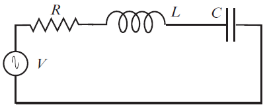
**ME370 Homework 1** Due LSN4 at Start of Class (50 points)

**Requirements:** Use MATLAB to calculate all values. Use comments to enter your name, date and assignment identification, i.e. HW1, at the top of the file.   
Remember: Clear all variables and do not hard-code variable values (use actual variable names). *Suppress all unnecessary output.*

**Deliverables:** Publish code and results to .pdf, add a signed cover sheet, and turn in a concatenated, hard-copy, of your work at the start of class.

***To publish to .pdf: Get your program running first. In the editor, click the Publish Tab above, use drop down menu to Edit Publishing Options to configure to .pdf, and then click “Publish”.***

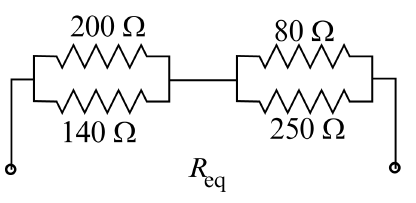
1. (+10) [Gilat Chapter 1, problem 26 (pg. 31)] The current in a series RCL circuit is given by:

where . Calculate *I* for the circuit shown if the supply voltage is 80[V],,

, and C.

1. (+10) [Gilat Chapter 1, problem 27 (pg. 32)] The monthly payment *M* of a mortgage *P* for *n* years with a fixed annual interest rate *r* can be calculated by the formula:

Determine the monthly payment of a 30-year $450,000 mortgage with interest rate of 4.2% (­). Define the variable *P*, *r*, and *n* and then use them in the above formula to calculate *M*.



1. (+10) [Gilat Chapter 1, problem 30 (pg. 32)] The equivalent resistance of two resistors R1 and R2 connected in parallel is given by. The equivalent resistance of tow resistors in series is given by. Determine the equivalent resistance of the four resistors in the circuit shown in the figure.
2. (+10) [Gilat Chapter 3, problem 5 (pg. 86)]. The radius, *r*, of a sphere can be calculated from its volume, *V*, by:

The surface are of a sphere, *S*, is given by:

Determine the radius and surface area of spheres with volumes of. Display the results in a three-column table where the values of *r*, *V*, and *S* are displayed in the first, second, and third columns respectively. Use MATLAB’s *disp* function to display your results. You DO NOT have to worry about rounding or formatting your answers.

1. (+10) [Gilat Chapter 3, problem 7 (pg. 87)] The remaining loan balance *B*, of a fixed payment *n* years mortgage after *x* years is given by:

where *L* is the loan amount, and *r* is the annual interest rate. Calculate the balance of a 30-year, $100,000 mortgage, with annual interest rate of 6% (use 0.06 in the equation) after 0, 5, 10, 15, 20, 25, and 30 years. Create a seven-element vector for *x* and use element-by-element operations. Display the results in a two-row table where the values of years and balance are displayed in the first and second rows, respectively. Use MATLAB’s *disp* function to display your results.