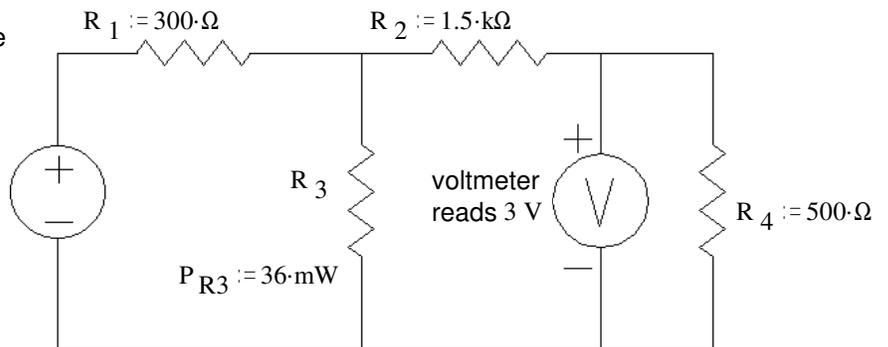


ECE 2210/00 Exam 1 given: Spring 06 (The space between problems has been removed.)

To get the most possible partial credit, always show all the intermediate values that you can calculate. If further calculations depend on a value that you can't figure out, just use a letter (like I_{R1}) or a guessed value and proceed.

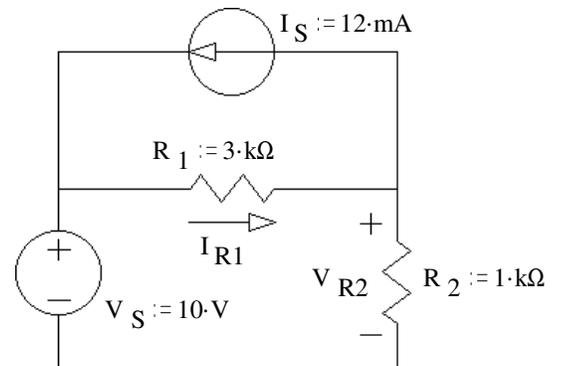
1. (20 pts) The voltmeter, V, reads 3 V.
 a) The power dissipated by R_3 is 36 mW, what is the value of R_3 . Assume that the voltmeter is ideal (has ∞ resistance).

Note: feel free to show answers & work right on the schematic



- b) What is the value of V_S ?
 c) How much power is provided by the source?

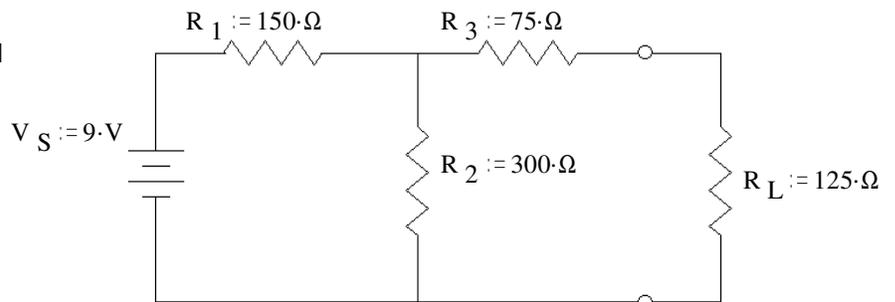
2. (21 pts) Use the method of superposition to find the current through R_1 (I_{R1}) voltage across R_2 (V_{R2}).
 Be sure to clearly show and **circle** your intermediate results.



Remember, you need I_{R1} and V_{R2}

Be sure to clearly show and **circle** your intermediate results.

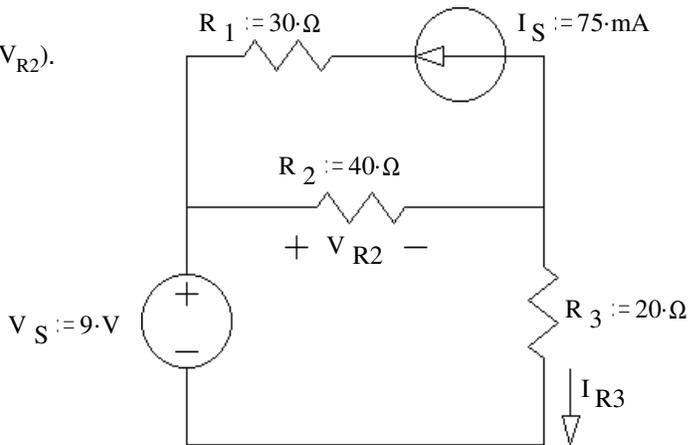
3. (21 pts) a) Find and draw the Thévenin equivalent of the circuit shown. The load resistor is R_L .



- b) Find and draw the Norton equivalent of the same circuit.
 c) Find the load current using your Thévenin equivalent circuit.

ECE 2210/00 Exam 1 Spring 06 p2

4. (20 pts) Use nodal analysis to find the voltage across R_2 (V_{R2}). You **MUST** show all the steps of nodal analysis work to get credit, including drawing appropriate symbols and labels on the circuit shown.



b) Find the current through R_3 (I_{R3}).

5. (18 pts) For the waveform shown, find:

a) peak-to-peak voltage, V_{pp}

b) amplitude, A

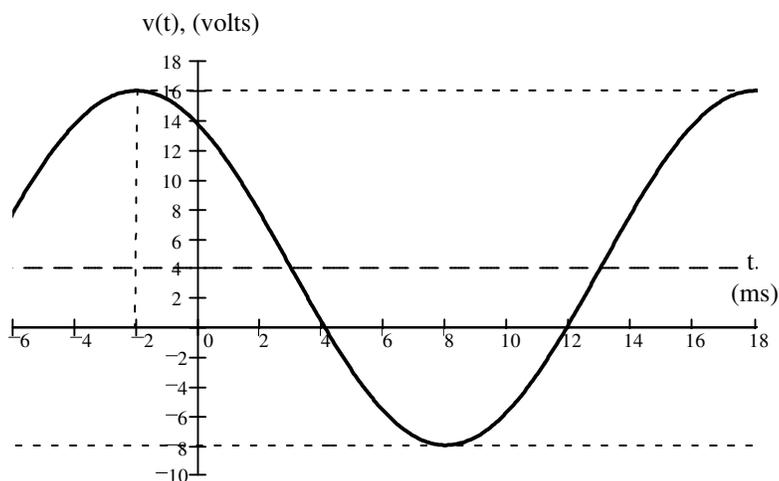
c) period, T

d) frequency f in cycles/sec or Hz

e) frequency ω in radians/sec

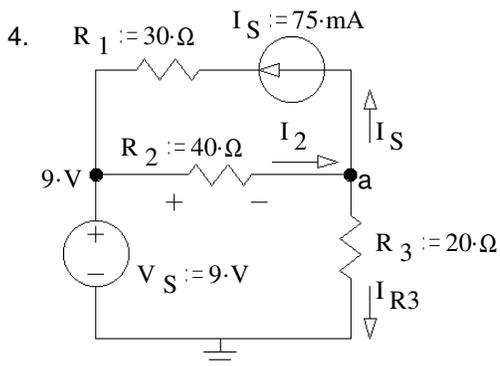
f) the phase angle in degrees

g) a complete expression for $v(t)$, include numbers and units

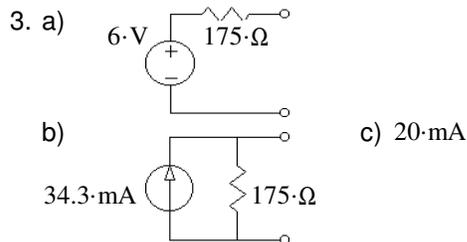


Answers

1. a) $4 \cdot K\Omega$ b) 14.7-V c) 132-mW 2. 5.5-mA -6.5-V



a) 7-V
b) 100-mA



3. a) b) c) 20-mA
5. a) 24-V b) 12-V c) 20-ms d) 50-Hz e) $314.2 \cdot \frac{\text{rad}}{\text{sec}}$
f) 36° g) $12 \cdot V \cdot \cos\left(314.2 \cdot \frac{\text{rad}}{\text{sec}} \cdot t + 36 \cdot \text{deg}\right) + 4 \cdot V$

ECE 2210 / 00 Midterm #1 Arn Stolp

Name _____

Scores:

Pages 1&2 _____ of a possible 41 pts

Pages 3&4 _____ of a possible 41 pts

Pages 5&6 _____ of a possible 18 pts

Total _____ of a possible 100 pts