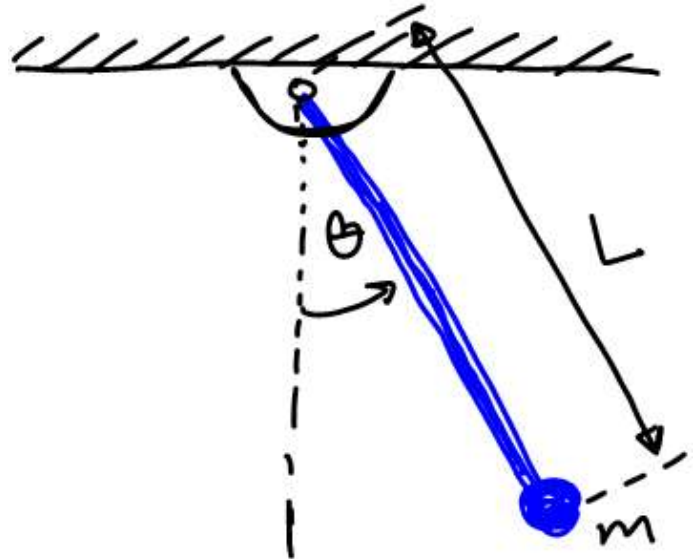


Mansoura University		Computer Engineering and Control Syst. Dept. Total Marks: 40 Marks	Faculty of Engineering
Course Title: Control Engineering 1		Course Code: CSE 3116	
Date: 25 Nov. 2014		Allowed time: 2 hr.	No. of Pages: (02)
Remarks: (Answer the following questions... assume any missing data)			

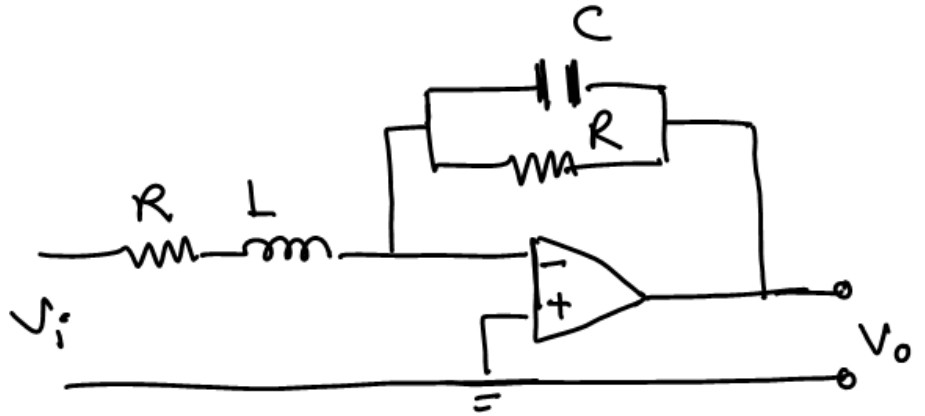
Question No. (1) (10 Marks)

For the simple pendulum shown, where $L = 0.5 \text{ m}$, $m = 1 \text{ kg}$, and $g = 9.8 \text{ m/s}^2$. Create an **.m** file to **plot the linear response** of the simple pendulum when the initial angle of the pendulum is $\theta(0) = 30^\circ$



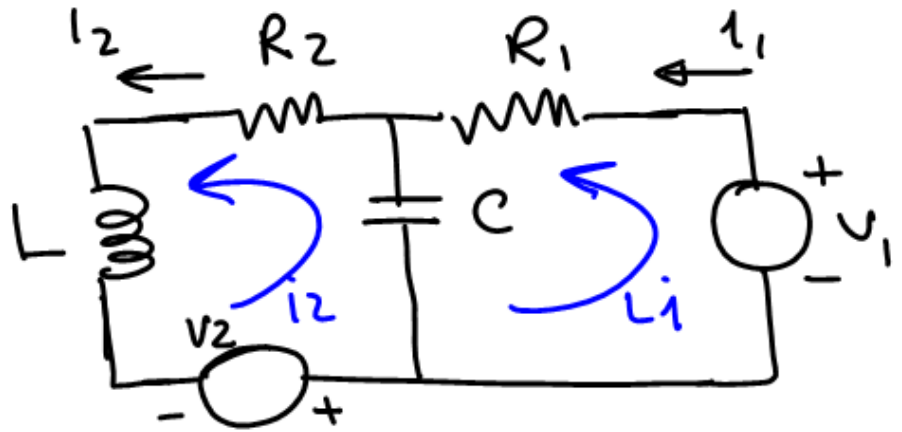
Question No. (2) (10 Marks)

Find the transfer function of the operational amplifier circuit of fig. shown next, and use it to find $V_o(\infty)$



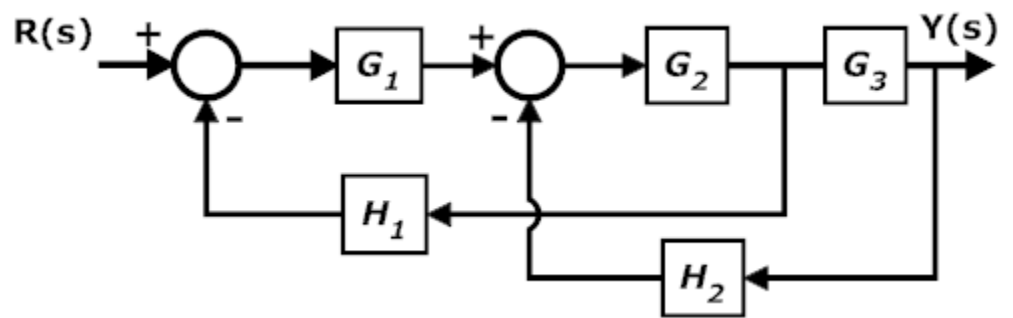
Question No. (3) (10 Marks)

Sketch the block diagram for the electrical circuit show next, and then determine $\frac{I_2}{V_1} \Big|_{V_2=0}$



Question No. (4) (10 Marks)

Use Block diagram reduction to find transfer function $\frac{Y(s)}{R(s)}$



Best wishes
Dr. Mostafa A. El-hosseini