Lab 2: OPAMP based Active circuits

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In this lab, you will work on active circuits such as amplifier, differentiator, and integrator. Active circuit offers output voltage level to be equal to or greater than input voltage level. Passive circuits provides an attenuated output voltage level.

Summing amplifier

Build the circuit as shown in Figure 1 using opamp 741. Capture and plot both input and output voltage with respect to time domain. Check whether the output voltage level is as you had expected. What should be the maximum input voltage level, where the circuit performs as amplifier and provides a complete output swing.

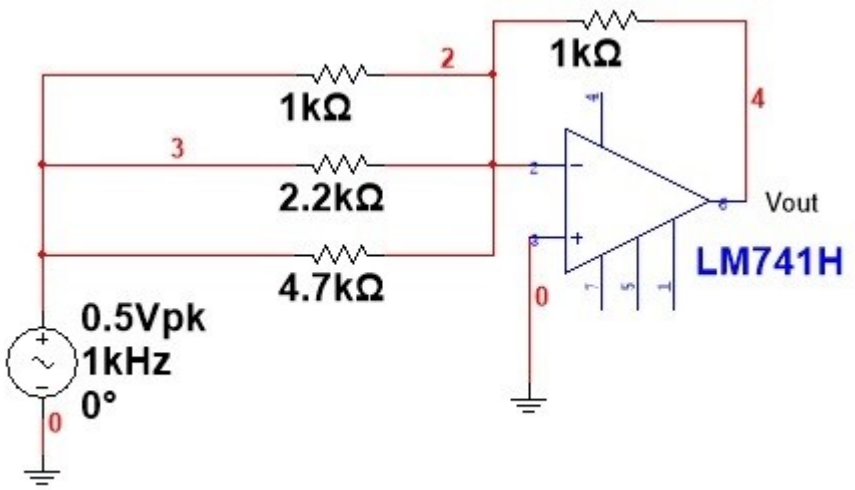

Figure 1: Schematic of summing amplifier circuit.

Differentiator

Build the circuit as shown in Figure 2, in breadboard. Apply Vin of 1Vp-p, Sine signal with 1 kHz frequency. Capture and plot the input and output voltage with respect to time domain. Check the functionality of the circuit at different frequencies. Could you check the frequency response of this circuit ? Is the functionality of differentiator band limited ? What happens to the nature of the signal at different frequency, whether sine signal remains sine ?

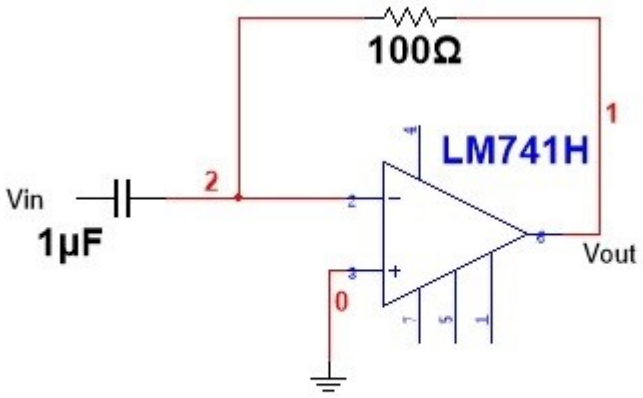

Figure 2: Schematic circuit diagram of differentiator circuit.

Integrator

Build an Integrator circuit as shown in Figure 3, in breadboard. Apply Vin of 1Vp-p, Sine signal with 1 kHz frequency. Capture and plot the input and output voltage with respect to time domain. Check the functionality of the circuit at different frequencies. Could you check the frequency response of this circuit? Is the functionality of Integrator band limited? Does it behave as differentiator at different frequencies?

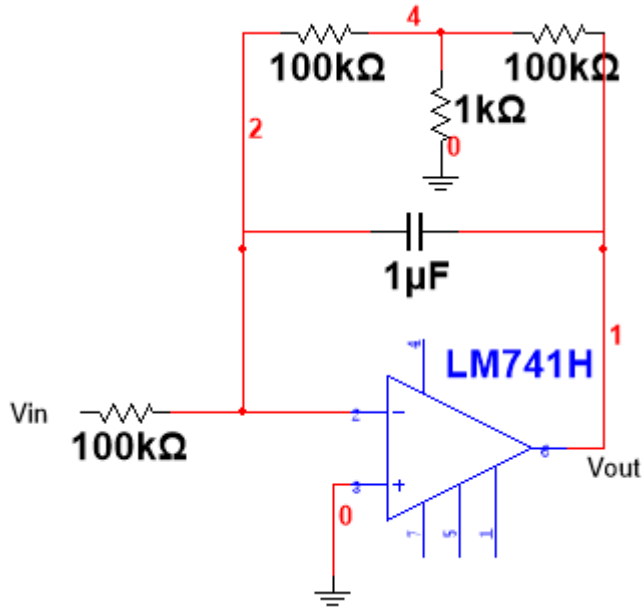

Figure 3: Schematic circuit diagram of Integrator circuit.

The lab report#2 and lab report#3 are due by 4th February, 2017 by 11:59:59 AM.