

# PRINCIPLES OF EE1

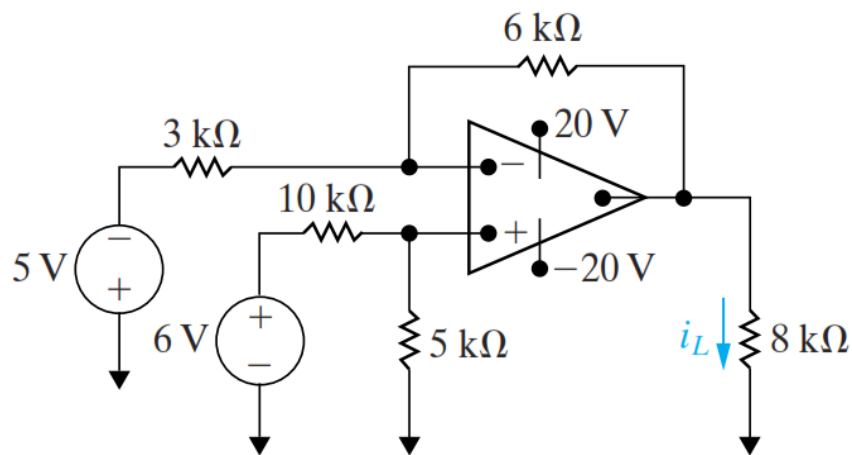
## HW

**Deadline: 8:00, 17 MAY 2024**

**INSTRUCTIONS:** Students scan and upload answer into Blackboard

### Question 1:

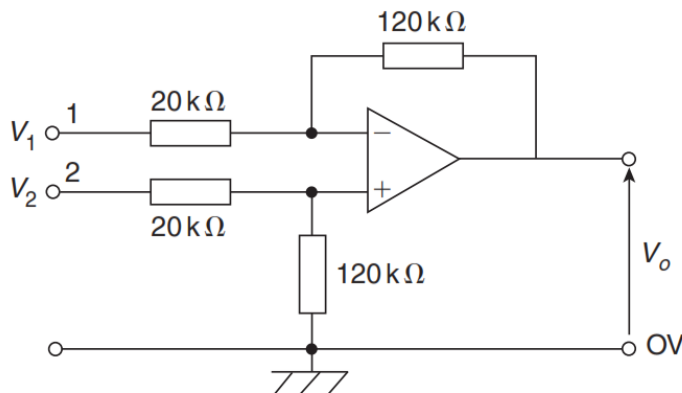
Find  $i_L$



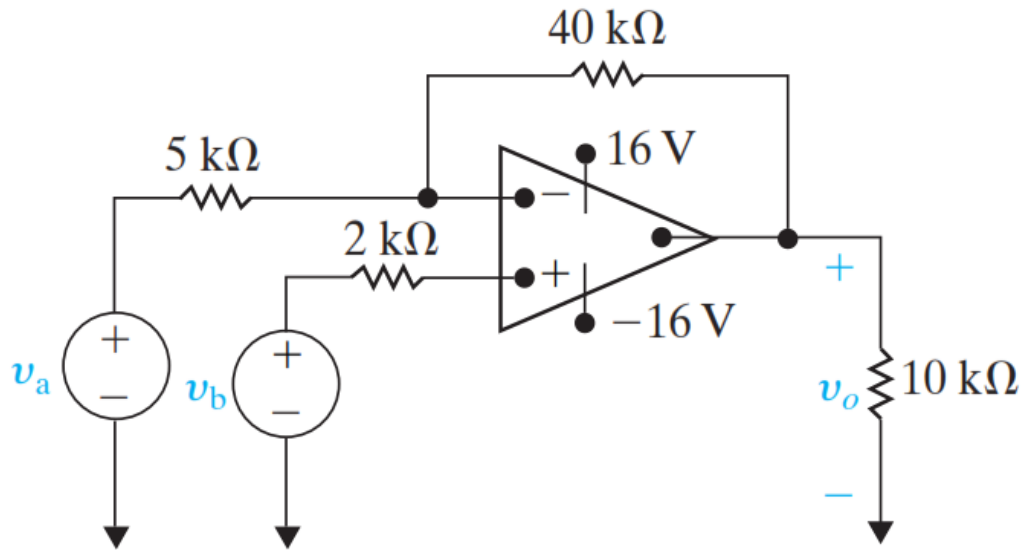
### Question 2:

Find  $V_O$

- (a)  $V_1 = 4 \text{ mV}$  and  $V_2 = 0$ , (b)  $V_1 = 0$  and  $V_2 = 5 \text{ mV}$ ,  
(c)  $V_1 = 20 \text{ mV}$  and  $V_2 = 10 \text{ mV}$  (6)

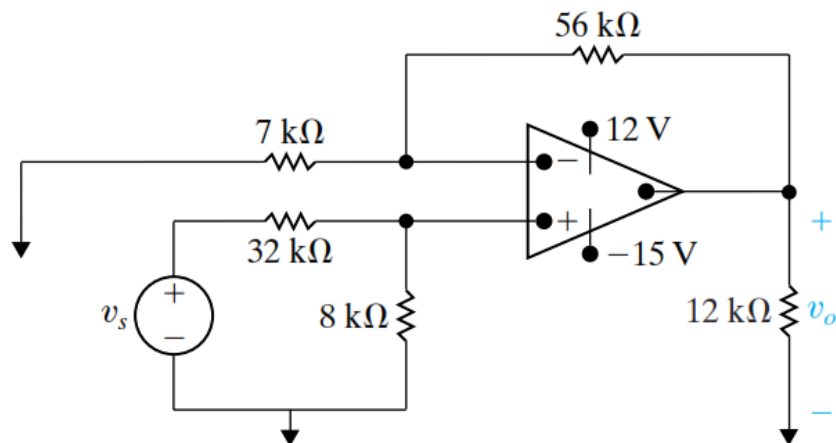


**Question 3:**



- Calculate  $v_o$  if  $v_a = 1.5\text{ V}$  and  $v_b = 0\text{ V}$ .
- Calculate  $v_o$  if  $v_a = -0.5\text{ V}$  and  $v_b = 0\text{ V}$ .
- Calculate  $v_o$  if  $v_a = 1\text{ V}$  and  $v_b = 2.5\text{ V}$ .
- Calculate  $v_o$  if  $v_a = 2.5\text{ V}$  and  $v_b = 1\text{ V}$ .
- Calculate  $v_o$  if  $v_a = 2.5\text{ V}$  and  $v_b = 0\text{ V}$ .
- If  $v_b = 2\text{ V}$ , specify the range of  $v_a$  such that the amplifier does not saturate.

**Question 4:**



- a) What op amp circuit configuration is this?
- b) Find  $v_o$  in terms of  $v_s$ .
- c) Find the range of values for  $v_s$  such that  $v_o$  does not saturate and the op amp remains in its linear region of operation.