behave?

Review 2)

Determine IR4.

Problem 1)
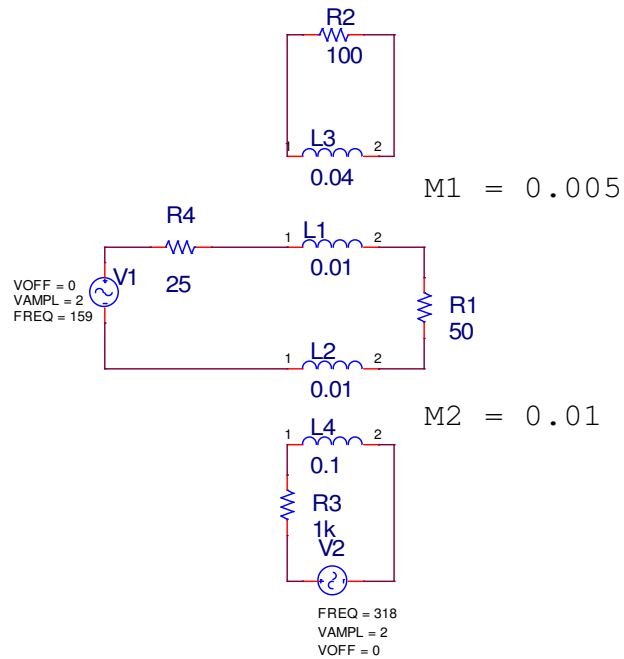

step up
$N_{3a} := 5$

step down
$N_{3b} := 0.5$

Find VR9

Problem 2) Impedance Matching

a. Determine the winding ratio and the impedance Z such that the power delivered to the load is maximized relative to the source power.

Problem 3) Tee Model

R2
100

L3   2
0.04

M1 = 0.005

R4

1 L1 2
0.01

VOFF = 0
VAMPL = 2
FREQ = 159

V1   25

R1
50

1 L2 2
0.01

1 L4 2
0.1

M2 = 0.01

R3
1k
V2

FREQ = 318
VAMPL = 2
VOFF = 0

Draw the tee model equivalent for the circuit above.

i_1

i_2

+

$L_1 - M$

$L_2 - M$

+

v_1

M

v_2

−

−