EECS 215: Introduction to Electronic Circuits WN 2010
Problem Set 8

Issued: 3/12/10

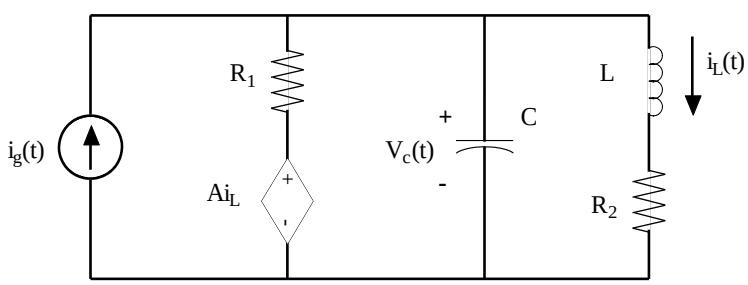
Due: 3/19/10, **9:30 AM**

U&M refers to a problem from Ulaby and Maharbiz.

Problems:

1. U&M 6.6
2. U&M 6.14
3. U&M 6.23 (also determine and plot $v_c(t)$)
4. U&M 6.28
5. U&M 6.38
6. U&M 6.43
7. For the circuit shown below:
   a. Find the general differential equation that relates $i_L(t)$ to $i_g(t)$.
   b. If $R_1 = 1000\Omega \quad R_2 = 5\Omega \quad A = 996\Omega \quad L = 1mH \quad C = 1\mu F$, we get

   $$\frac{d^2 i_L}{dt^2} + \left(6x10^3 s^{-1}\right)\frac{di_L}{dt} + \left(9x10^6 s^{-2}\right) i_L = \left(1x10^9 s^{-2}\right) i_g$$

   where s here is the abbreviation for the unit seconds

   If $i_g(t) = (1mA)\left[u(t) - u(t - 0.4ms)\right]$, find both $i_L(t)$ and $V_c(t)$ and plot them (Matlab or other programs) for $-0.5ms \le t \le 3ms$