

EE1002/CG1108 Practice questions

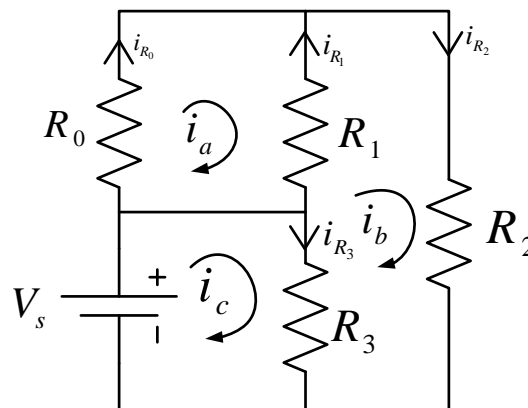
1. Assume $R_0 = 1\Omega$, $R_1 = 1\Omega$, $R_2 = 1\Omega$, $R_3 = 1\Omega$, and $V_s = 12V$ in the circuit.

a) Find i_a, i_b, i_c .

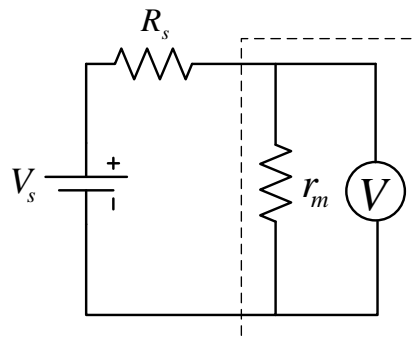
[4A, 8A, 20A]

b) The current through each resistance.

[$i_{R_0} = 4A, i_{R_1} = 4A, i_{R_2} = 8A, i_{R_3} = 12A$]



2. A practical volt meter has an internal resistance r_m . What is the value of r_m if the meter reads 11.81V when connected as shown in the circuit.

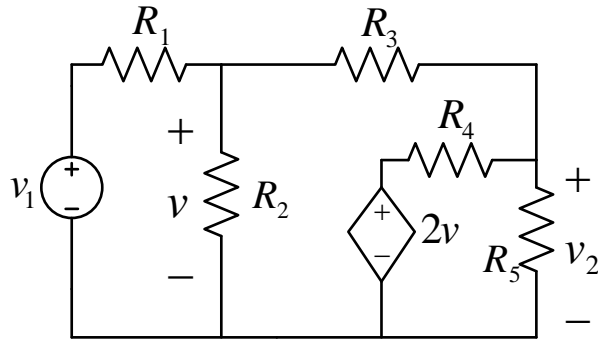


$$V_s = 12V \quad R_s = 25k\Omega$$

[1554k Ω]

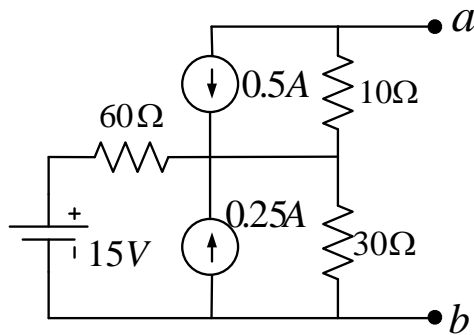
3. Determine the voltage “gain” $A_v = v_2/v_1$ in the amplifier circuit.

$$R_1 = 1\Omega, R_2 = 0.5\Omega, R_3 = 0.25\Omega, R_4 = 0.25\Omega, R_5 = 0.25\Omega$$



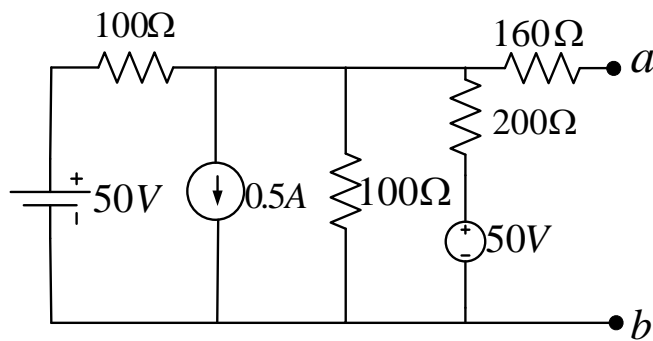
[0.33]

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



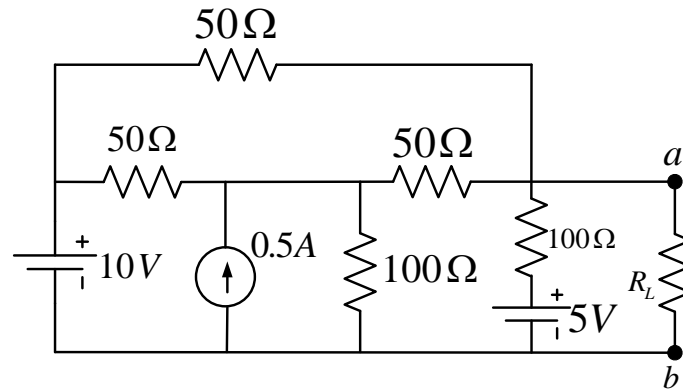
[5V, 30Ω]

5. Compute the Norton’s equivalent of the circuit between nodes a and b.



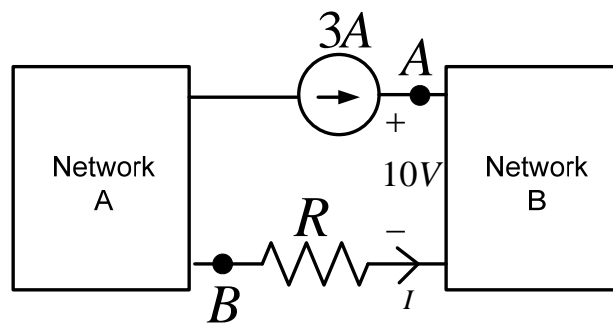
[0.05A, 200Ω]

6. Find the Thevenin equivalent resistance seen by the load resistor R_L in the circuit.



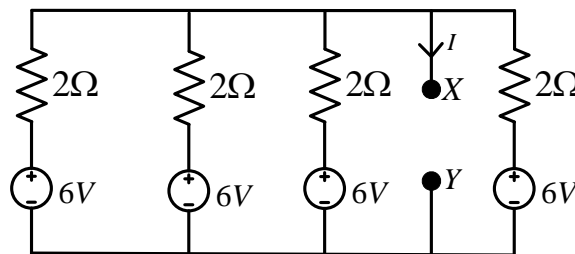
[23.81Ω]

7. In the circuit determine the current I and the voltage V_{AB} for each of the cases $R = 2, 0, 6 \Omega$.



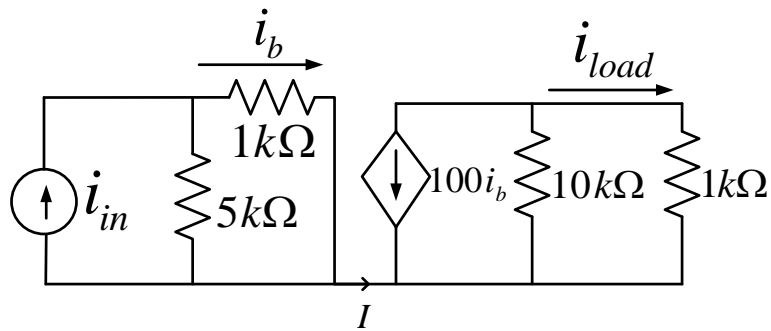
[16V, 10V, 28V]

8. In the circuit determine the voltage across the terminals X and Y when (a) they are on open-circuit, (b) they are short-circuited and (c) a resistor of 1Ω is connected across them. Determine also the current I for all three cases.



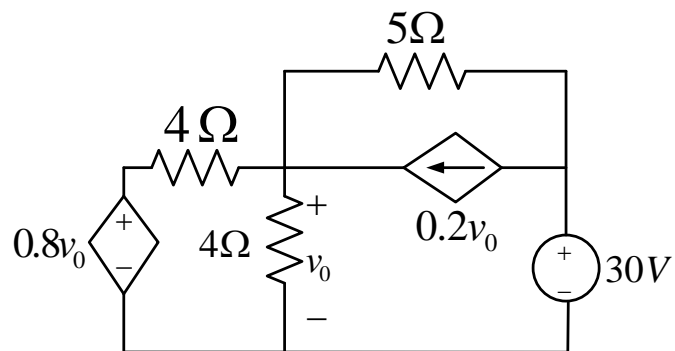
[(a) 6V, 0A; (b) 12A, 0V; (c) 4V, 4A]

9. Determine the current gain $A_i = \frac{i_{load}}{i_{in}}$.



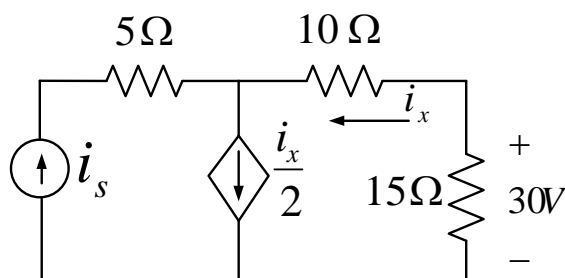
[-75.76]

10. Determine the voltage v_o in the circuit.



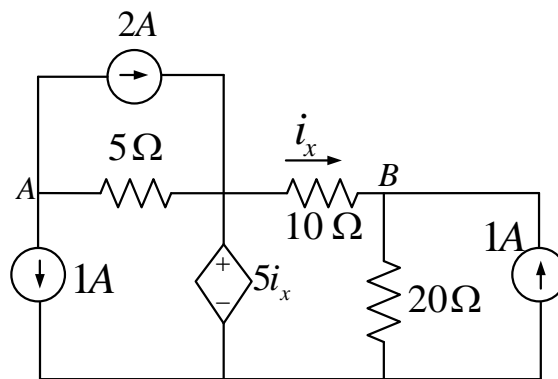
[20V]

11. For the circuit, solve for i_s .



[-1A]

12. Find the voltage V_{AB} in the circuit.



[-23V]