Home Task

Full Wave rectifier
In this case, the full wave rectifier inverts the negative output voltage into the positive to convert the AC input to DC.

Non-Inverting Amplifier
In this case, when we apply voltage to the positive terminal of the OpAmp in this non-inverting amplifier, the result is a gain of (1+R2/R1)Vin. As a result, when the input is 5V, we obtain an output that is higher than the positive saturation, resulting in a 12V output. Here, unlike an inverting amplifier, the output is not reversed.

Inverting Summing Amplifier
In this case I took Rf= 0.25k and Vb= -5V.
Now,

1. Va=-5, Vout= -(0.25 *(-5) + 0.25*-5) =2.5V
2. Va =5, Vout= -(0.25*5+0.25*-5) = 0V

Integrator
In this case, we integrated and accumulated the input voltage over time using a 1u capacitor. The output voltage, which ranges from -0.3V to 0V and reflects the time integral of the input signal, is the result of the capacitor continually charging or discharging.

Exponential
In this case, an exponential amplifier increases the input signal and yields an output proportional to the input's exponential function, whereas the logarithmic amplifier we built in class yields an output proportional to the input signal's logarithm.

Challenges:
No, I didn't have any difficulties when creating the circuit. I have LTspice's fundamentals. It all went well as a result.

Discussions:
We simulated circuits online using LTspice. As part of my homework, I built a complete rectifier out of diodes and several OpAmp-based circuits, including a non-inverting amplifier, Determined the input voltage and reference resistance for an inverted summing Opamp, looked into the use of diodes in an exponential OpAmp, and ultimately employed a capacitor in an Integrator OpAmp. With ease, we could extract the data from the graph and confirm it through our computations, comprehending how the circuit functions.