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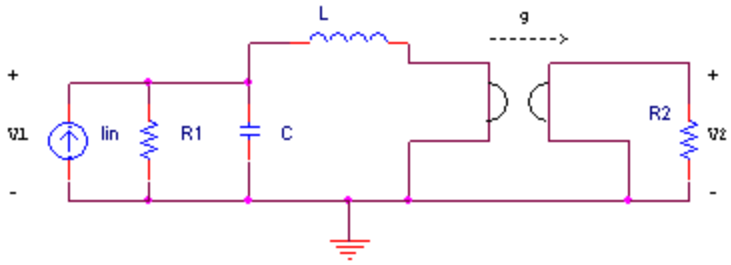
610 Fall 2008 – Homework 6

1. For the following circuit the transfer function of interest is V2/Iin(s)
   a. Draw the graph for the circuit with separate (terminal) branches for Iin and V2.
   b. Draw the adjoint circuit and give the components which go into the terminal branches assuming that ΔV2 is desired.
   c. Give the formula for ΔV2/ΔR1 in terms of voltages and currents in the network and its adjoint.
   d. Analyze the two networks to evaluate ΔV2/ΔR1 in terms of circuit elements and Iin.
   e. Give the sensitivity $S_{R1}^{V2/Iin} = \frac{R1}{V2/Iin}\frac{d(V2/Iin)}{dR1}$



2. Repeat problem 1 above to find

a) $S_{C}^{V2/Iin} = \frac{C}{V2/Iin}\frac{d(V2/Iin)}{dC}$

b) $S_{R1}^{V1/Iin} = \frac{R1}{V1/Iin}\frac{d(V1/Iin)}{dR1}$

c) $S_{g}^{V2/Iin} = \frac{g}{V2/Iin}\frac{d(V2/Iin)}{dg}$