Name:	ID:	Section:

Assignment 2

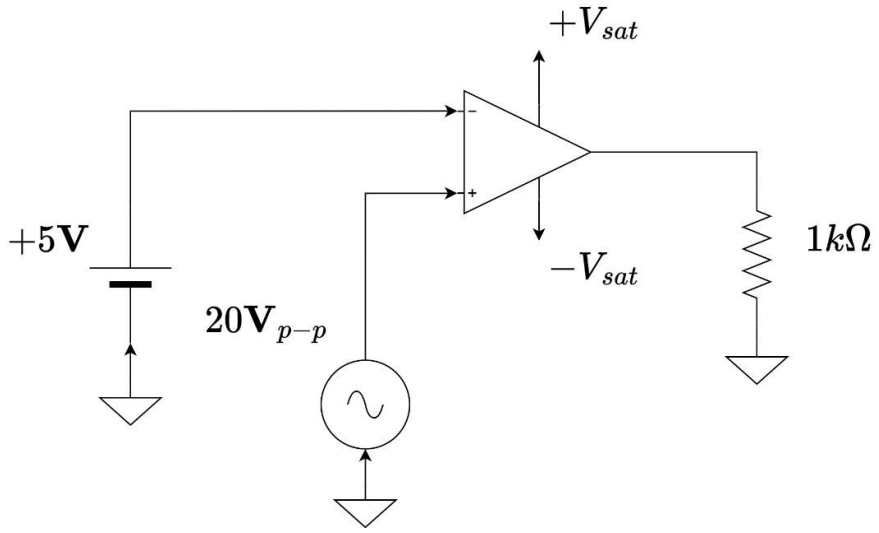
BRAC University

Semester: Fall 2023

Course No: CSE251	Marks:
Course title: Electronic Devices and Circuits	Submission Date: 24/10/2023
Faculty: TMT	

1. For the circuit given below, draw the output waveform across the resistor [The green line is used to represent the 5V DC source] [CO2]: [Marks: 12]

Here, Vsat = 10V.



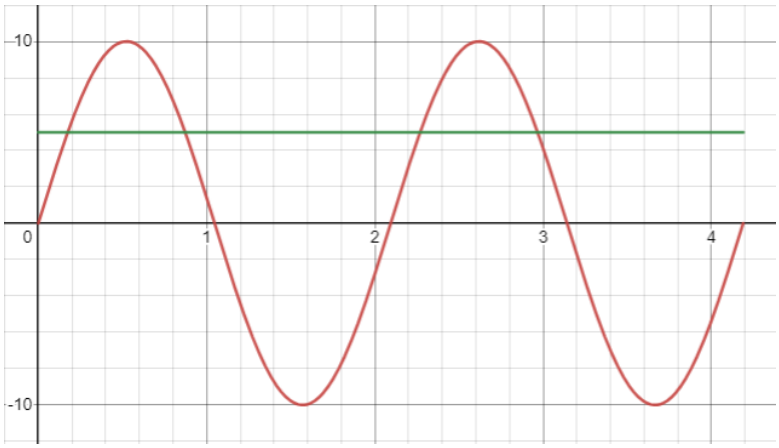
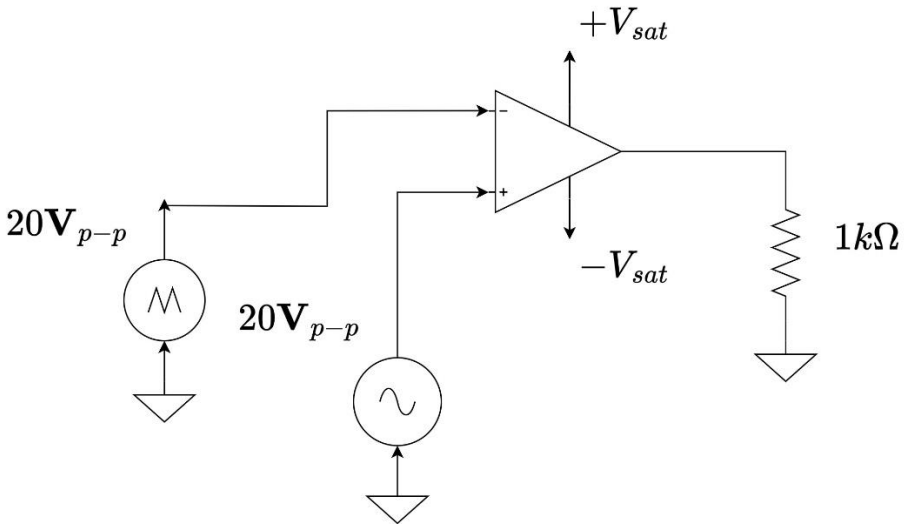
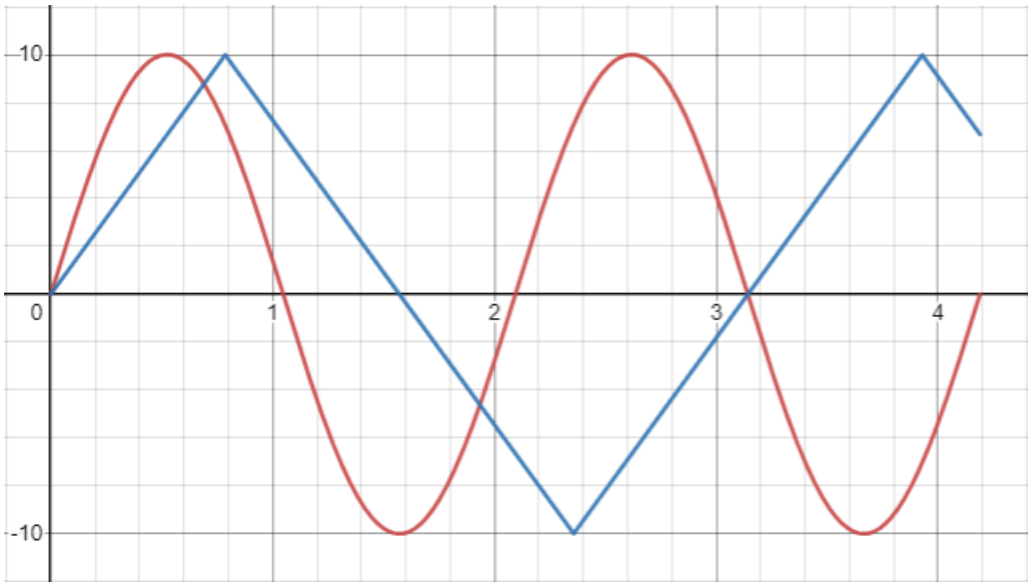


Fig: Waveform of 20 Vp-p source

2. Now a triangular wave is replaced instead of the DC source and the two waveforms are given below together[The red curve is the sinusoidal source while the blue curve is the triangular source output][CO2]: [Marks: 18]





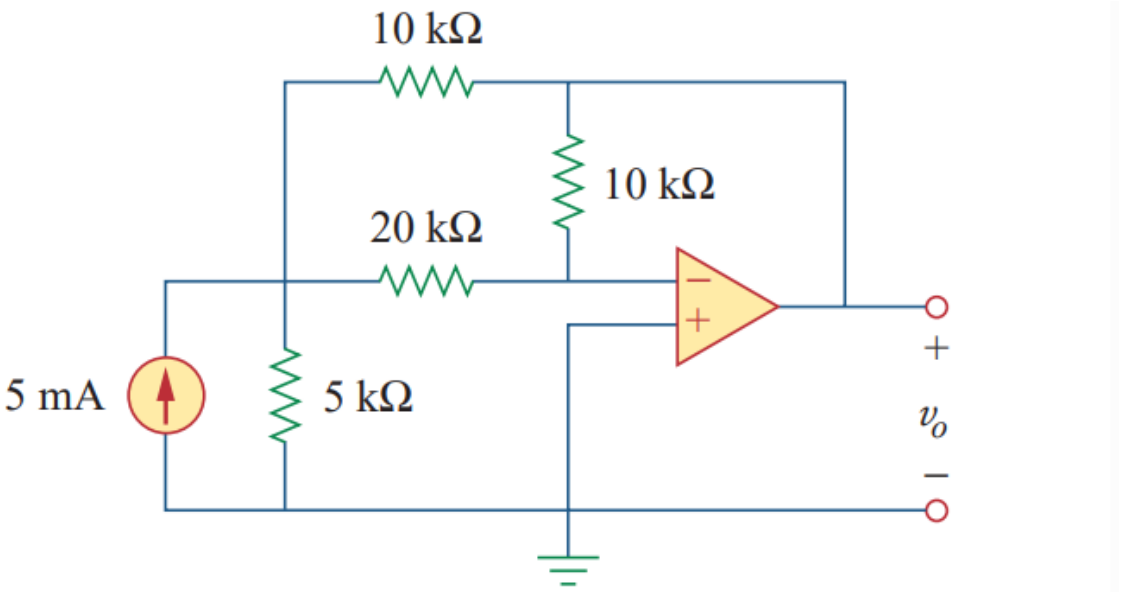
[Hint: for a comparator:

When v2 > v1: output is +Vsat

When v2 < v1: output is -Vsat

Where, v2 is the output of the noninverting terminal and v1 is the output of the inverting terminal]

3. Determine the output voltage, v_o [CO1]: [Marks: 6]

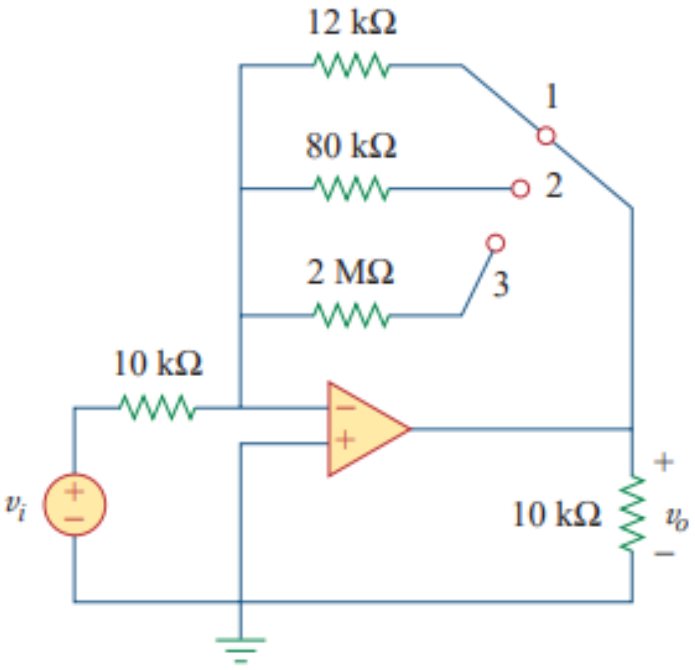


4. Calculate the gain, A = vo/vi for the following circuit when the switch is in [CO1]: [Marks: 3x4 = 12]

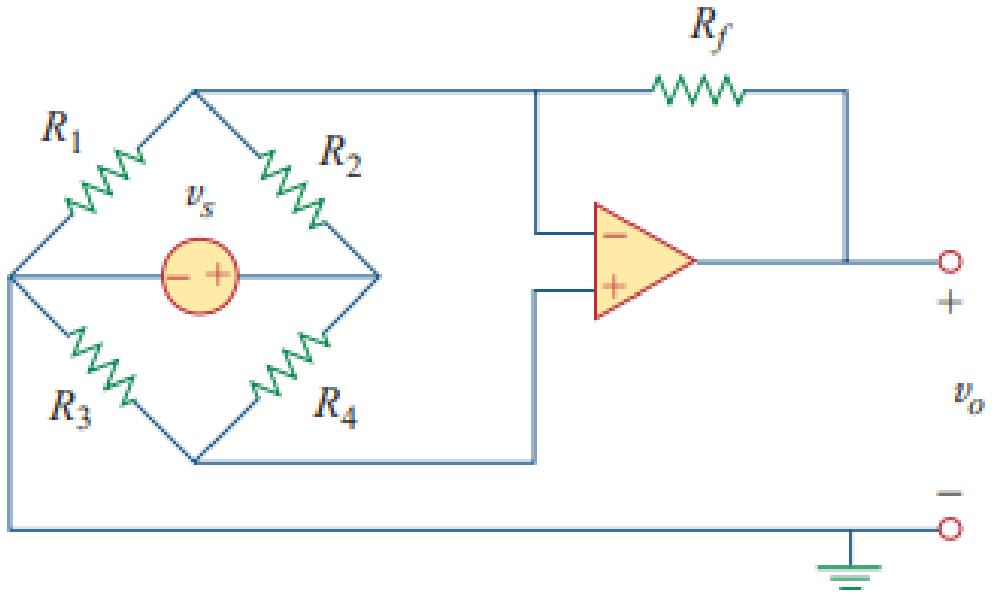
(i) Position 1

(ii) Position 2

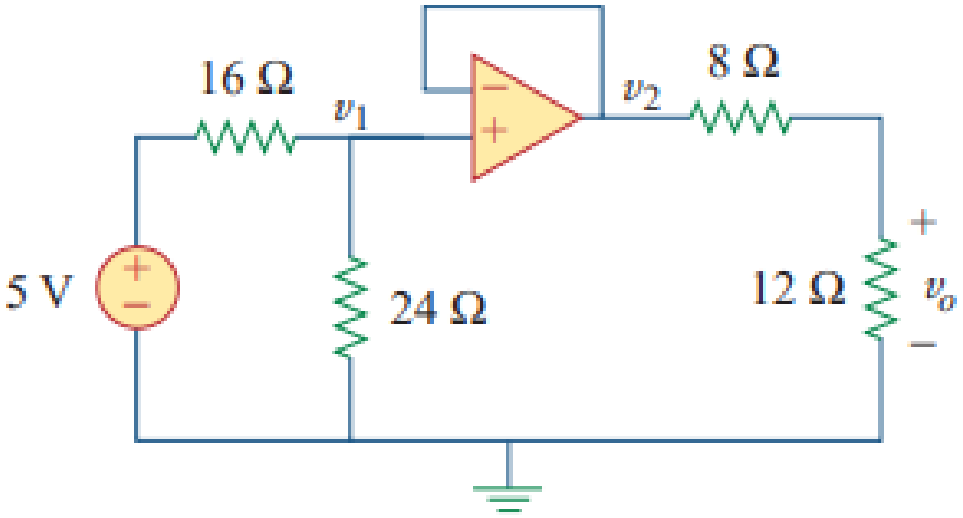
(iii) Position 3



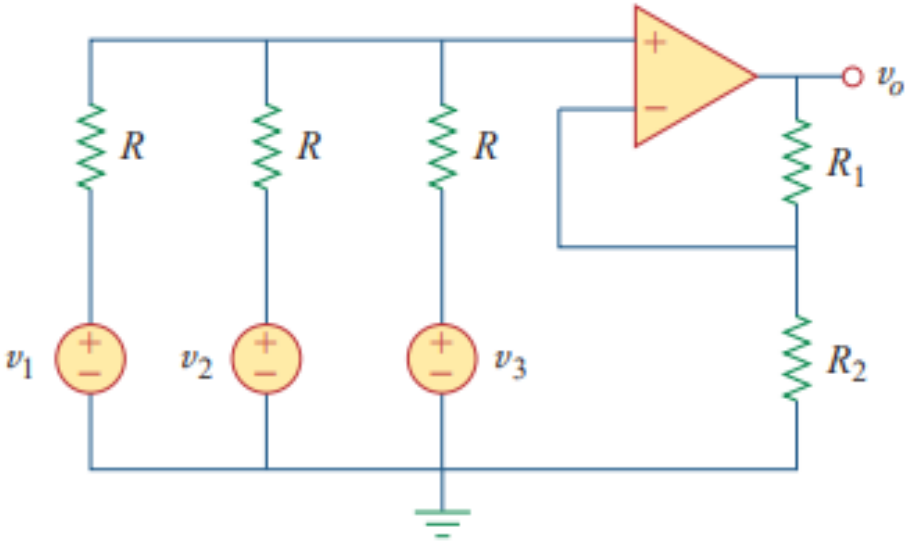
5. For the following circuit, find the expression for the gain, A = vo/vi. Then calculate the gain when R1 = R3 = 20 kilo-ohms, R2 = 50 kilo-ohms and R4 = 100 kilo-ohms [CO1]: [Marks: 18]



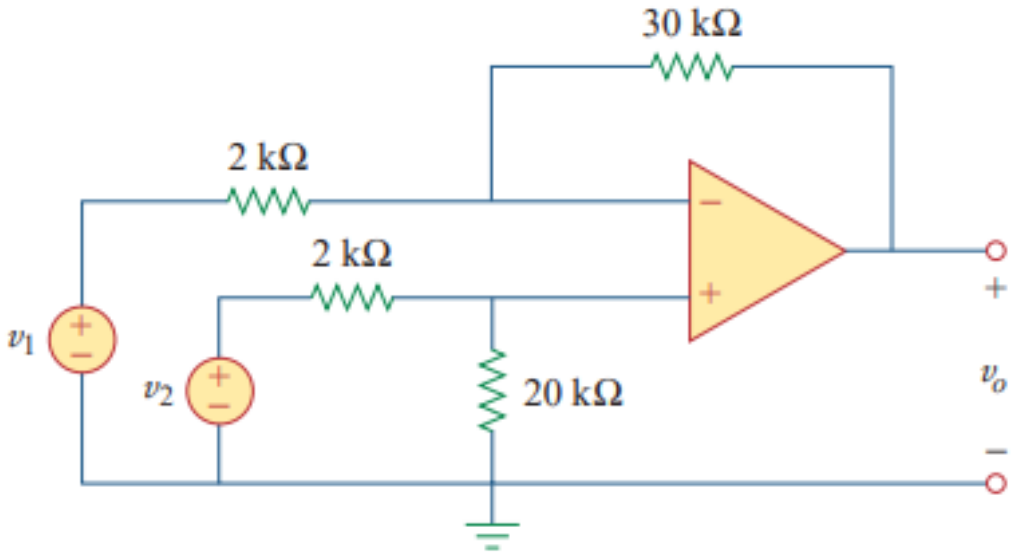
6. Find vo in the op amp circuit [CO1]: [Marks: 6]



7. Find the output voltage vo for the circuit. Assume v1 = 1V, v2 = 2V, v3 = 3V. and R = 1kilo-ohm, R1 = 10 kilo-ohm and R2 = 20 kilo-ohm. [CO1] [Marks: 16]



8. Find the output voltage, vo for the following circuit. Given that, v1 = 1V and v2 = 2V. [CO1] [Marks: 14]



[Hints for solving op-amp circuits with closed loop feedback:

Make the assumptions as shown in the class:

➔ Current through the op amp input terminals are zero
➔ Voltage of the two input terminals are assumed to be equal
Best of Luck!]