GEORGIA INSTITUTE OF TECHNOLOGY
School of Electrical and Computer Engineering

EE 2250
Electric Circuit Analysis

Quiz #3

Thursday, March 4, 1999

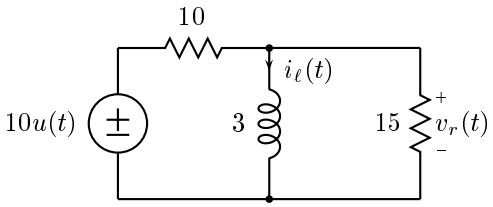
Name: _____

GENERAL INSTRUCTIONS

1. This is a *closed book, closed notes* exam. You may also use a calculator and one 8.5 × 11 handwritten sheet of notes.
2. Please do all of your work on the exam itself. You may use the backs of the pages, if necessary.
3. Please be as neat and well organized as possible.
4. Clearly indicate your answers.

Problem	*Max*	*Score*
1	25	
2	25	
3	25	
4	25	
Total	100	

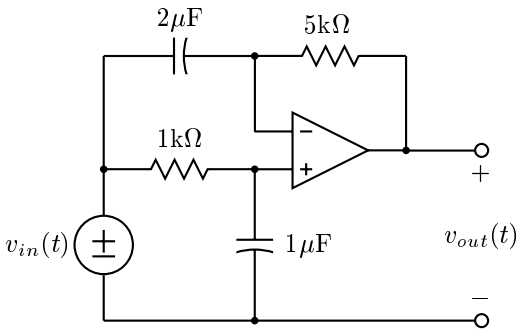
Problem Q3.1: This problem concerns the following circuit.



(a) Find $v_r(t)$ for $t > 0$ if $i_\ell(0) = 0$.

(b) Find $v_r(t)$ for $t > 0$ if $i_\ell(0) = 5$.

Problem Q3.2:

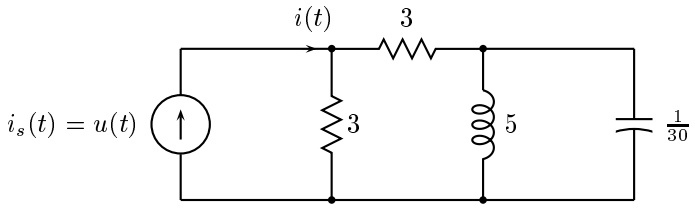


Find the system function $H(s) = V_{out}(s)/V_{in}(s)$ for the above circuit.

Problem Q3.3: Find the signal $x(t)$ for $t \geq 0$ if its Laplace transform is

$$X(s) = \frac{s^3}{(s+1)([s+1]^2+4)}.$$

Problem Q3.4:



(a) For the circuit above, determine the system function $H(s)$ that relates the output $i(t)$ to the input $i_s(t)$, i.e. find

$$H(s) = \frac{I(s)}{I_s(s)}$$

(b) Determine $i(t)$ for all values of t if $i_s(t) = u(t)$. Assume that the circuit is at initial rest for $t < 0$.