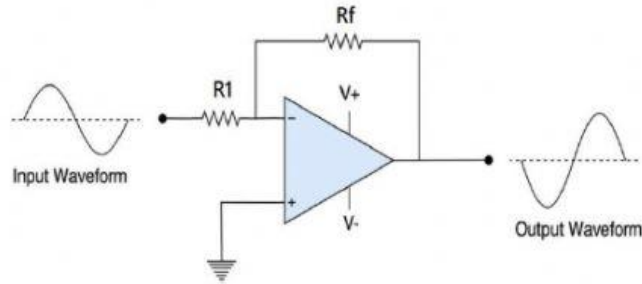


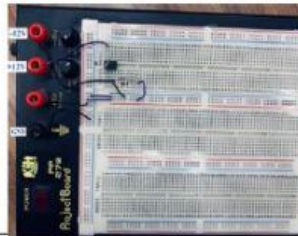
PC6.1 Inverting Amplifier practical activity

Part 1: For the inverting amplifier shown below, answer questions a to g.



- a) What is the output expression of the operation amplifier configuration above?
 - a. $V_{out} = V_{in}$
 - b. $V_{out} = V_{in} (- R_2/R_1)$
 - c. $V_{out} = V_{in}(1+R_2/R_1)$
 - d. $V_{out} = V_{in}(1+R_1/R_2)$
- b) If $R_1=1K\Omega$, $R_2=10K\Omega$, $V_{in}= 0.5V$. Calculate the voltage Gain A?
- c) If $R_1=2K\Omega$, $R_2=10K\Omega$, $V_{in}= 1V$. Calculate V_{out} ?
- d) Is the output of this amplifier inverted?
- e) Use www.MultiSim.com to simulate the circuit, where $V_- = -12V$, $V_+ = +12V$, $R_1=10K\Omega$, $R_2=1K\Omega$, $V_{in}= 5V$.and insert the link of your circuit in the box below:

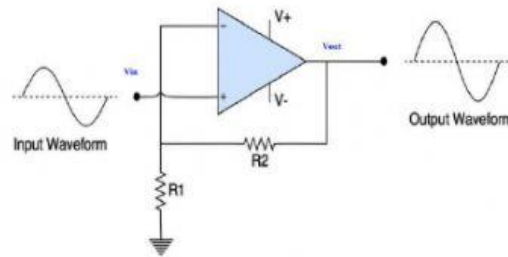
- f) Build the circuit in step e and tabulate your readings in the table below:



V_{out}	Calculated V_{out}	Simulated V_{out}	Practically measured V_{out}
Voltage Gain A_v	Calculated V_{out}/V_{in}	Simulated V_{out}/V_{in}	Practically measured V_{out}/V_{in}
% Error	#####		

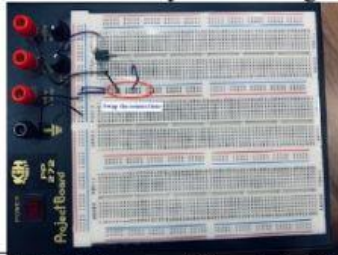
- g) record a video for your circuit. Store the video in the class team and past the link of your video below.

Part 2: For the non-inverting amplifier shown below, answer questions i to m.



- i) What is the output expression?
- $V_{out} = V_{in}$
 - $V_{out} = V_{in}(R_2/R_1)$
 - $V_{out} = V_{in}(1 + R_2/R_1)$
 - $V_{out} = V_{in}(1 + R_1/R_2)$
- j) If $R_1 = 1\text{K}\Omega$, $R_2 = 10\text{K}\Omega$, $V_{in} = 2\text{V}$. Calculate the voltage Gain A?
- k) If $R_1 = 10\text{K}\Omega$, $R_2 = 1\text{K}\Omega$, $V_{in} = 5\text{V}$. Calculate V_{out} ?
- l) Is the output of this amplifier inverted?
- m) Use www.MultiSim.com to simulate the circuit, where $V_- = -12\text{V}$, $V_+ = +12\text{V}$, $R_1 = 10\text{K}\Omega$, $R_2 = 1\text{K}\Omega$, $V_{in} = 5\text{V}$. and insert the link of your circuit in the box below:

- n) Build the circuit in step K and tabulate your readings in the table below:



V_{out}	Calculated V_{out}	Simulated V_{out}	Practically measured V_{out}
Voltage Gain A_v	Calculated V_{out}/V_{in}	Simulated V_{out}/V_{in}	Practically measured V_{out}/V_{in}
% Error	#####		

- o) record a video for your circuit. Store the video in the class team and past the link of your video below.

$$\% \text{ Error} = \left| \frac{\text{Calculated} - \text{measured}}{\text{calculated}} \right| * 100\%$$