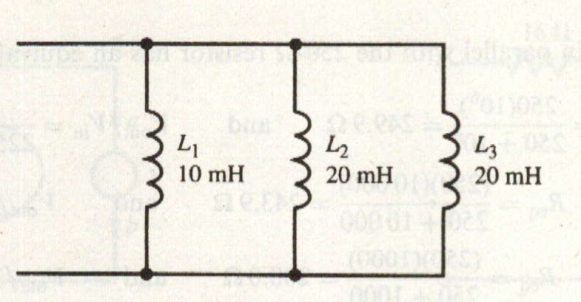
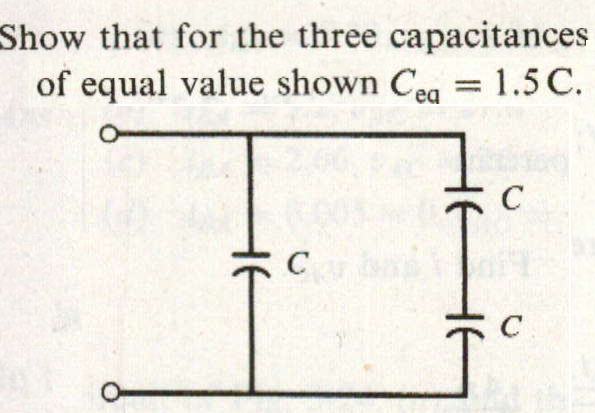
ENGR 12 Assignment 7 Due: next wed

**Part I. Drills -- 1 point each**

1. An inductance of 2 mH has a current i = 5.0(1 – e-5000t) A, for t>0. Find the corresponding voltage as a function of time, v(t) = ...
2. A voltage pulse v = 50 sin(200t) V, for 0 < t < 0.005pi sec (this is one half cycle of a sinewave) is applied to a 20uF capacitor. Find the corresponding current as a function of time, i(t) = ...
3. A current pulse i = 50 sin(200t) A, for 0 < t < 0.005pi sec (this is one half cycle of a sinewave) is applied to a 20uF capacitor, which has an initial voltage of 0V. Find the corresponding voltage as a function of time, v(t) = ...
4. Find the equivalent inductance of the 3 parallel connected inductors:  
   
5. 

**Part II. Assisted Problem Solving – 2 pts each**

|  |  |
| --- | --- |
| 6 For problem 2,   1. find the corresponding power over the same interval (0 to 0.005pi sec) 2. find the energy in the capacitor over the same interval. (0 to 0.005pi sec) 3. What is the maximum energy stored?   careful with UNITS!!   1. plot all 4 curves using matlab or [www.wolframalpha.com](http://www.wolframalpha.com) , copy plots into a 1 page Word file (align them vertically, add labels) and print/staple to your homework | PLAN   1. To plot in Wolfram, use an expression like so: plot[x^2, {x, 0, 10}]   (plots the function x^2 vs x from 0 to 10)   1. For integration, use dummy variable substitution 4+Integrate[x^2, {x, 0, t}] (integrate wrt x from 0 – t, with initial value 4 ) 2. To capture a plot from Wolfram, hover over lower left corner to activate copy, then go back and R-click the plot, choose Copy then paste into Word. 3. More details in ppt lecture |
| 7 For problem 3,   1. find the corresponding power over the same interval (0 to 0.005pi sec) 2. find the energy in the capacitor over the same interval. (0 to 0.005pi sec) 3. What is the maximum energy stored?   careful with UNITS!!   1. plot all 4 curves using matlab or wolfram alpha, copy plots into a 1 page Word file (align them vertically, add labels) and print/staple to your homework | PLAN  same as above |

**Part III. Unassisted Problem Solving – 3 points each**

8)

