ECE-205 : Dynamical Systems
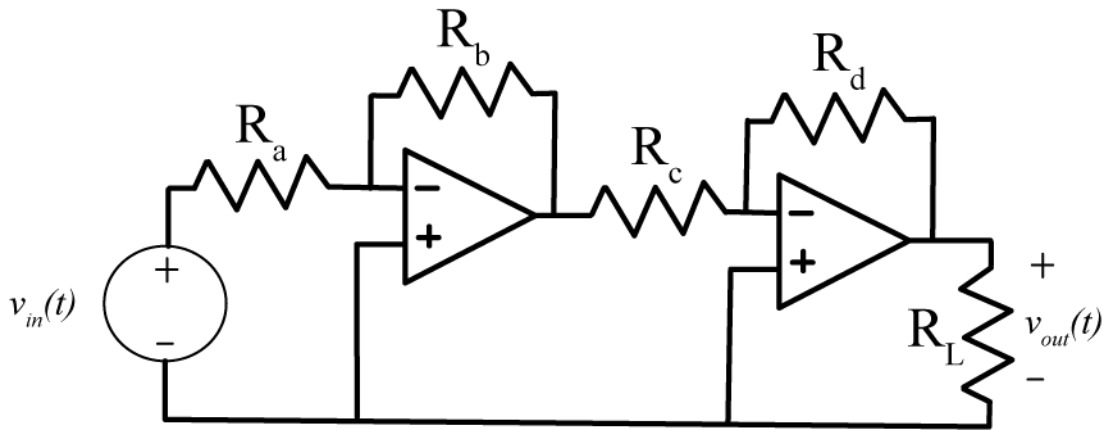
Homework #1

Due : Friday November 30 at 5 PM

Use the ideal op-amp assumption for all of the following problems (and all problems in this course, unless you are explicitly told otherwise).

1) Chapter 2 Problem 2.1

2) Chapter 2 Problem 2.2

3) Chapter 2 Problem 2.3
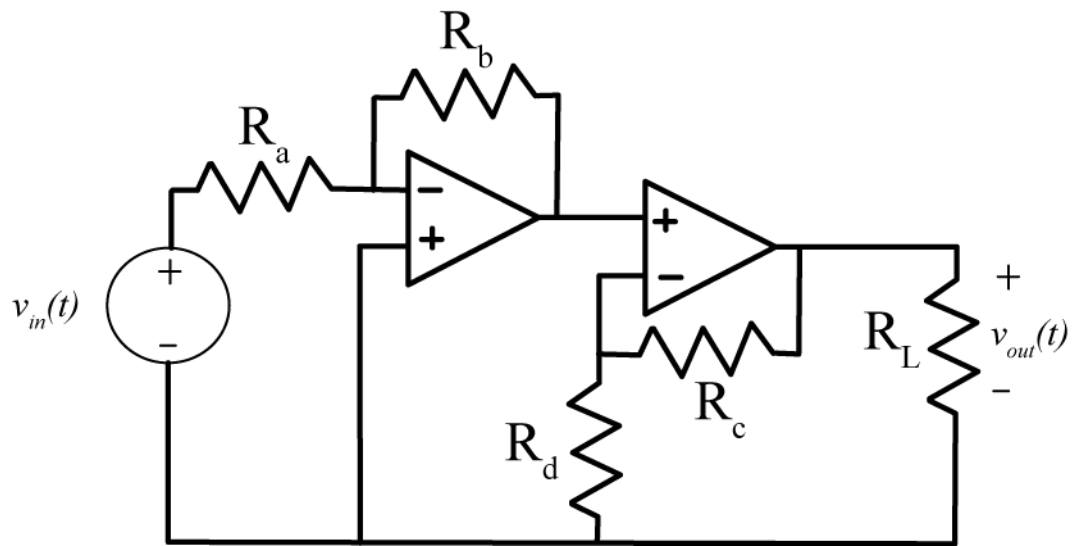
4) Chapter 2 Problem 2.5

5) Chapter 2 Problem 2.6

6) For the following circuit, show that $v_{out}(t) = \left(\dfrac{R_b R_d}{R_a R_c} \right) v_{in}(t)$

7) For the following circuit, show that $v_{out}(t) = \left(-\dfrac{R_e}{R_d} \dfrac{R_b}{R_a + R_b} \right) v_{in}(t)$
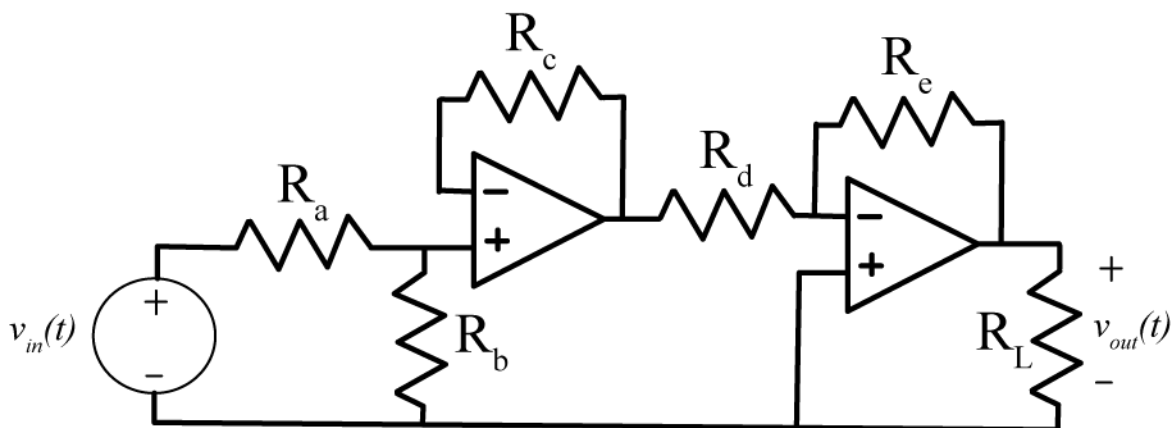
8) For the following circuit, show that $v_{out}(t) = \left(-\dfrac{R_b}{R_a} \dfrac{R_c + R_d}{R_d} \right) v_{in}(t)$

Note that the polarity of the two op-amps are different!