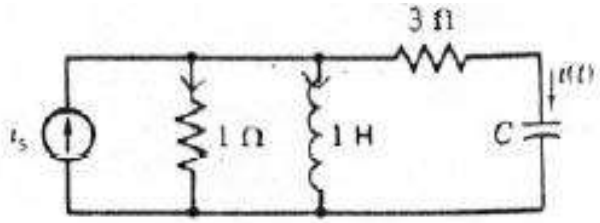
ECES-303

Homework #2

From book: 7.12 and 7.30

Supplementary Problems:

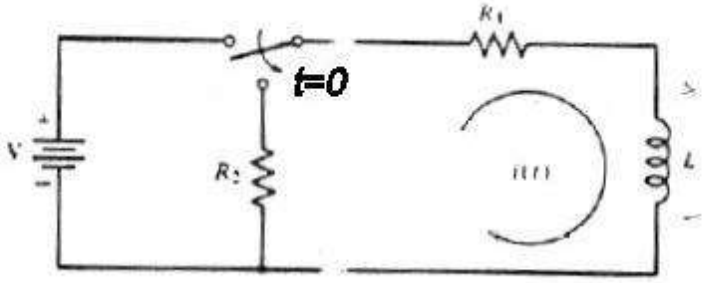
1. Find I(t) for t>0 using Laplace transform when C= 1 and $i_s\, e^{t}\, u(t)$ for the circuit of the following figure:



2. A system with impulse response *h(t)*, has three poles located at s=-3, s=1+3j and s=1-3j, and two zeros located at s=2+j and 2-j.
   a. Write down an expression for *H(s)*.
   b. If the system is BIBO stable find the region of convergence of *H(s)*.
   c. Find *h*(*t*) .

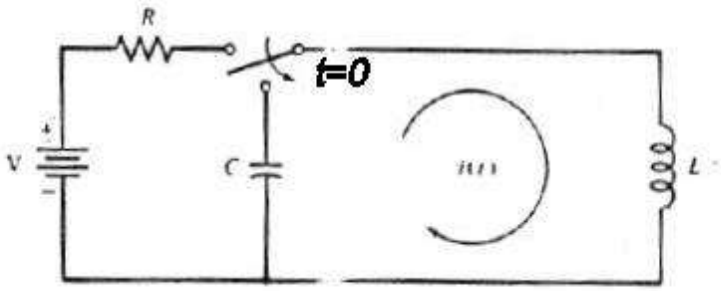
3. In the circuits shown, the switch is moved in accordance with the arrow at t=0, having been in the top position for a long time. Solve for the current I(t). for t>=0 using the Laplace transform.

(a)



(a)

(b)



(b)

4. Using Laplace transforms, find the response v(t) for t>0 for the circuit of the following figure when $v_s\ 6e^{3t}\ u(t)$