

# ECE-205 : Dynamical Systems

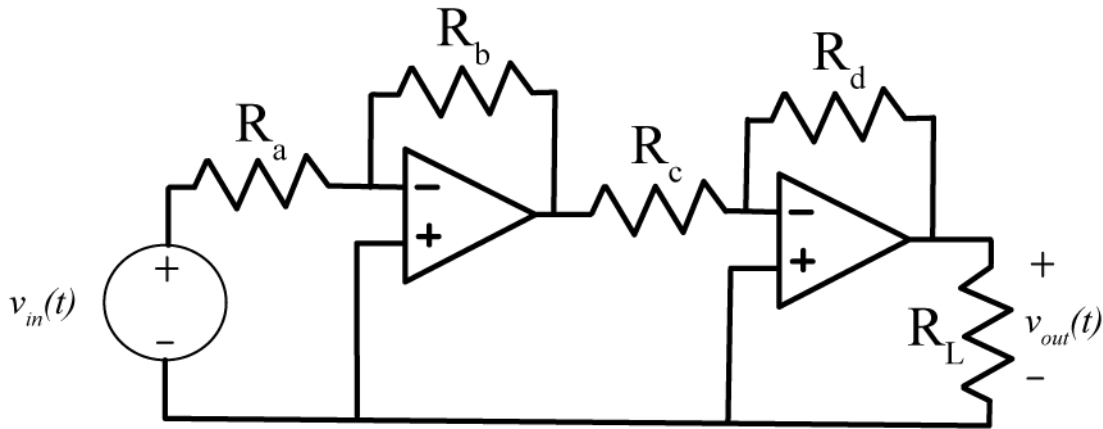
## Homework #1

**Due :** Thursday December 1 at the beginning of class

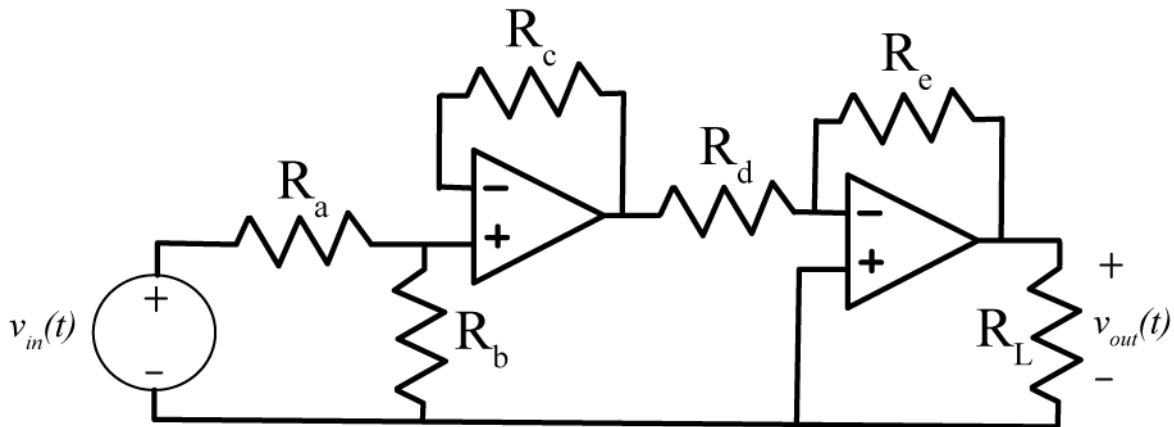
*Use the ideal op-amp assumption for all of the following problems (and all problems in this course, unless you are explicitly told otherwise).*

- 1) Chapter 2 Problem 2.1
- 2) Chapter 2 Problem 2.2
- 3) Chapter 2 Problem 2.3

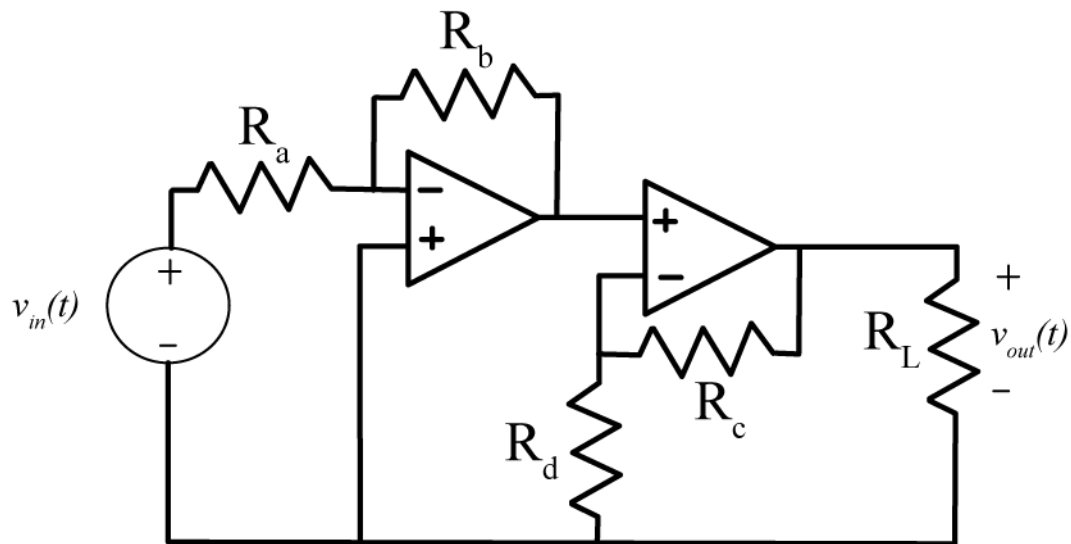
4) For the following circuit, show that  $v_{out}(t) = \left( \frac{R_b R_d}{R_a R_c} \right) v_{in}(t)$



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



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



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