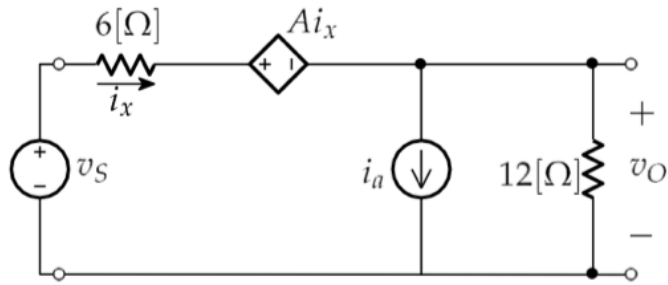


Problem 1

Use superposition to solve this problem. Choose values for i_a and A so that

$$v_0 = 1/2 v_s - 3[\text{V}]$$

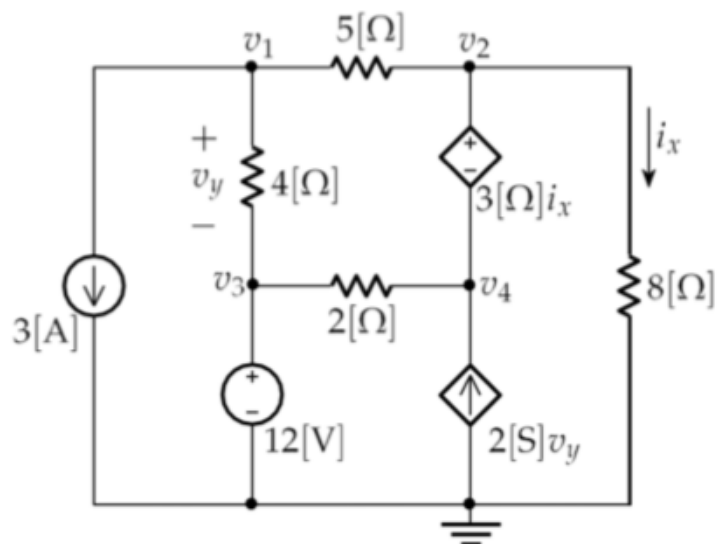
Hint: first find A by using only the voltage source, and then find the value of i_a by using only the current source.



Ans: $A = 6\Omega$; $i_a = 0.5\text{A}$

Problem 2

For the following circuit, use the node voltage method to determine the values of v_1 , v_2 , v_3 , and v_4 with respect to the reference node.



Ans: $v_1=23.5\text{V}$, $v_2=52.9\text{V}$, $v_3=12\text{V}$, and $v_4=33.1\text{V}$

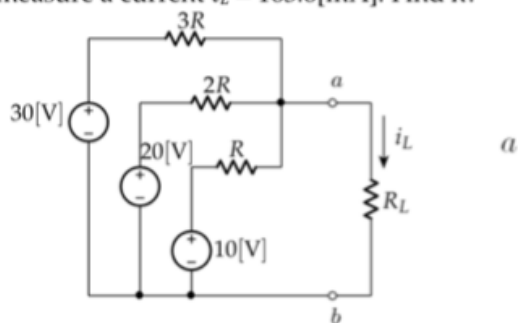
Problem 3

For the following circuit, you measure an open circuit potential $v_{oc} = 180/11$ [V] between nodes a and b when you remove the load resistor. When you attach a load resistor $R_L = 40[\Omega]$, you

1

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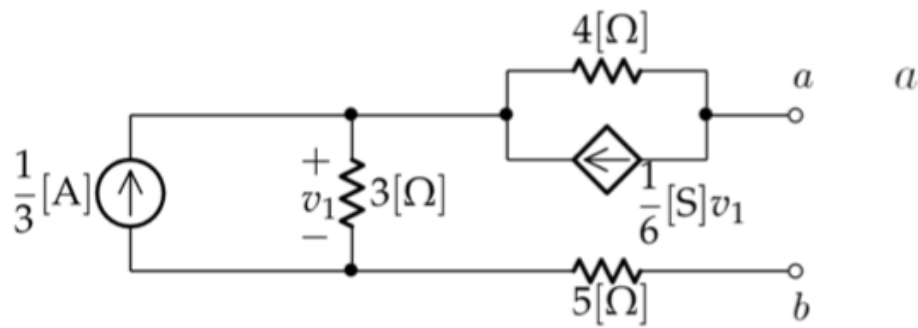
measure a current $i_L = 163.6$ [mA]. Find R .



Ans: 110Ω

Problem 4

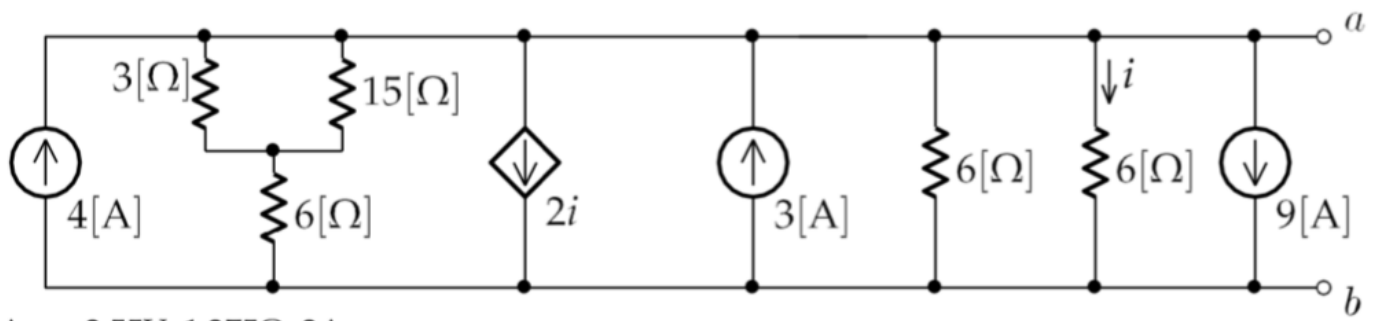
Find the Thevenin equivalent for the following circuit between nodes a and b .



Ans: $1/3\text{V}$; 10Ω

Problem 5

Find the Thevenin or Norton equivalent for the circuit below between nodes a and b .



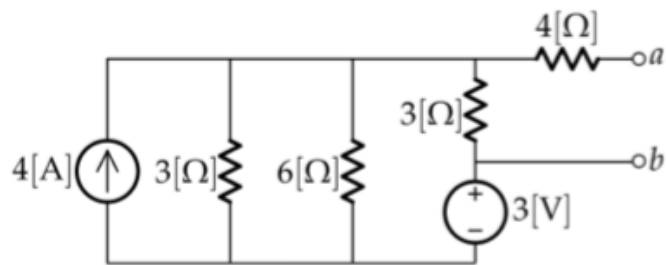
Ans: -2.55V ; $1.275\text{ }\Omega$; 2A

Problem 6

Find the Thévenin equivalent circuit at terminals (a,b) in the circuit below.

2

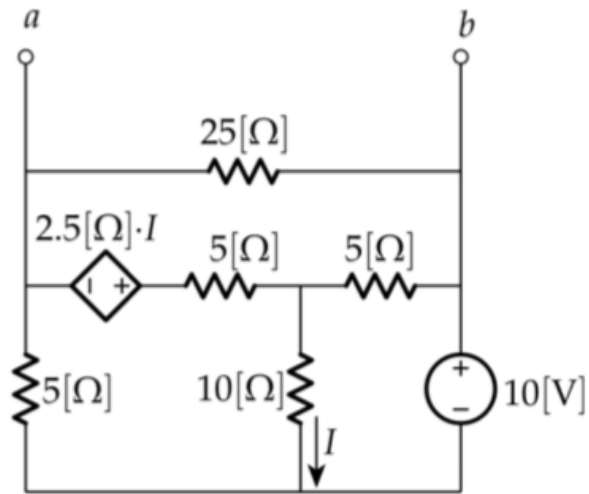
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Ans: 3V ; $26/5\ \Omega$

Problem 7

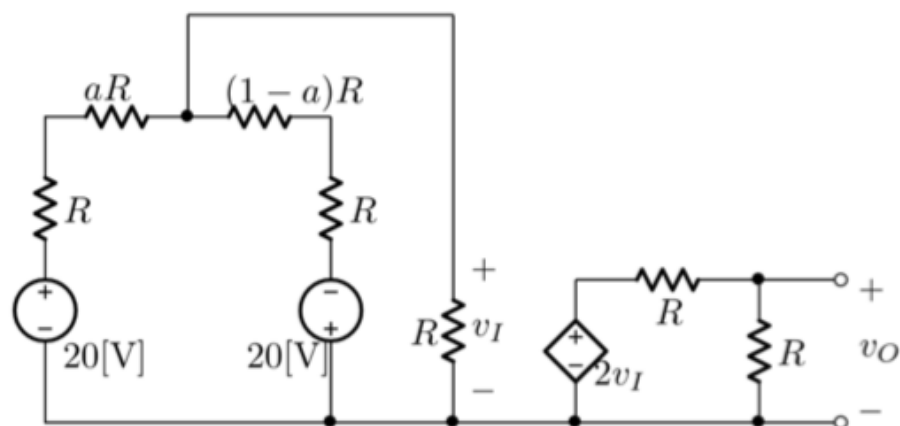
Find the Thévenin equivalent circuit at terminals (a,b) for the circuit below



Ans: $-50/7\text{V}; =75/28\Omega$

Problem 8

For the following circuit determine the value of v_o for $a=1/2$ and $a=1/4$



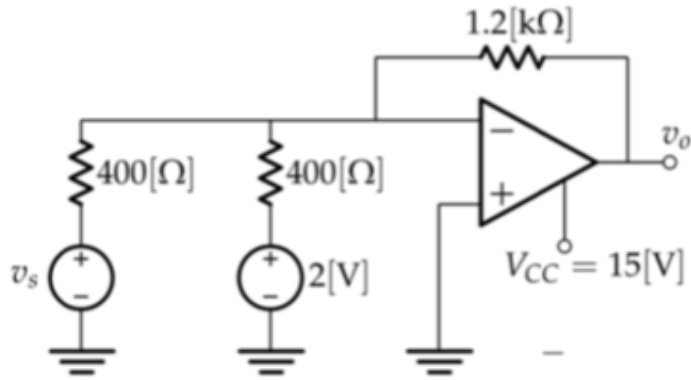
Problem 9

- a. Determine the output voltage (v_o) in the circuit below in terms of v_s .

3

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- b. Specify the linear range for v_s .



Ans: $-3v_s - 6[V]$ for $-7[V] < v_s < 3[V]$