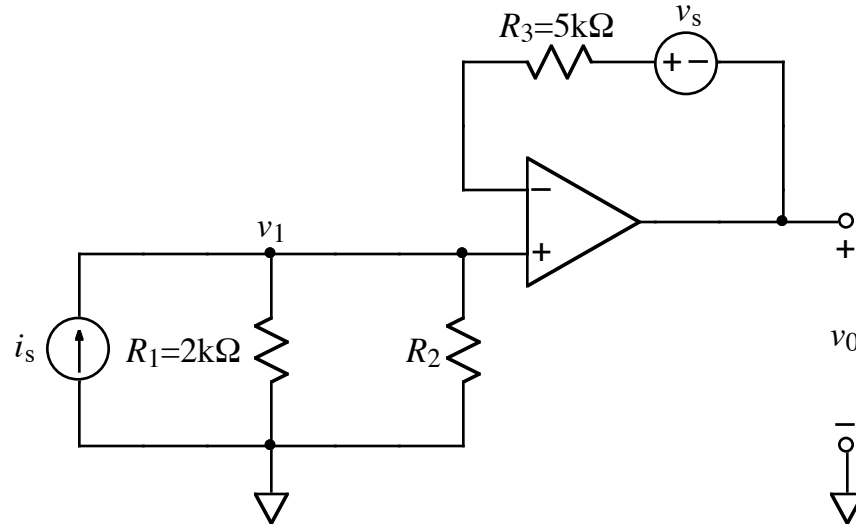


1.

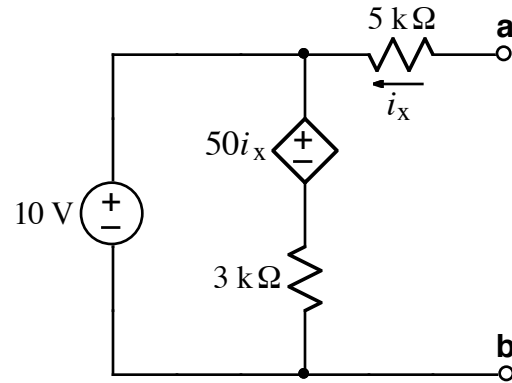


Rail voltage =  $\pm 9$  V

The above circuit operates in linear mode. Derive a symbolic expression for  $v_o$ . The expression must contain not more than the parameters  $i_s$ ,  $v_s$ ,  $R_1$ ,  $R_2$ , and  $R_3$ .

2.
  - a) If  $v_s = 0$  V, find the value of  $R_2$  that will yield an output voltage of  $v_o = 1$  V when  $i_s = 1$  mA.
  - b) Using the value of  $R_2$  from part (a), find the value of  $v_s$  that will yield  $v_o = 1$  V when  $i_s = 0$  A.
3. Using the value of  $R_2$  from above, calculate the input resistance,  $R_{in} = v_1/i_s$ , seen by the  $i_s$  source.

4.



Find the Thevenin equivalent of the above circuit relative to terminals **a** and **b**.

- 5.
- a) Calculate the value of  $R_L$  that would absorb maximum power.
  - b) Calculate that value of maximum power  $R_L$  could absorb.