# Analog IC

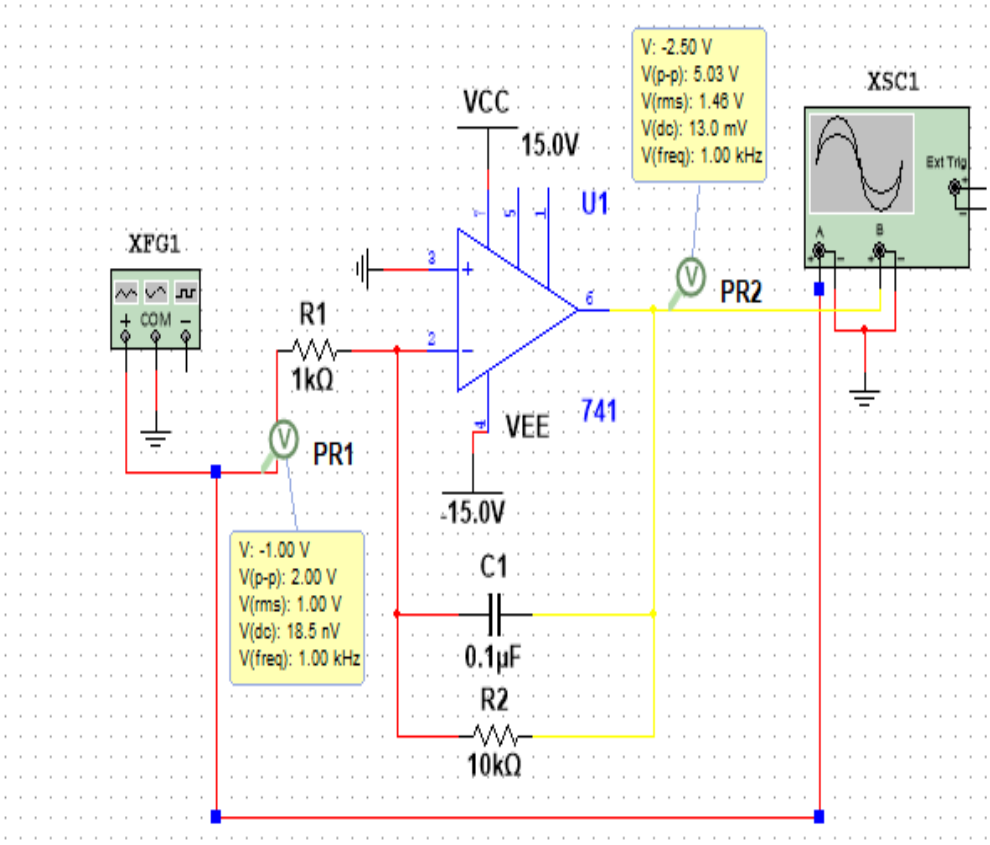
# Lab 2

| Name | ID |
|---|---|
| Nada Tarek Mowafi | 20012094 |
| Salma Hamdy Mohammed | 20010677 |

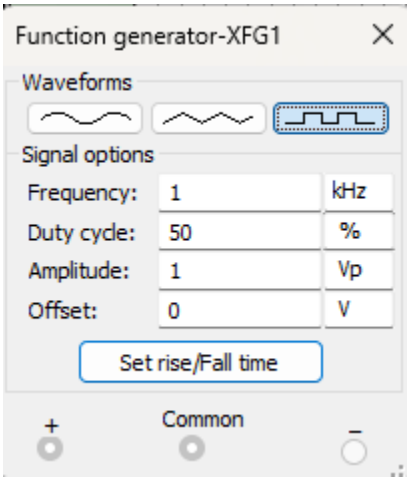
## The Characteristics of Integrators and Differentiators Circuits:

### ➢ Integrator:

- The circuit:

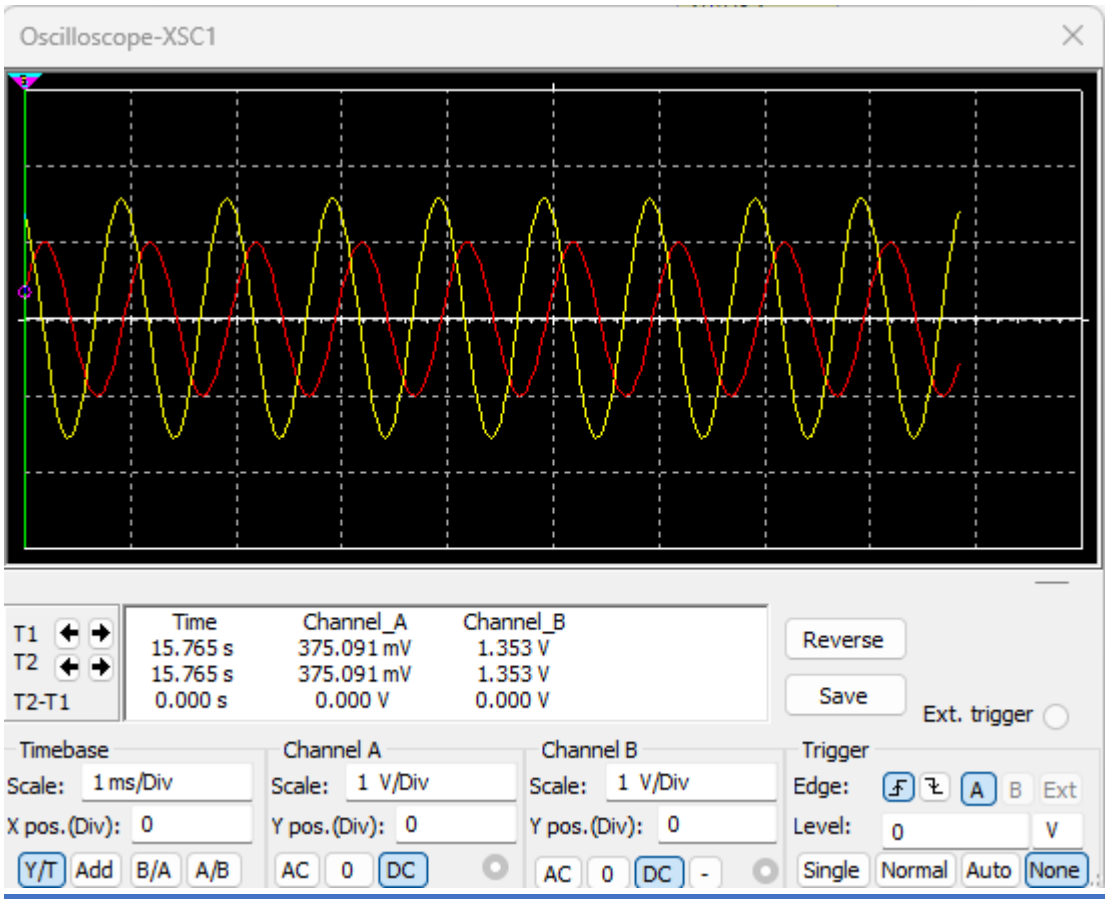



Function generator settings for all:

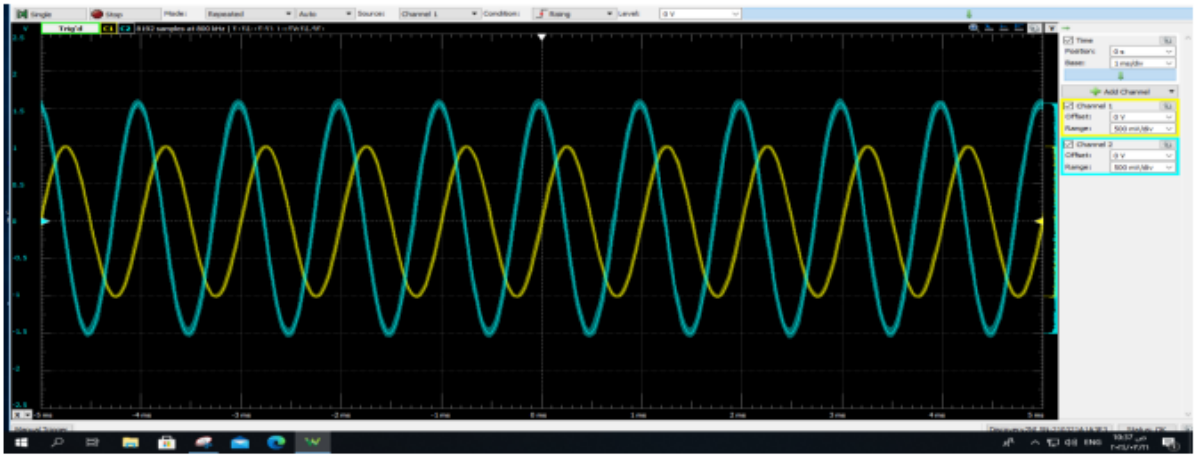


1. **Sinusoidal wave input:**

- **Output from multisim:**

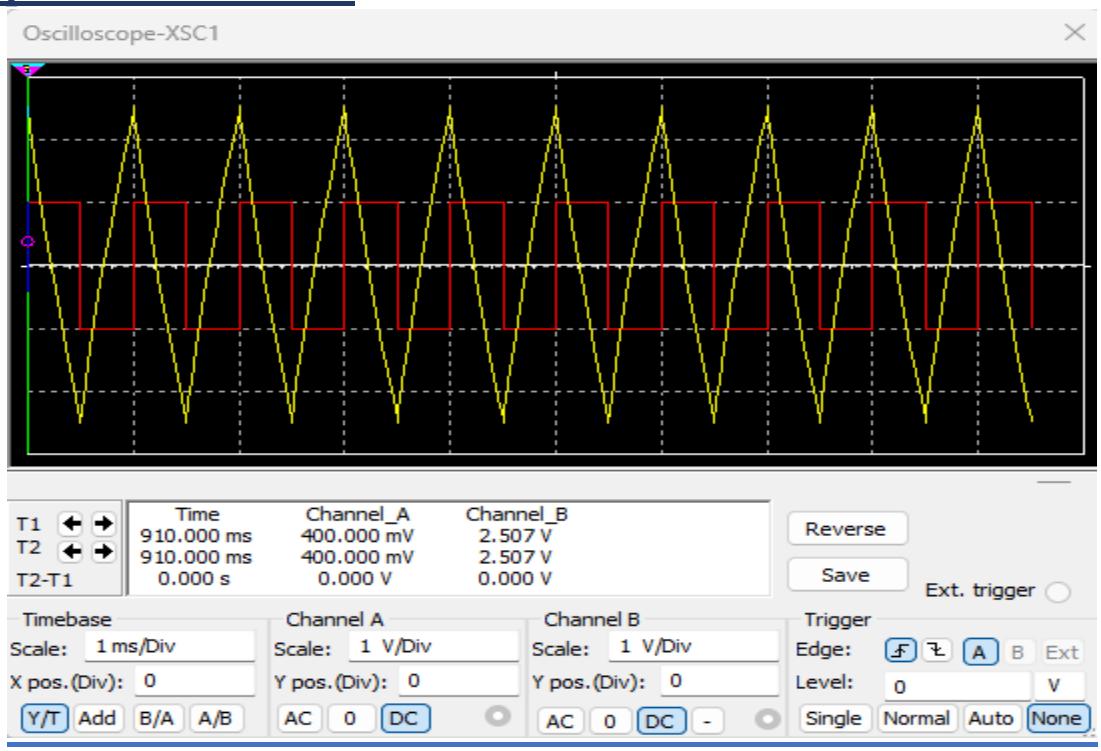



- **Output in the lab:**

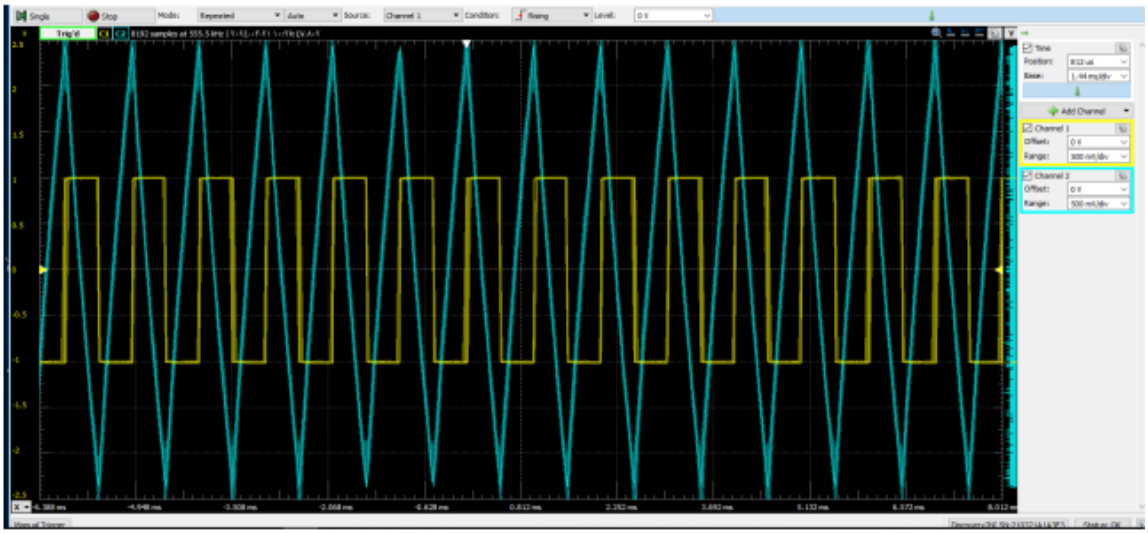


2. **Square wave input:**

- **Output from multisim:**



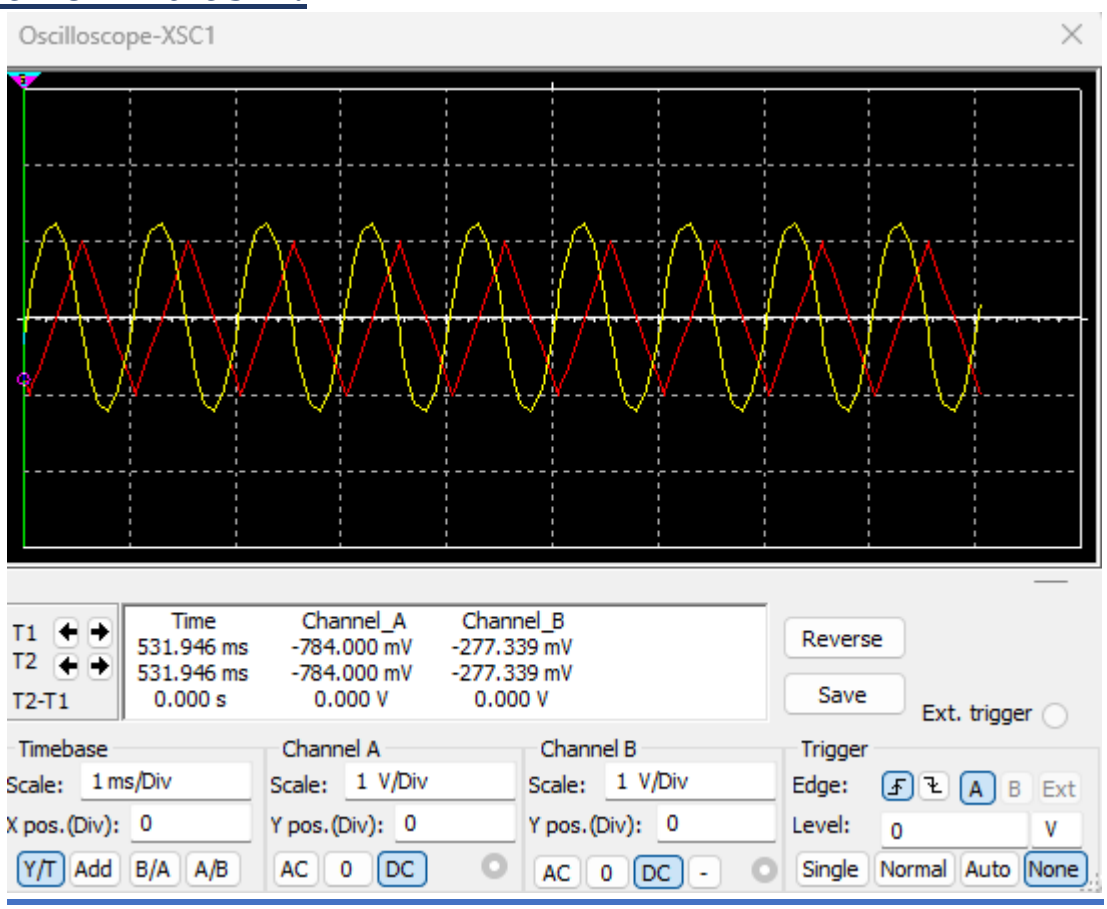

- **Output in the lab:**



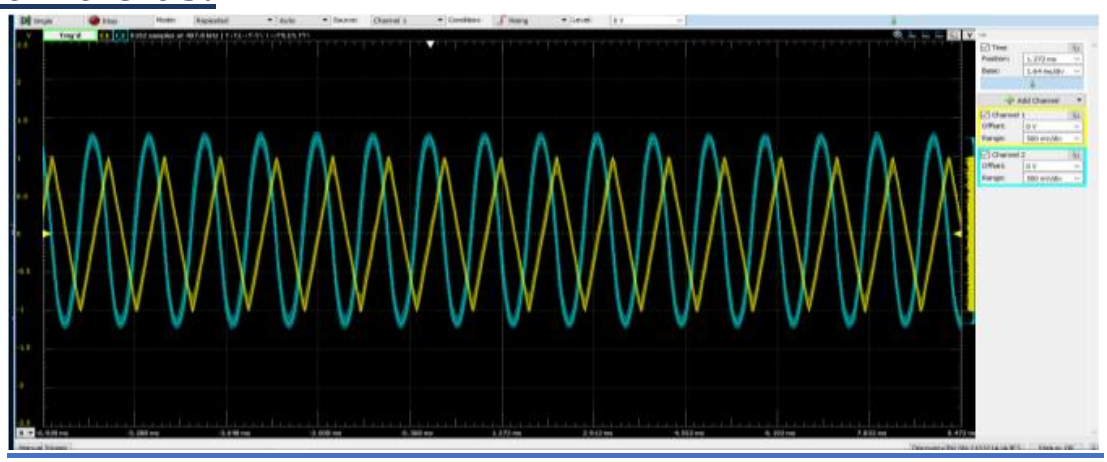
Comment: If the square wave is applied to Integrator Amplifier, the produced output will be a triangular wave or saw tooth wave as the op-amp integrator produces an output voltage which is proportional to the integral of the input voltage.

## 3. Triangular wave input:

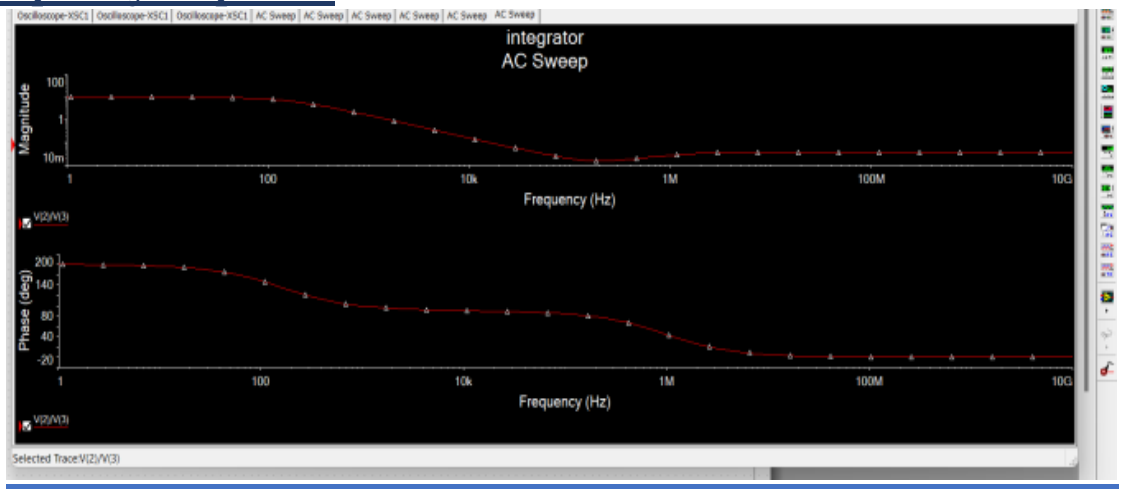
- **Output from multisim:**



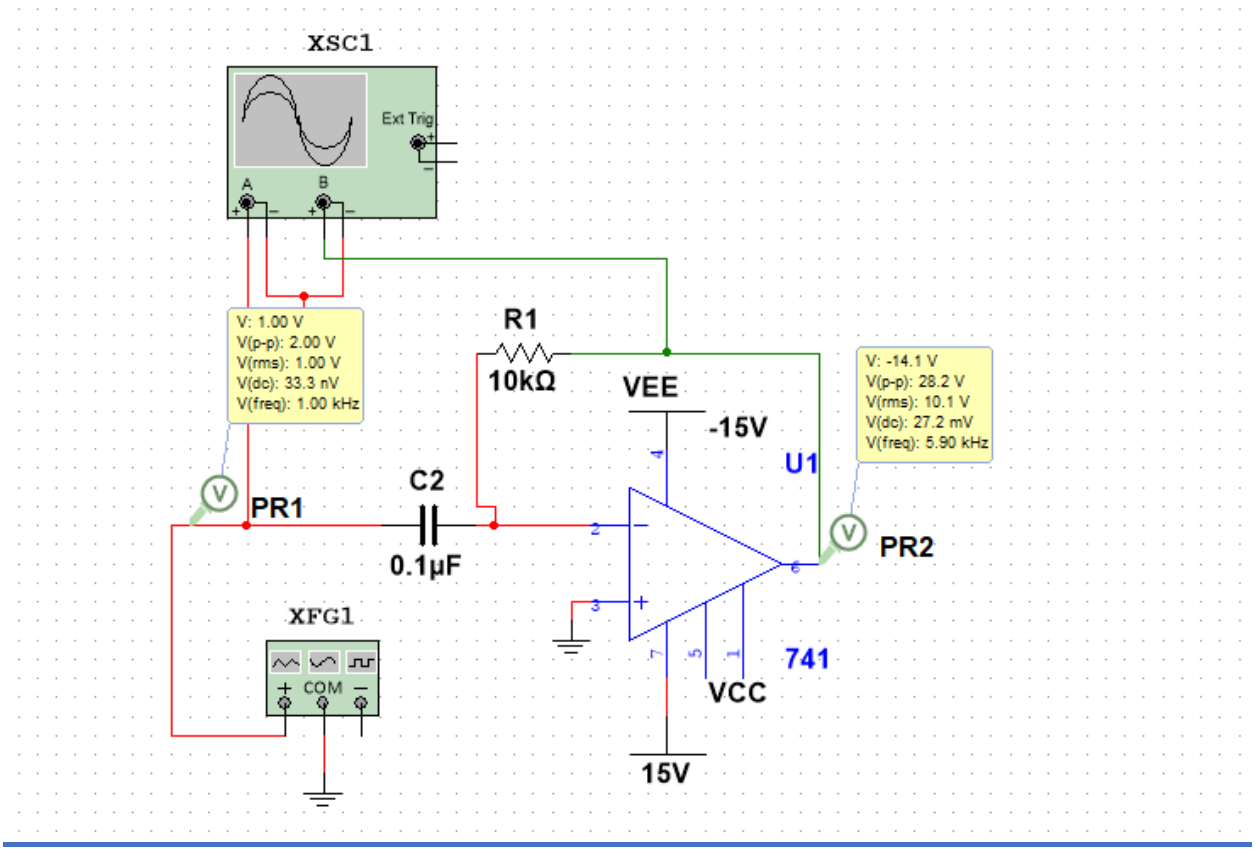

- **Output in the lab:**



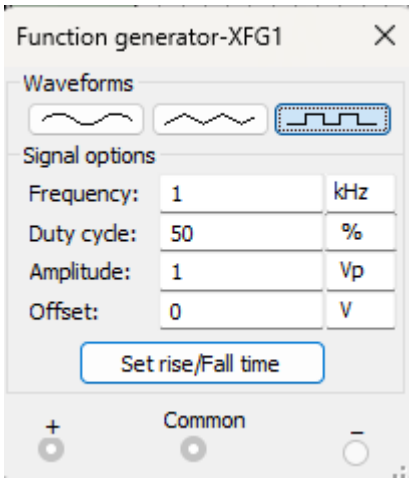
- **The frequency response:**



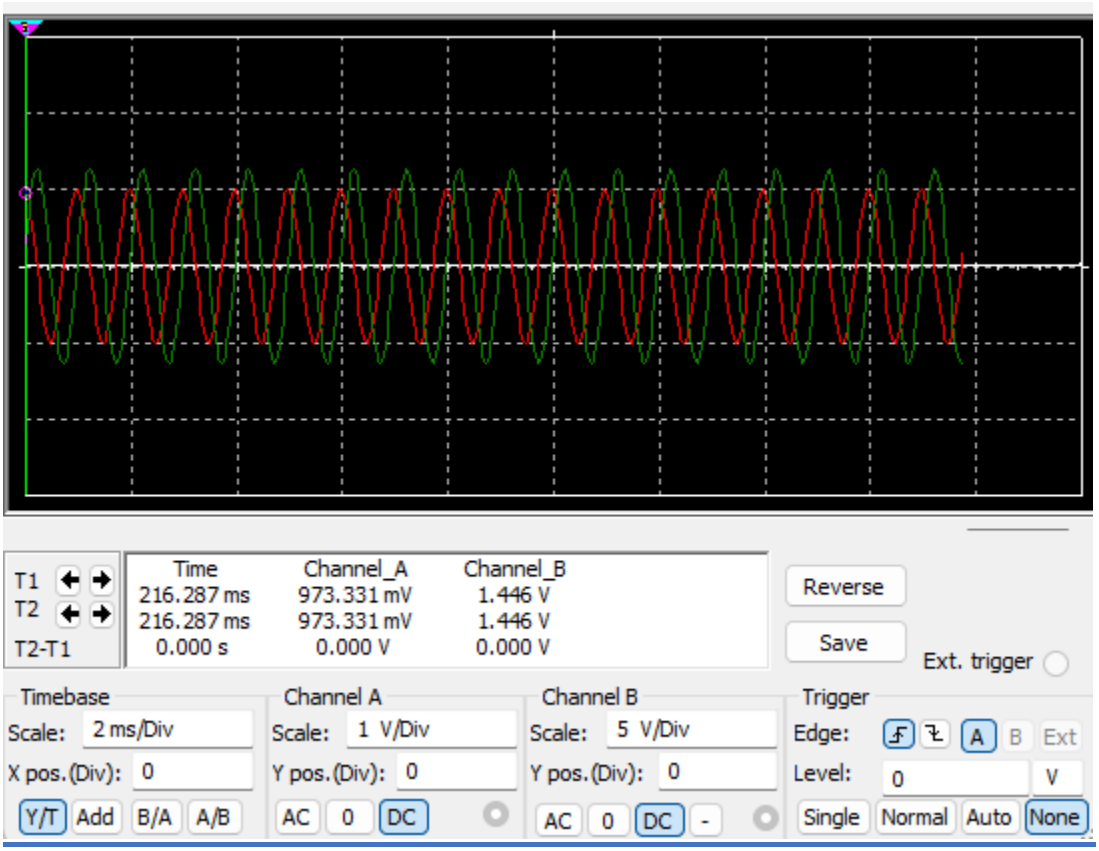

➢ **The differentiator circuit:**



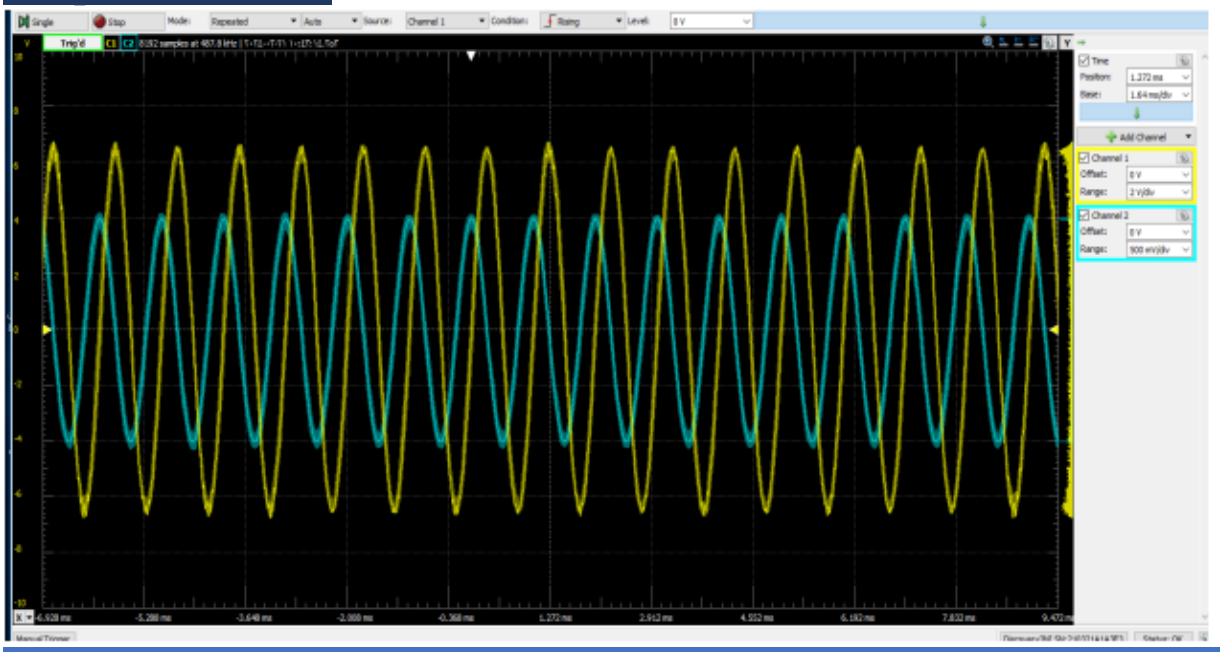
- Function generator settings for all:




## 1) Sinusoidal wave input:
## Output from multisim:

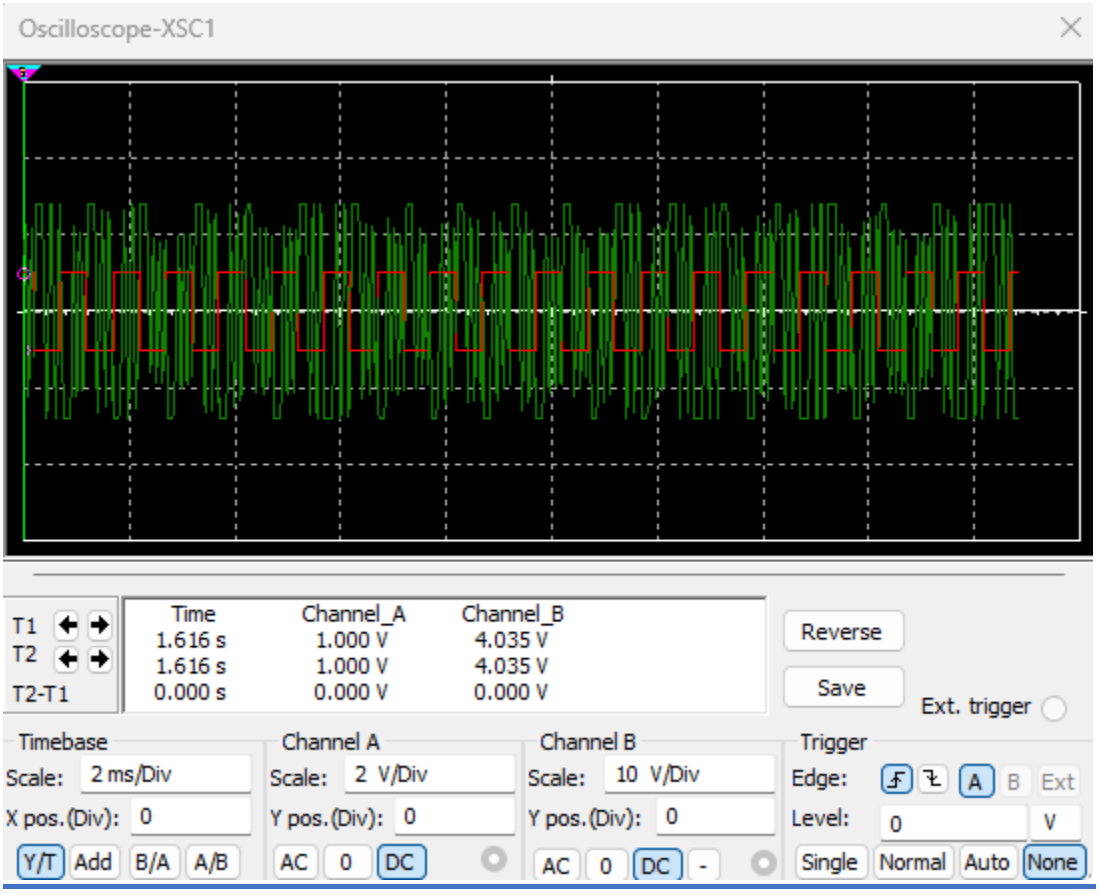


## Output in the lab:

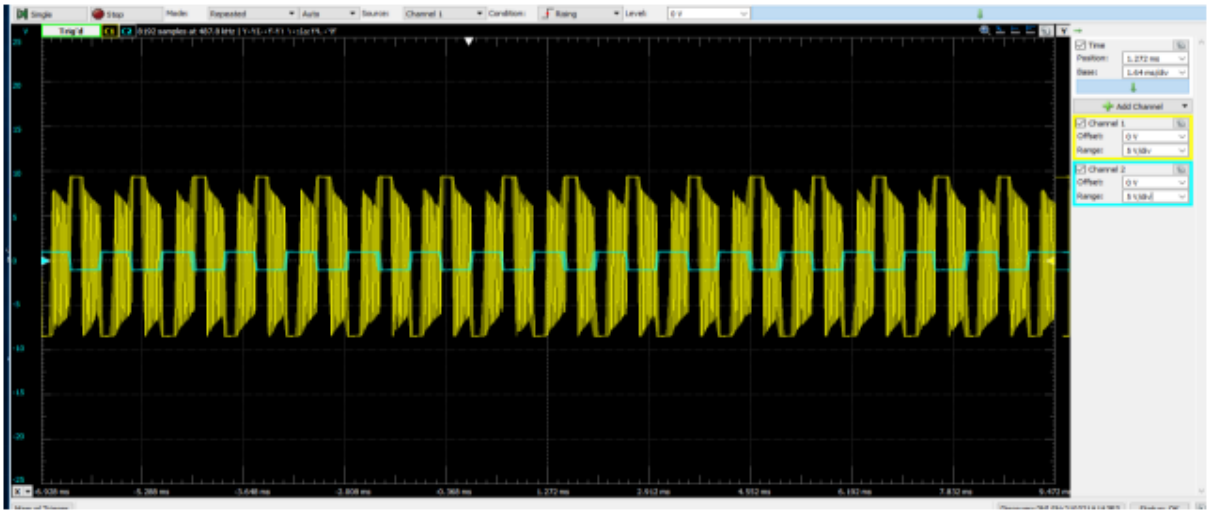


## 2) Square wave input:

## Output from multisim:



## Output in the lab:

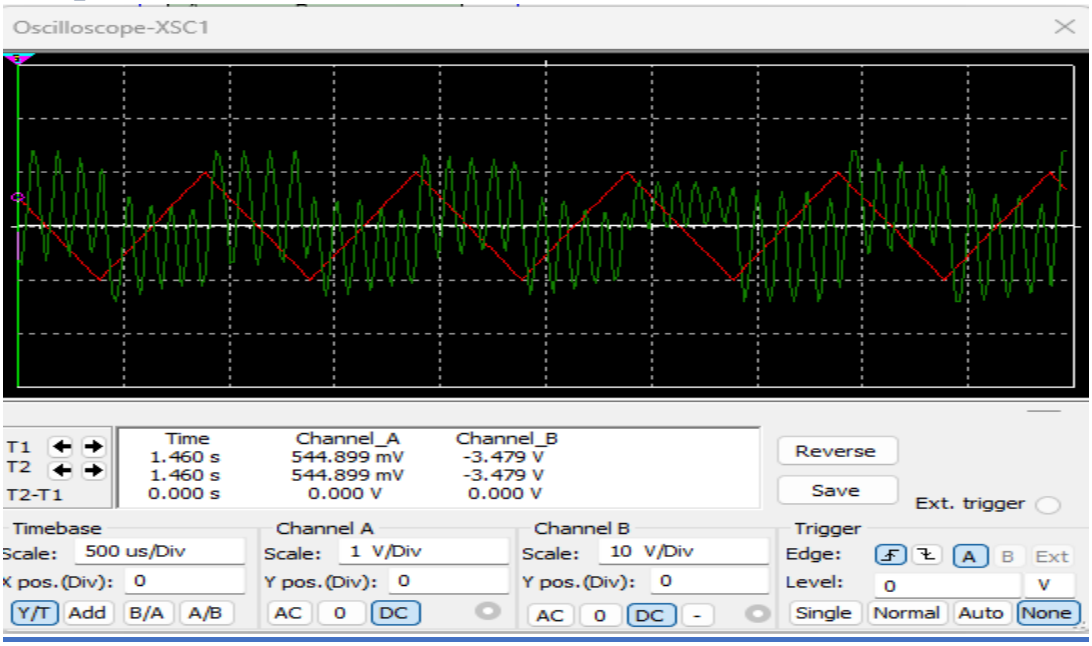


Comment:

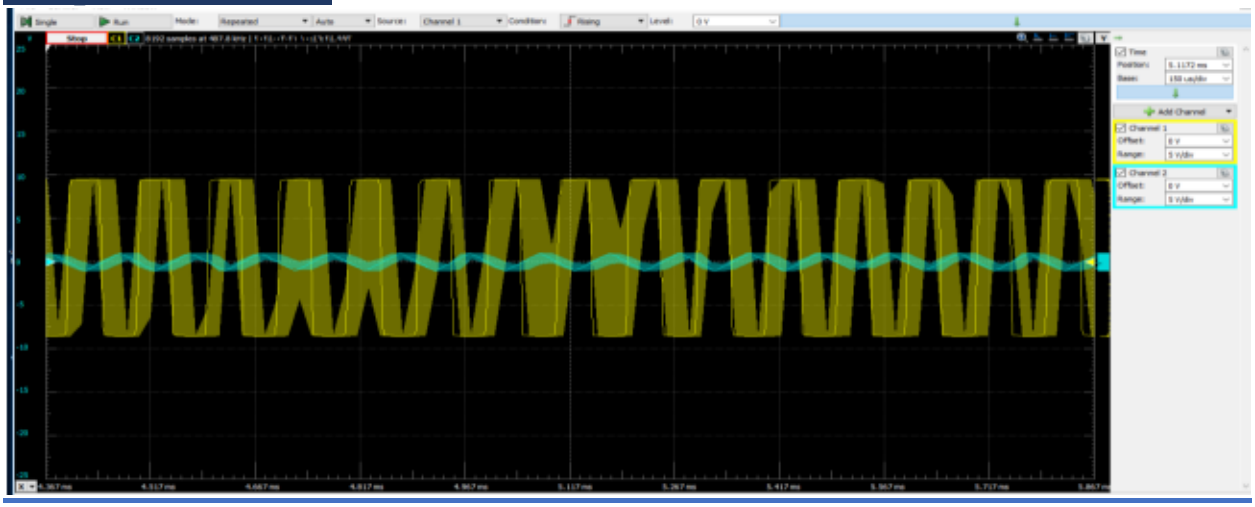
If a rectangular wave is applied to a differentiator amplifier, the output will be a series of pulses. And if a square wave is applied, the output will be delta as the op-amp differentiator produces an output voltage which is proportional to the rate of change of the input voltage.

## 3) Triangular wave input:

## Output from multisim:



## Output in the lab:



## Frequency response: