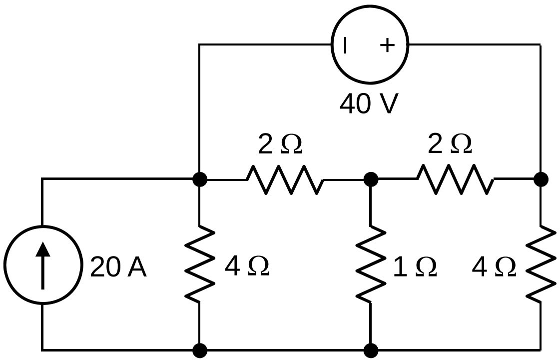
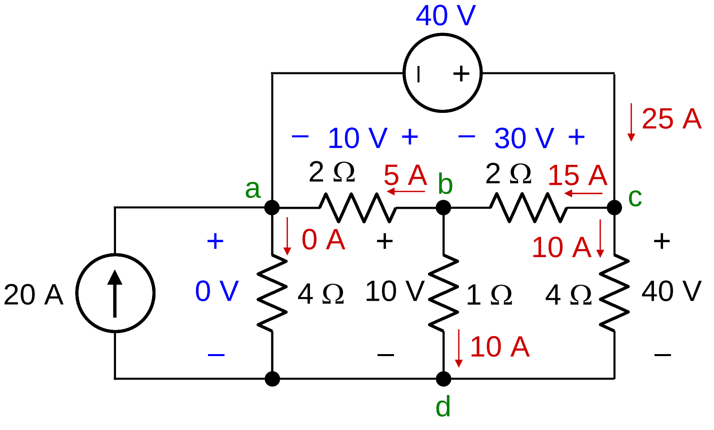
Determine all the currents and voltages in the circuit using superposition and mark them on the circuit diagram.



Solution:



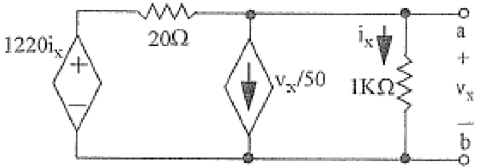


Figure 10

12. Find the Thevenin equivalent of the circuit shown in figure 10.

a) V_{th} = 10V and R_{th} = 1K

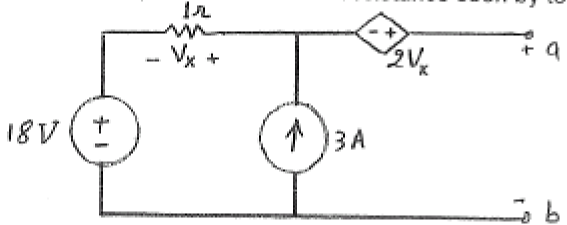
b) V_{th} = 0V and R_{th} = 0.1K

c) V_{th} = 10V and R_{th} = 2K

d) V_{th} = 1V and R_{th} = 1K

e) None of the above

10. For the circuit shown, find the Thevenin resistance seen by terminals ab



A. 4Ω
B. 5Ω
C. 3Ω
D. 6Ω
E. None of the above.

2. In the circuit of Figure 1, the Thevenin resistance as seen from terminals ab is:

a. $100/3\Omega$
b. $100/9\Omega$
c. $50/9\Omega$
d. 10Ω
e. None of the above

Refer to figures below

10. In the circuit of Figure 8, the Thevenin equivalent resistance, across terminals a-b, is:

a. 20Ω
b. 5Ω
c. -20Ω
d. 10Ω
e. None of the above

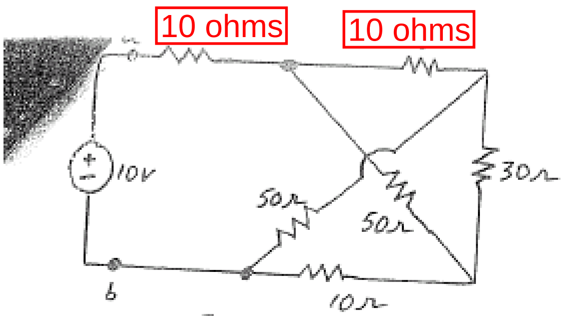


Fig. 1

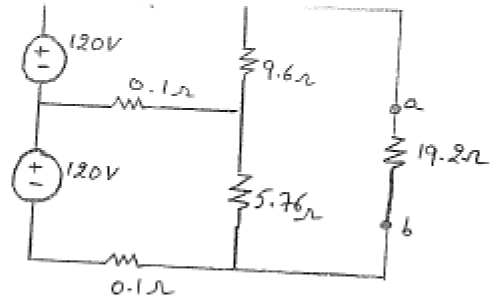


Fig. 5

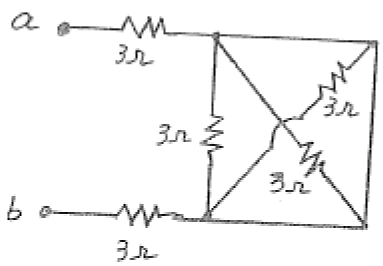


Fig. 2

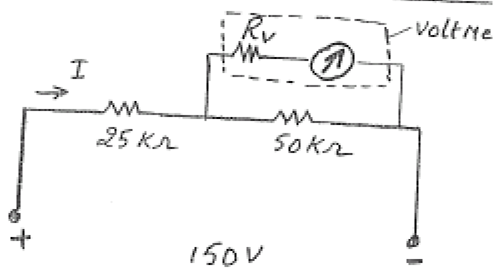


Fig. 6

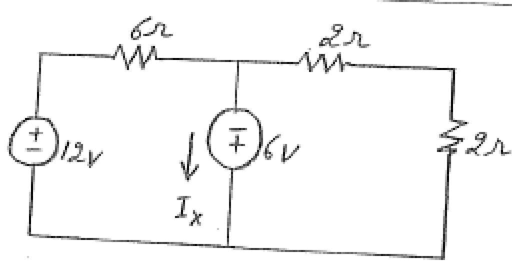


Fig. 3

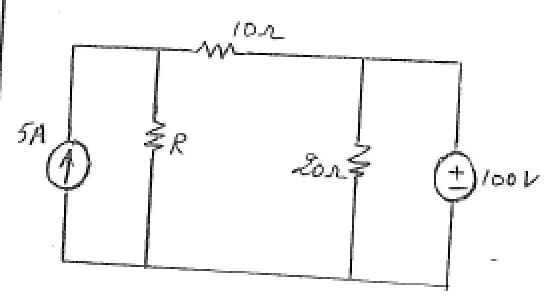


Fig. 7

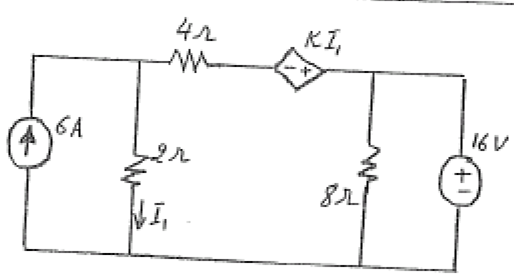


Fig. 4

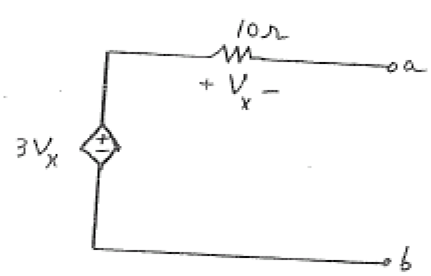
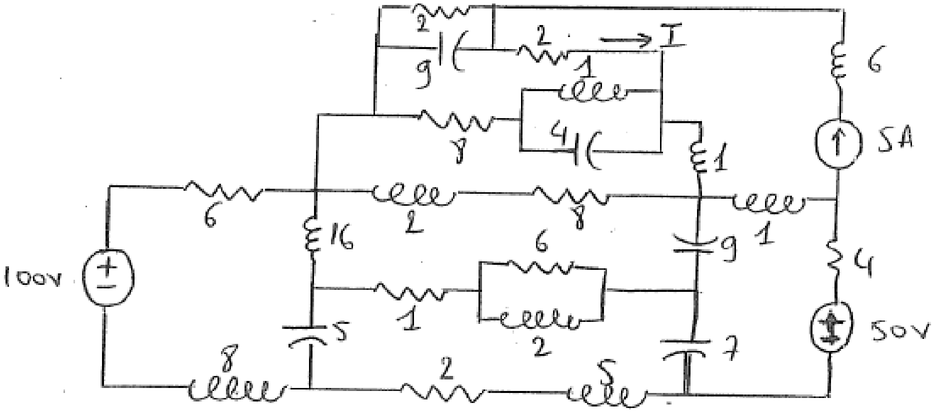


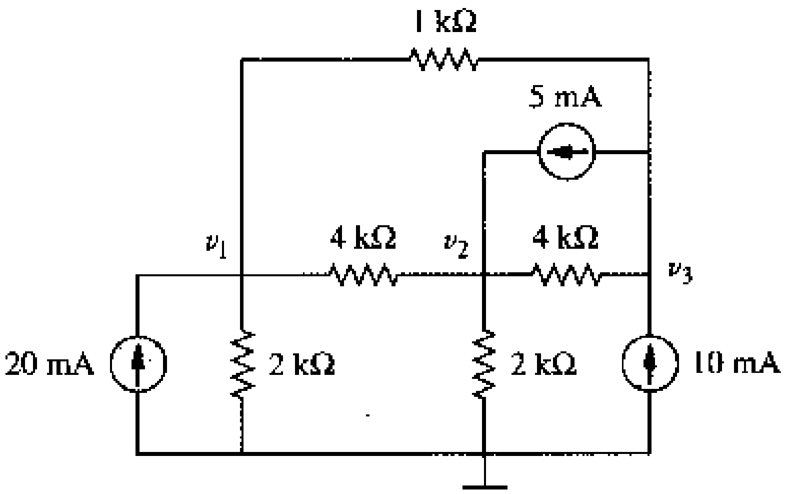
Fig. 8

25. Consider the circuit below, connected for a long time. All resistors are in Ohm, capacitors in Farads and inductors in Henrys. Find the current I.



a) 5.357 A b) 11.25A c) 7.5A d) 22.5A e) NOA

Problem 1 (10 pts)
Consider the circuit shown below.



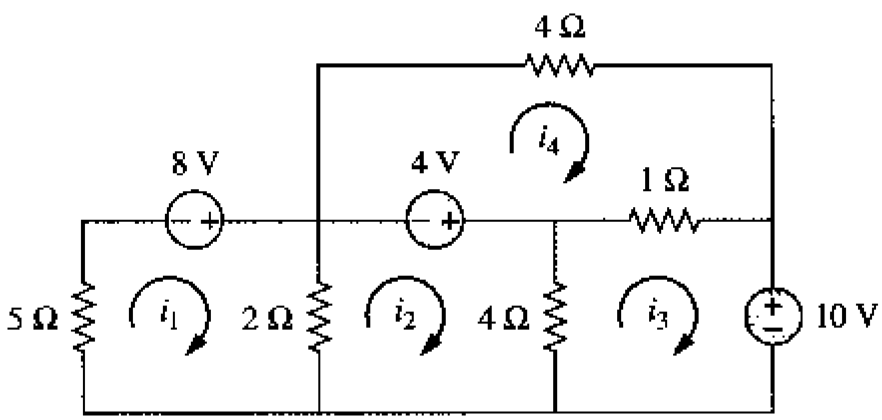
1. We, first, set the current sources 5 mA and 10 mA to zero. Determine the equivalent resistance seen by the 20 mA current source. (5 pts)

   R_1 = (4 + 1)||4 = 20/9 kΩ; R_2 = 20/9 + 2 = 38/9 kΩ, R_{eq} = 2||(38/9) = 19/14= 1.36 kΩ

2. Write the node voltage equations by inspections (**do not solve**) (5 pts)

$1.75V_1$	–	$0.25V_2$	–	V_3	=	20
$-0.25V_1$	+	V_2	–	$0.25V_3$	=	5
$-V_1$	–	$0.25V_2$	+	$1.25V_3$	=	5

Problem 2 (10 pts)
Consider the circuit shown below



1. We, first, set the 4V source and the 10V source to zero. Determine the equivalent resistor seen by the 8V voltage source. (5 pts)

   $\boxed{R_{eq} = 5 + (2||4||4||1) = 5 + 0.5 = 5.5\ \Omega}$

2. Write the mesh-current equations. **(do not solve).** (5 pts)

$$\boxed{\begin{array}{lllllllll}
7I_1 & - & 2I_2 & - & 0I_3 & - & 0I_4 & = & 8 \\
-2I_1 & + & 6I_2 & - & 4I_3 & - & 0I_4 & = & 4 \\
0I_1 & - & 4I_2 & + & 5I_3 & - & I_4 & = & -10 \\
0I_1 & - & 0I_2 & - & I_3 & + & 5I_4 & = & -4
\end{array}}$$

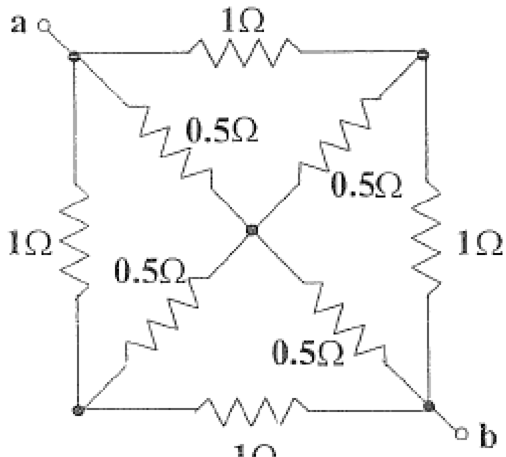
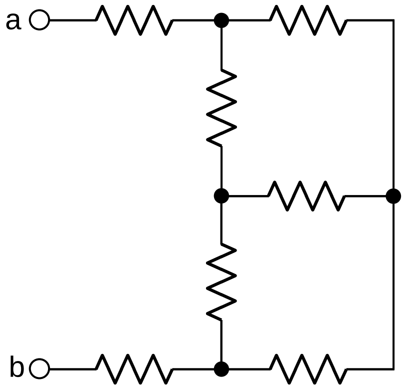


Figure 20

21. Determine the resistance between terminals a b in figure 20.

a) 0.5Ω
b) 0.6Ω
c) 1.5Ω
d) 0.25Ω

1. Determine the equivalent resistance between terminals a and b, given that all resistances are 1 Ω.



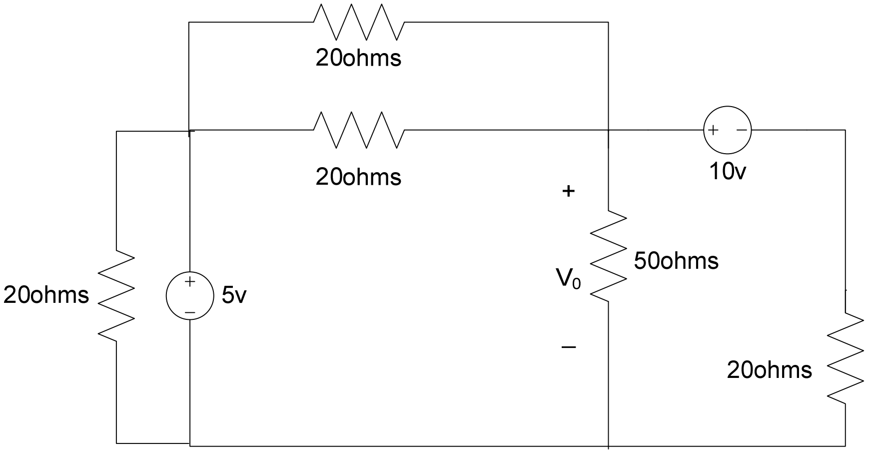
   A. 5 Ω
   B. 4.5 Ω
   C. 4 Ω
   D. 3 Ω
   E. None of the above

Solution: The resistances not connected directly to terminals a and b form a balanced bridge. Hence the resistance across the bridge does not carry any current and can be replaced by an open circuit or a short circuit. If replaced by an open circuit, $R_{eq} = 1 + 2||2 + 1 = 3\ \Omega$.

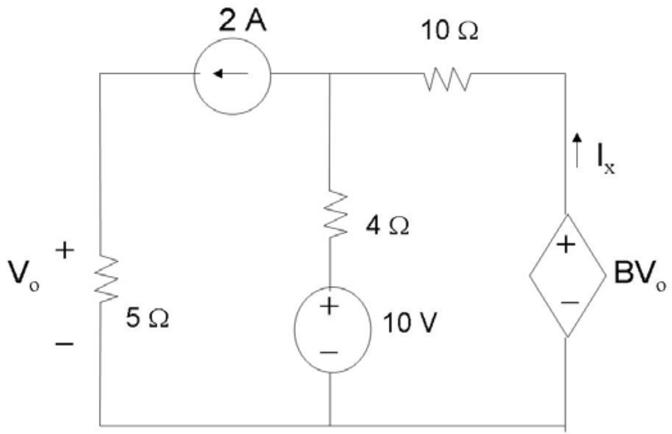
Problem 2

Find the power consumed by the 50 ohm resistor in the circuit shown below

A) P= 0.246 W
B) P= 0.692 W
C) P= 2.358 W
D) P= 5.100 W
E) None of the above



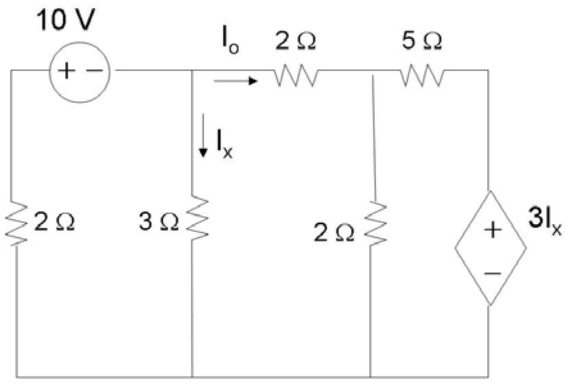
Problem 6



Given the circuit above, determine the current I_x if voltage-controlled current source has B=0.2:

A) 0
B) 0.285
C) 1.285
D) 0.5
E) None of the above

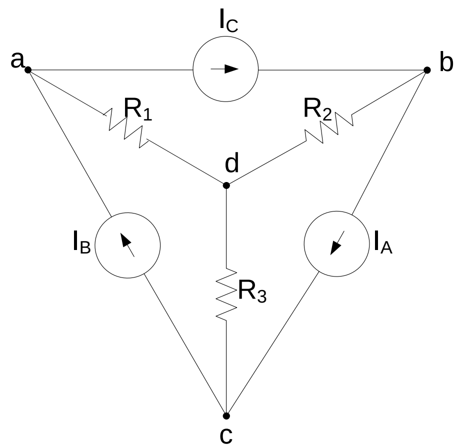
Problem 11



What is I_0?

A) 1 A
→ B) -1 A
C) 2 A
D) -2 A
E) None of the above

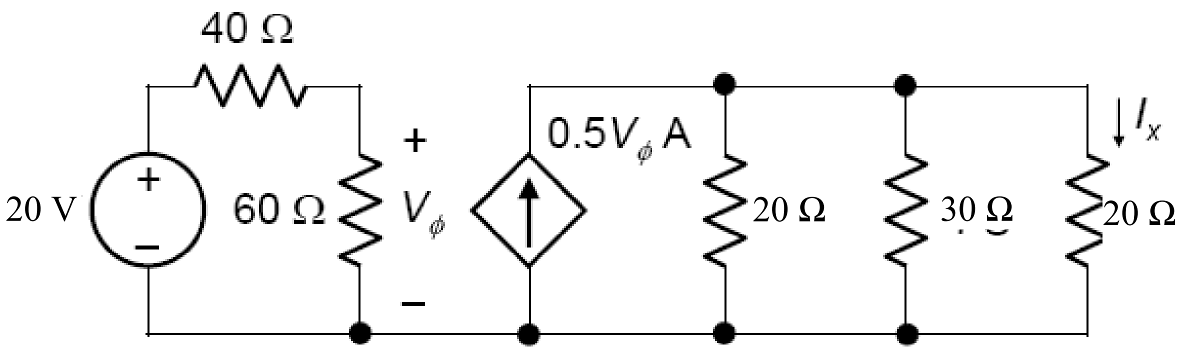
Problem 5



The following values are given:
$I_A = 1$ mA, $I_B = 2$ mA, $I_C = 4$ mA, $R_1 = R_2 = R_3 = 1$ kΩ,
What is the value of V_{bc}?

A) 4 V
B) -2 V
C) 1 V
D) 5 V
E) None of the above

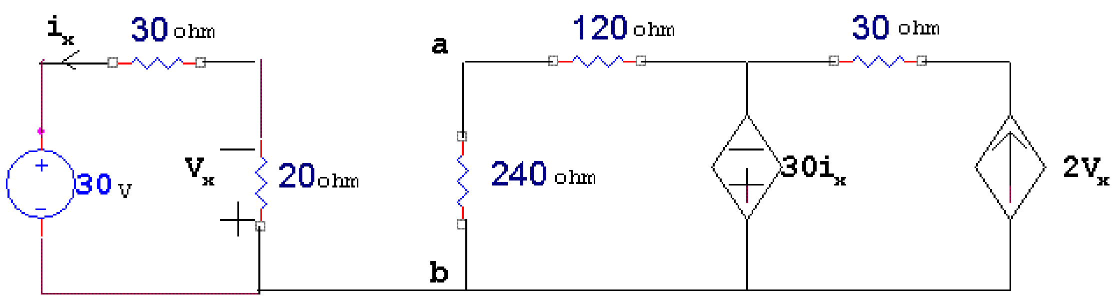
Problem 9



Find I_x.

A) 4.2 A
B) 3.5 A
C) 2.25 A
D) 4.75 A
E) None of the above

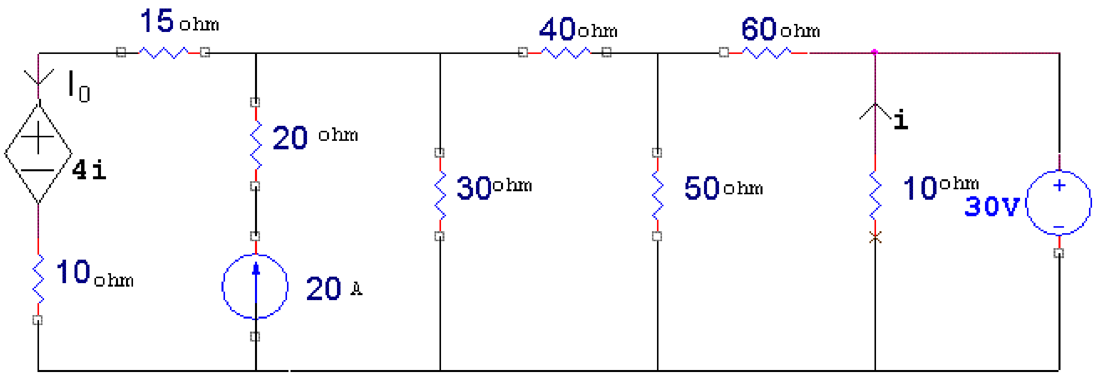
Problem 10



Find the Thevenin equivalent across terminals a and b.

A) $R_{TH} = 40\Omega$, $V_{TH} = 6.67$ V
B) $R_{TH} = 40\Omega$, $V_{TH} = -6.67$ V
C) $R_{TH} = 80\Omega$, $V_{TH} = 12$ V
D) $R_{TH} = 80\Omega$, $V_{TH} = -12$ V
E) None of the above

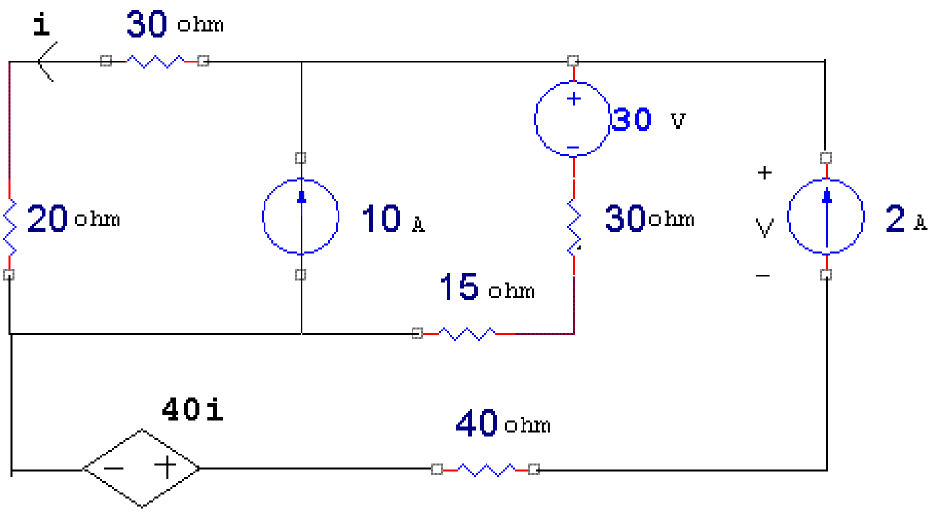
Problem 11



Find the current, I_0, flowing through the dependant source.

A) 9.4A
B) 14A
C) -3A
D) -12A
E) None of the above. Approx 6.6 A

Problem 12



Find the voltage, V, across the 2A source.

A) 400 V
B) 140 V
C) 6 V
D) -300 V
E) None of the above

P3.1.25 Determine V_O in Fig. P3.1.25 using node-voltage analysis.

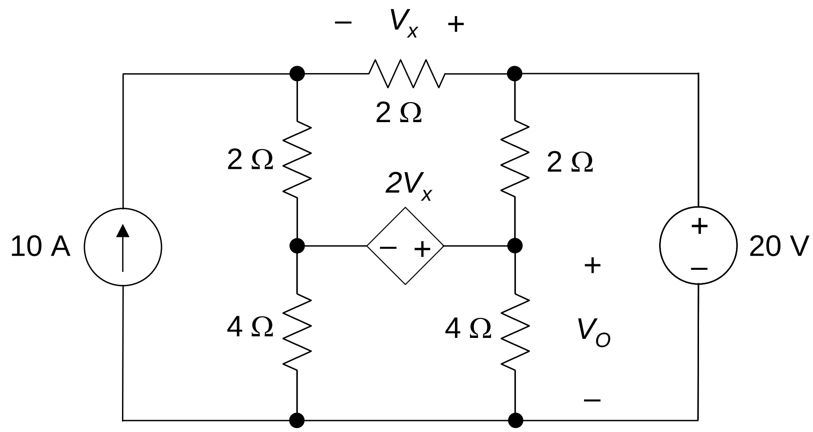
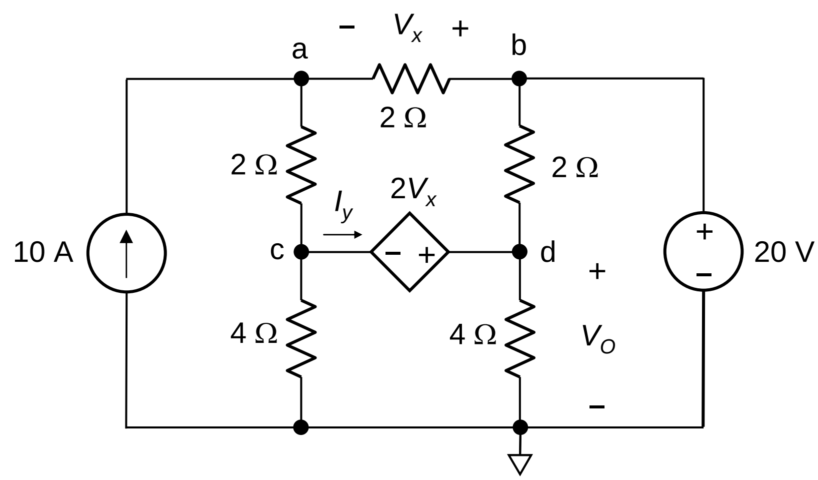


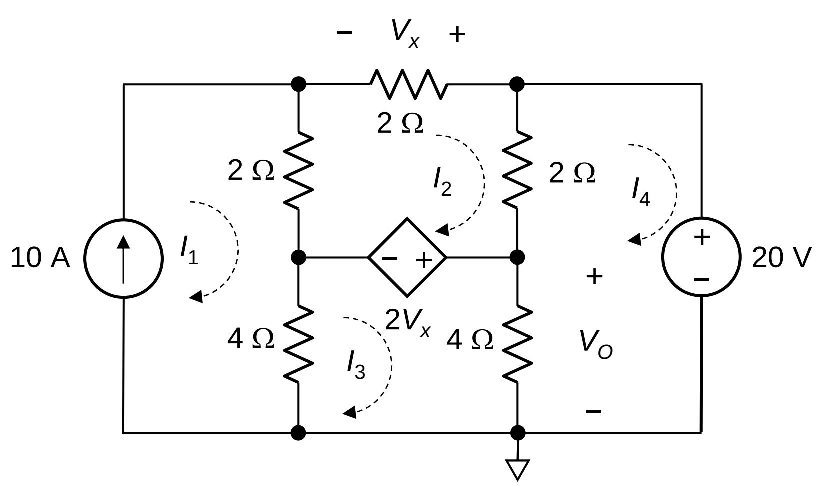
Figure P3.1.25

Solution: The node-voltage equation for node a is: $V_a - 0.5V_b - 0.5V_c = 10$; substituting $V_b = 20$ V: $V_a - 0.5V_c = 20$. For node c: $-0.5V_a + 0.75V_c = -I_y$; for node d: $-0.5V_b + 0.75V_d = I_y$; adding and substituting for V_b: $-0.5V_a + 0.75V_c + 0.75V_d = 10$. For the dependent source: $V_d - V_c = 2V_x = 2V_b - 2V_a$, or $2V_a - V_c + V_d = 40$. Solving, $V_a = 40$ V, $V_c = 40$ V, $V_d = V_O = 0$.



P3.1.26 Determine V_O in Fig. P3.1.25 using mesh-current analysis.

Solution: For mesh 2: $-2I_1 + 6I_2 - 2I_4 = -2V_x$; substituting $I_1 = 10$ and $V_x = -2I_2$: $I_2 - I_4 = 10$. For mesh 3: $-4I_1 + 8I_3 = 2V_x$; $I_2 + 2I_3 = 10$. For mesh 4: $-2I_2 - 4I_3 + 6I_4 = -20$, or $-I_2 - 2I_3 + 3I_4 = -10$. Solving, $I_2 = 10$ A, $I_3 = 0$, and $I_4 = 0$, which gives $V_O = 0$.



P3.2.12 Determine V_O in Fig. P3.1.19 using superposition and calculate the power dissipated in the 5 Ω resistor.

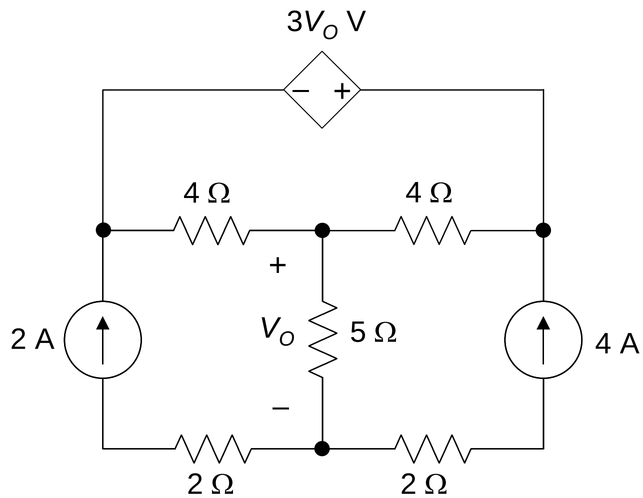
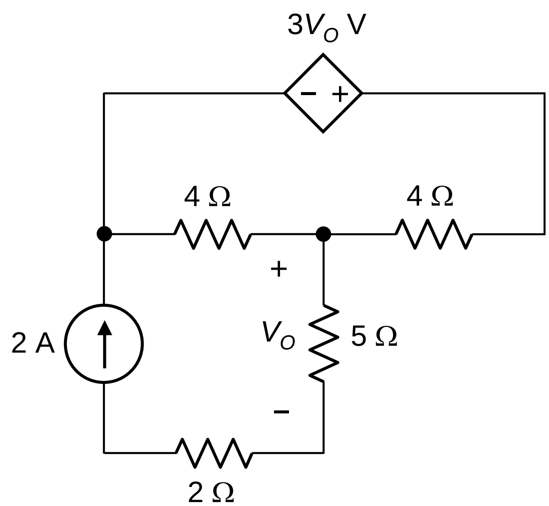


Figure P3.1.19

Solution: With the 2 A source acting alone, the circuit becomes as shown. The source current flows through the 5 Ω resistor, so that V_{O1} = 10 V. Similarly, when the 4 A source is applied alone, V_{O2} = 20 V. From superposition, V_O = V_{O1} + V_{O2} = 30 V. The dependent source does not contribute to V_O.



Power dissipated in the 5 Ω resistor is

$$\frac{(30)^2}{5} = 180\,\text{W}.$$

P3.2.13 Determine I_O in Fig. P3.1.21 using superposition and calculate the power dissipated in the 5 S resistor.

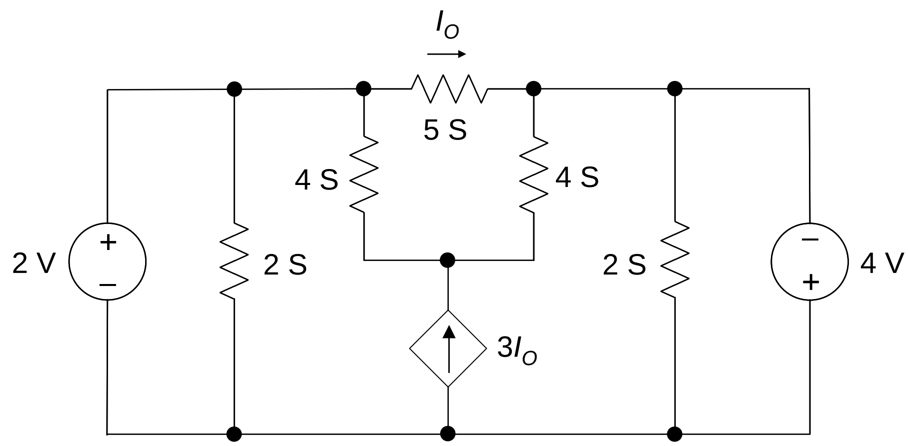
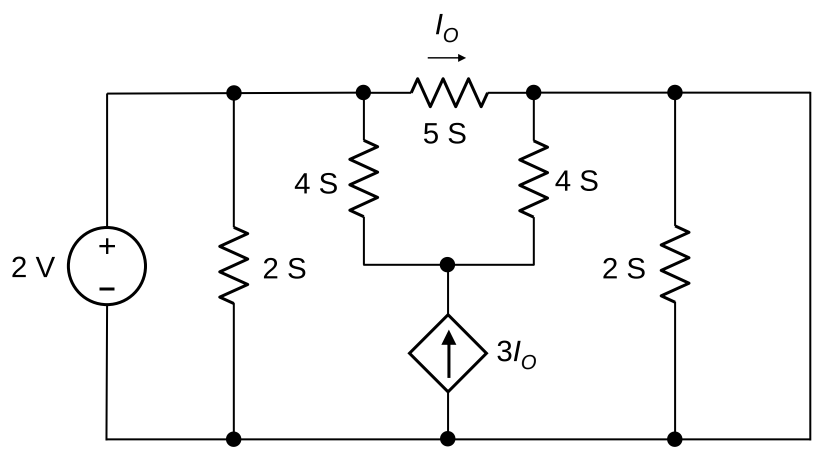


Figure P3.1.21



Solution: With the 2 V source acting alone, and the 4 V source replaced by a short circuit, the circuit becomes as shown. The source voltage is applied across the 5 S resistor, so that I_{O1} = 10 A. Similarly, when the 4 V source is applied alone, I_{O2} = 20 A. From superposition, $I_O = I_{O1} + I_{O2}$ = 30 A. The dependent source does not contribute to I_O. Power dissipated in the 5 S resistor is

$$\frac{(30)^2}{5} = 180\text{ W}.$$

P4.1.8 Derive TEC between terminals ab in Fig. P4.1.8.

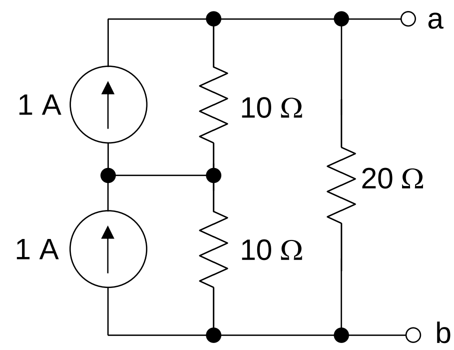
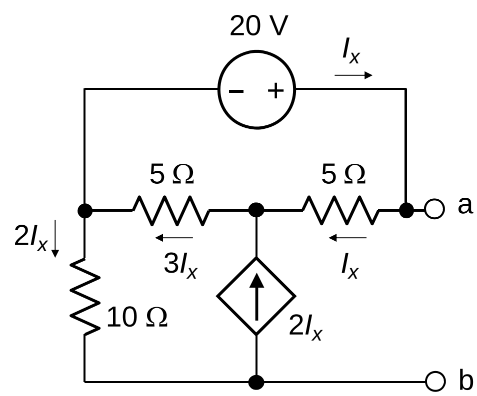


Figure P4.1.8

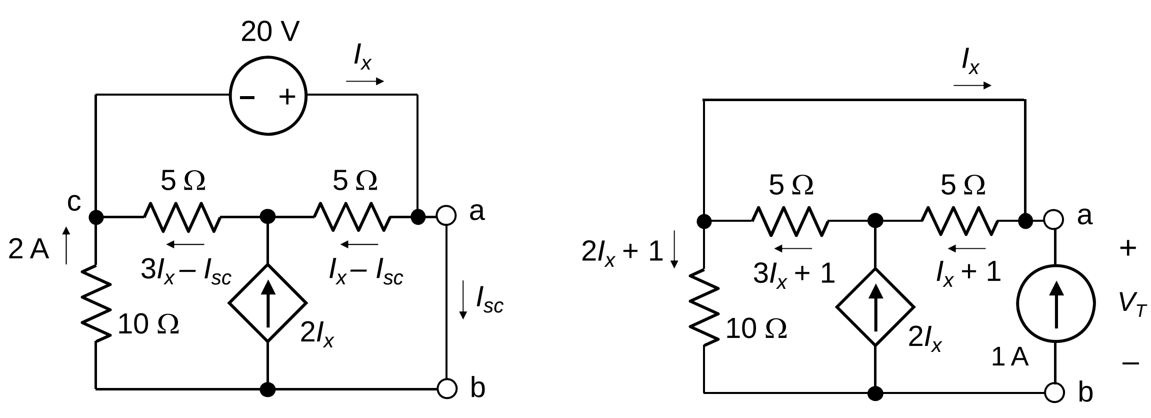
Solution: Let us first remove the 20 Ω resistor and reapply it later. On open circuit, each 1 A source produces a 10 V drop across the resistor in parallel with it. Hence V_{oc1} = 20 V. On short circuit, I_{sc} = 1 A, so that R_{Th1} = 20 Ω. When the 20 Ω resistor is added at terminals ab, $V_{Th} = 20\times(20/40) = 10$ V and $R_{Th} = (20||20) = 10$ Ω

P4.1.9 Derive TEC between terminals ab in Fig. P4.1.9.



Solution: On open circuit, KVL around the upper mesh gives $20I_x = 20$, or I_x = 1 A. It follows that $V_{Th} = V_{oc} = 20 + 20I_x = 40$ V.

On short circuit, the current in the 10 Ω resistor is 2 A. KVL around the upper mesh gives: $20 = 5(I_x - I_{sc}) + 5(3I_x - I_{sc})$, or $2I_x - I_{sc} = 2$; from KCL at node c: $3I_x - I_{sc} + 2 = I_x$, or $2I_x - I_{sc} = -2$. This means that I_x and I_{sc} are indeterminate. This suggests that $R_{Th} = 0$, which would make I_{sc} indeterminate. To verify this, we apply a test source of 1 A, with the voltage source set to zero. Then, $4I_x + 2 = 0$, so that I_x = -0.5 A and $V_T = 2(-0.5) + 1 = 0$. Hence $R_{Th} = 0$.



P4.1.10 Derive NEC between the short-circuited terminals ab in Fig. P2.1.4.

Solution: If a test voltage is applied, KCL at node a gives $I_\phi = I_T + 3$. From KCL at node c, $I_T + 3 + 10 = 5$, or $I_T = -8$ A, irrespective of V_T. It follows that $I_N = 8$ A. Since I_T is independent of V_T, it means that there is no resistance in parallel with the current source I_N.

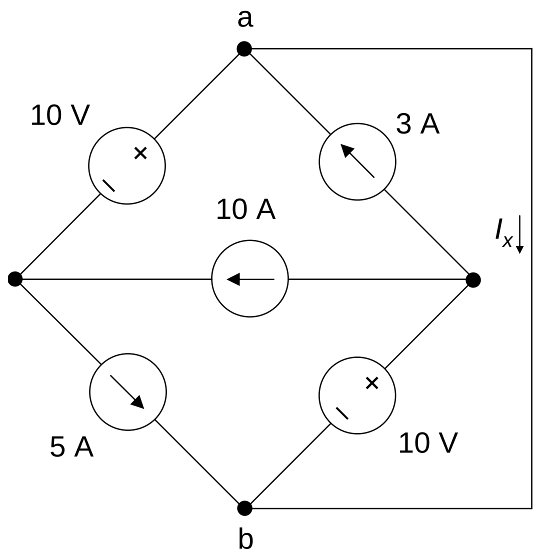
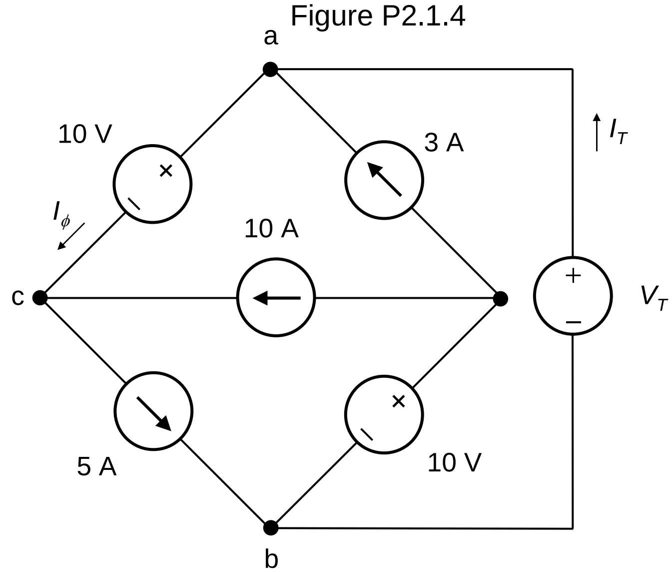


Figure P2.1.4



P4.1.11 Determine V_O in Fig. P3.1.7 using TEC.

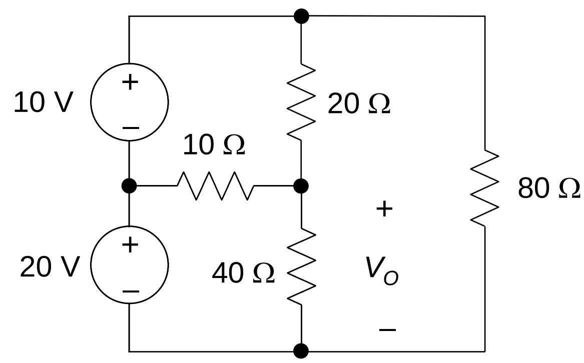
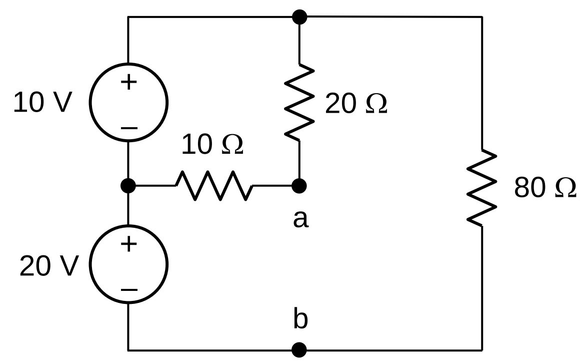


Figure P3.1.7

Solution: Open-circuit voltage: When only the 10 V source is applied, V_{Th1} = $\frac{10}{30}\times 10 = \frac{10}{3}$ V. When only the 20 V source is applied V_{Th2} = 20 V. Hence, V_{Th} = 70/3 V. With both sources set to zero, R_{Th} = 10||20 = 20/3 Ω. It follows that V_O = $\frac{40}{40+20/3}\times\frac{70}{3} = 20\,\text{V}$.



P4.1.12 Determine I_O in Fig. P3.1.9 using NEC.

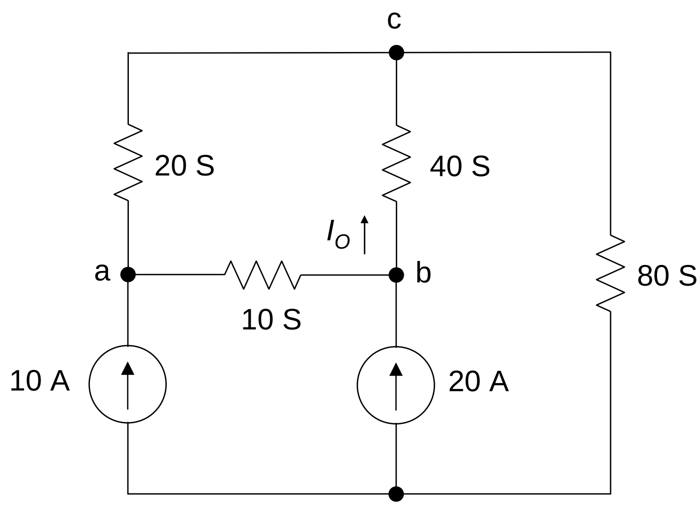
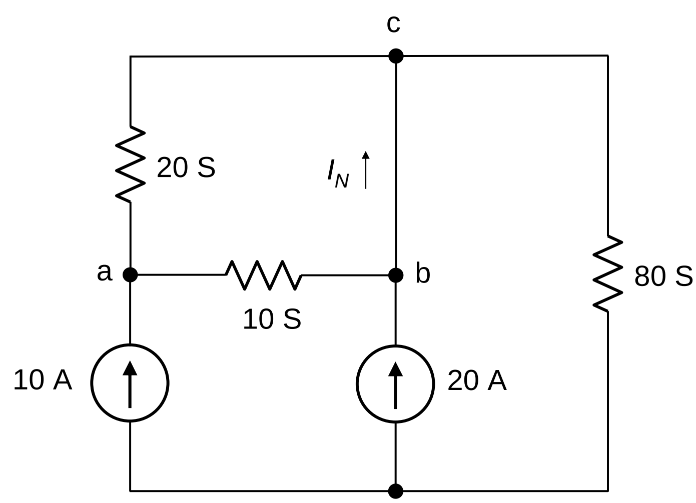


Figure P3.1.9

Solution: With the 10 A source acting alone, I_{N1} = $\frac{10}{30}\times 10 = \frac{10}{3}$ A. With the 20 A source acting alone, I_{N2} = 20 A. Hence, I_N = 70/3 A.

The conductance between terminals bc is $\frac{20\times 10}{20+10} = \frac{20}{3}$ S. It follows from NEC that $I_O = \frac{40}{40+20/3}\times\frac{70}{3} = 20$ A.



P4.1.15 Determine V_O in Fig. P3.1.15 using TEC.

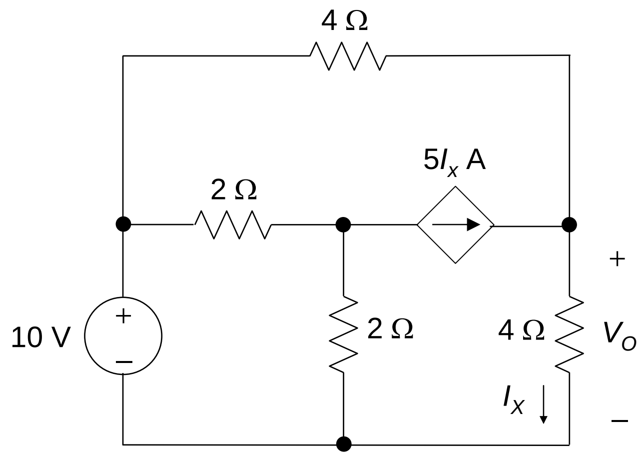
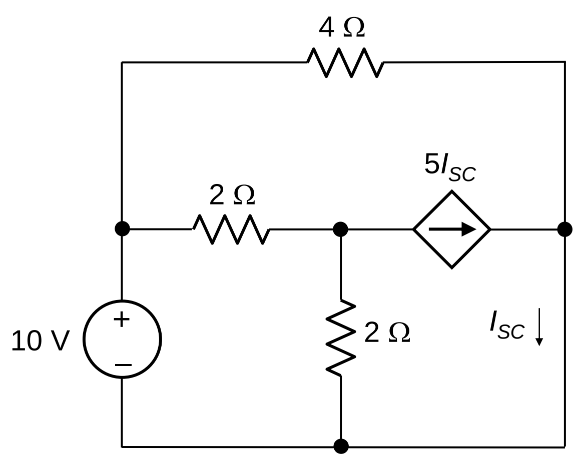


Figure P3.1.15

Solution: On open circuit, I_x = 0, and the dependent source becomes an open circuit. It follows that V_{Th} = 10 V. On short circuit, the circuit becomes as shown, where I_x = I_{SC} and the dependent source becomes 5I_{SC}. It follows from KCL that: $I_{SC} = 5I_{SC} + \frac{10}{4}$, which gives $I_{SC} = -\frac{5}{8}$ A, and $R_{SC} = -16\,\Omega$. Hence $V_O = \frac{4}{4-16}\times 10 = -\frac{10}{3}$ V.



P4.1.16 Determine I_O in Fig. P3.1.17 using NEC.

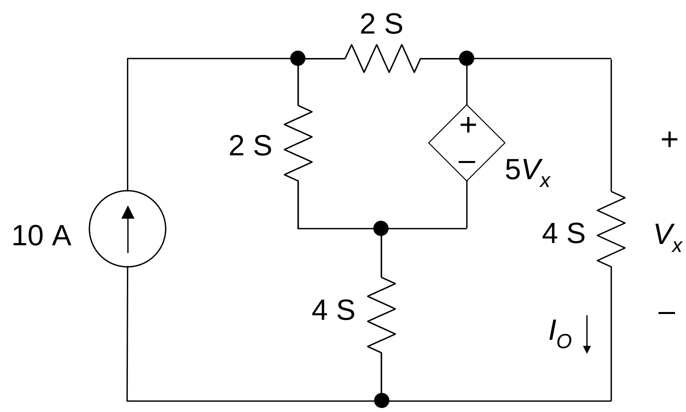
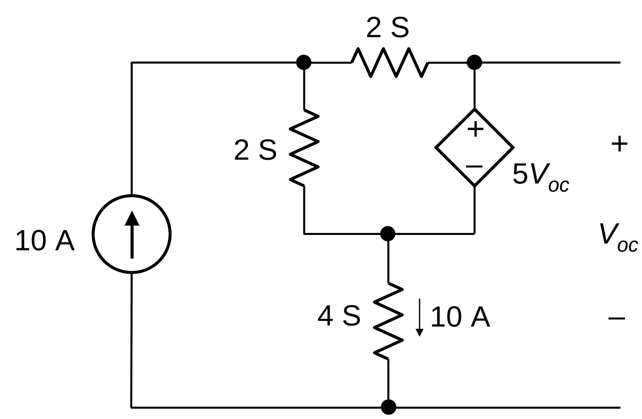


Figure P3.1.17

Solution: On open circuit, 10 A flows through the 4 S resistor, so that $V_{oc} = 5V_{oc} + \frac{10}{4}$, which gives $V_{oc} = -\frac{5}{8}$ A. On short circuit, $V_x = 0$ and the dependent source is zero, so that $I_N = 10$ A. This makes $G_N = -16$ S. It follows that

$$I_O = \frac{4}{4-16} \times 10 = -\frac{10}{3} \text{ A.}$$



P4.1.17 Determine V_O in Fig. P3.1.19 using NEC.

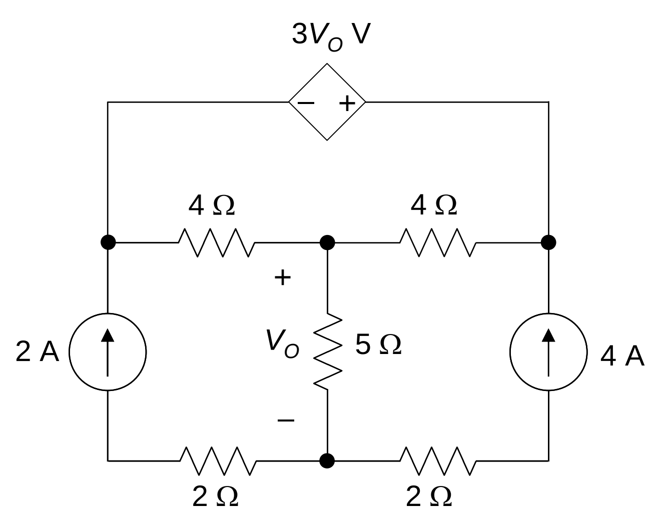


Figure P3.1.19

Solution: If the 5 Ω resistor is replaced by an open circuit, the circuit is invalid, as two unequal current sources will be connected in series through the 2 Ω resistors, and $V_O \to \infty$. If a test source is applied in place of the 5 Ω resistor and the current sources replaced by open circuits, the resistance seen by the source is infinite. If the 5 Ω resistor is replaced by a short circuit, $I_{SC} = 6$ A. It follows that the circuit does not possess a TEC between the specified terminals, only an NEC consisting of an ideal current source of 6 A. This gives $V_O = 30$ V.

P4.1.18 Determine I_O in Fig. P3.1.21 using TEC.

Solution: If the 5 S resistor is replaced by a short circuit, the circuit is invalid, as two unequal voltage sources will be connected in series, and $I_O \to \infty$. If a test source is applied in place of the 5 S resistor and the voltage sources replaced by short circuits, the resistance seen by the source is zero. If the 5 S resistor is replaced by an open circuit, V_{Th} = 6 V. It follows that the circuit does not possess an NEC between the specified terminals, only a TEC consisting of an ideal voltage source of 6 V. This gives I_O = 30 A.

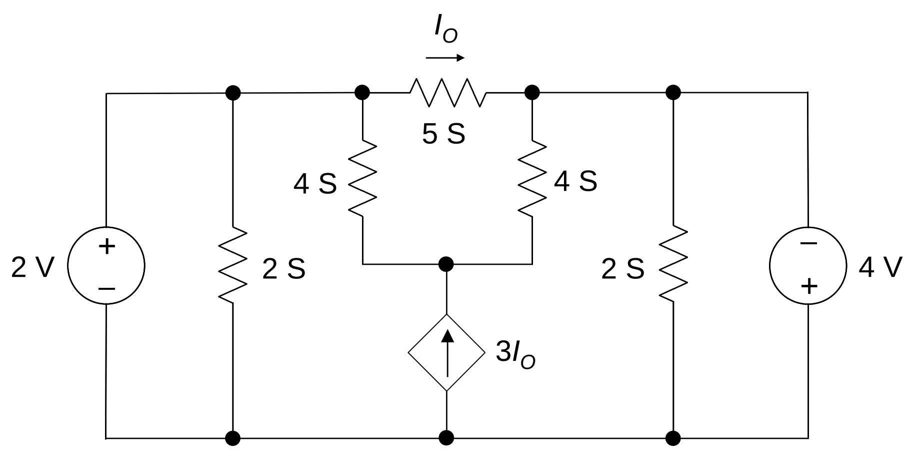


Figure P3.1.21

P4.1.19 Determine I_O in Fig. P3.1.23 using NEC.

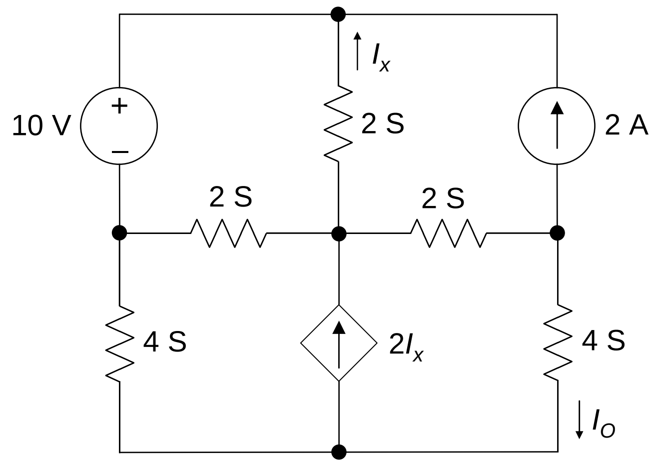
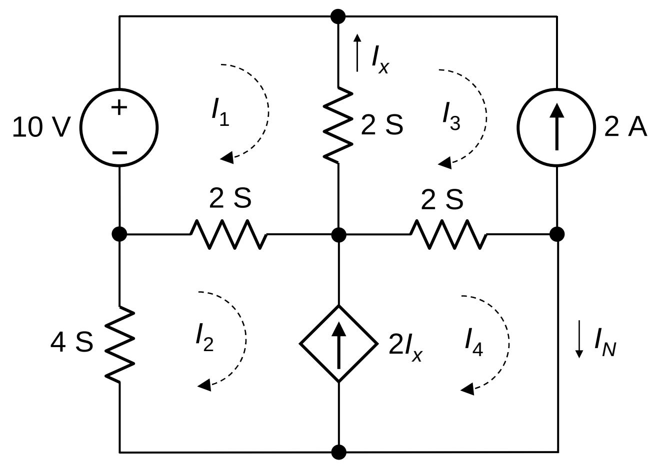
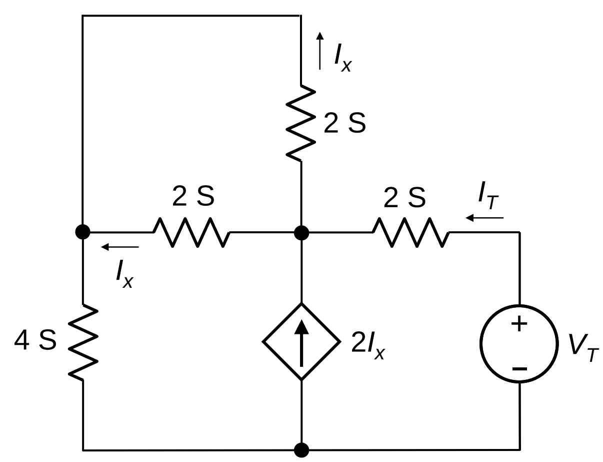


Figure P3.1.23

Solution: With the 4 S resistor replaced by a short circuit, I_O can be obtained from mesh-current analysis. The mesh current equations are the same as those for P3.1.24 but with a coefficient of 0.5 for I_4 in the equation for mesh 4. The equations are: $I_1 - 0.5I_2 = 9$; $-0.5I_1 + 0.75I_2 + 0.5I_4 = -1$; and $2I_1 - I_2 + I_4 = -4$. Solving, $I_4 = I_O = -22$ A.



If a test source is substituted for the 4 S resistor, with the independent source set to zero, it is seen from KCL at the middle node that $I_T = 0$, which means that the source resistance is infinite. The circuit does not possess a TEC between the specified terminals, only an NEC.



P4.1.20 Determine V_O in Fig. P3.1.25 using TEC.

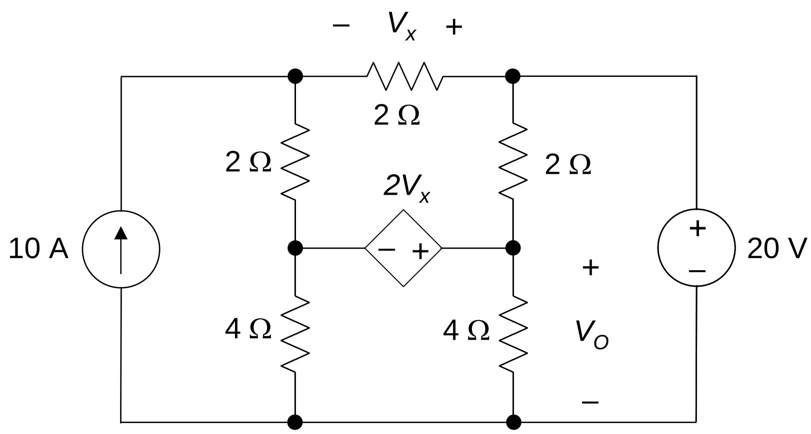
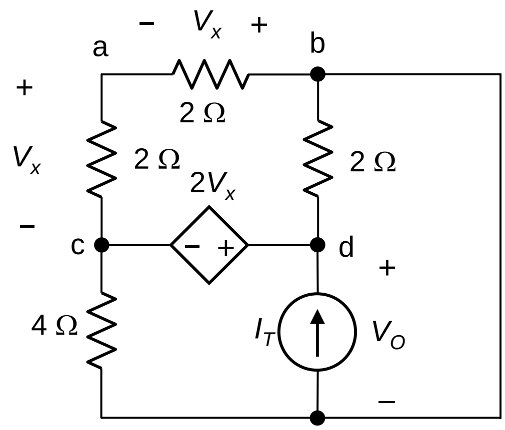
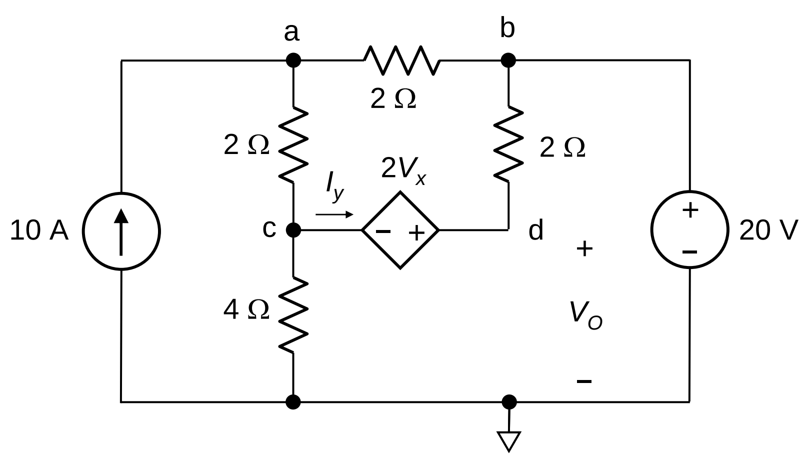


Figure P3.1.25

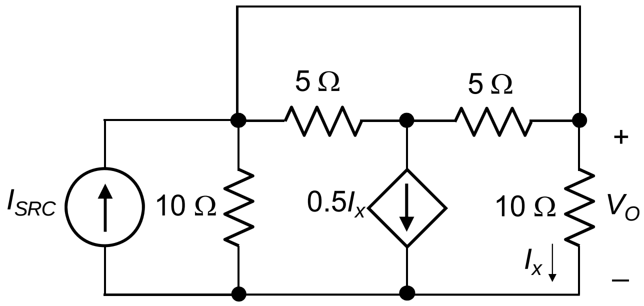
Solution: If a current source is applied at node d, with the independent sources set to zero, it is seen that $V_{ac} = V_x$, so that $V_{bd} = 0$ and $V_O = 0$. In other words the source sees a short circuit and $R_{src} = 0$.



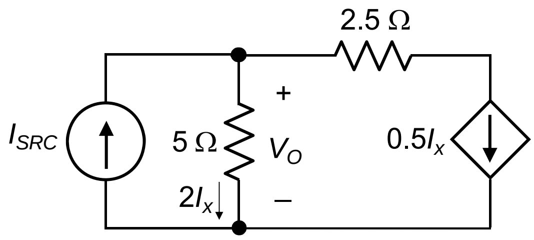
If the resistor between node d and the reference node is replaced by an open circuit, the node-voltage equation at node a is: $V_a - 0.5V_c = 20$, and the node voltage equation at node c is: $-0.5V_a + 0.75V_c = -I_y$, where I_y = $0.5(V_c + 2V_x - 20) = 0.5V_c + V_a - 30$. Substituting for I_y: $0.25V_a + V_c = 30$. Solving, gives $V_a = V_c = 40$ V. Hence, V_x = 20 V and $V_d = 0$. In other words, TEC and NEC are just short circuits,



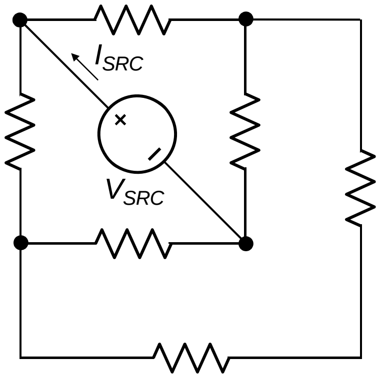
1. Determine V_O assuming I_{SRC} = 0.25 A.
   A. 4 V
   B. 1 V
   C. 5 V
   D. 2 V
   E. 3 V



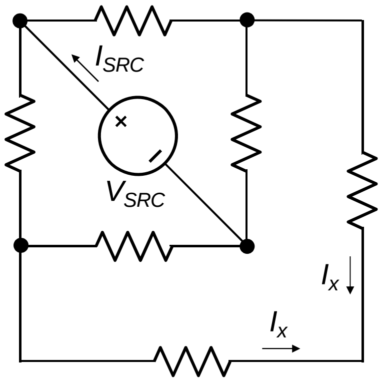
Solution: The two 5 Ω resistances can be combined in parallel to give a 2.5 Ω resistance, and the two 10 Ω resistances can be combined in parallel to give a 5 Ω resistance carrying a current of $2I_x$, as shown. It follows that $I_{SRC} - 2I_x = 0.5I_x$, or $I_x = \frac{I_{SRC}}{2.5}$ and $V_O = 10I_x$, so that $V_O = 4I_{SRC}$.



2. Determine I_{SRC} assuming V_{SRC} = 2 V and all resistances are 2 Ω.
   A. 1.5 A
   B. 3 A
   C. 2.5 A
   D. 2 A
   E. 1 A

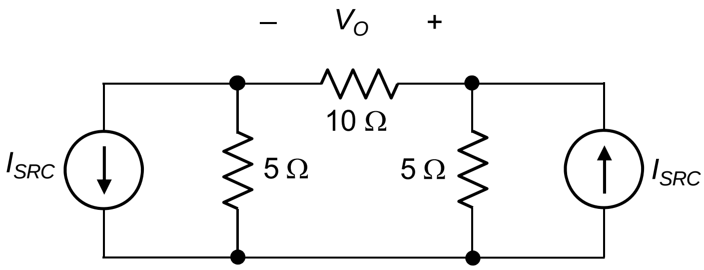


Solution: From symmetry the two currents I_x are equal and sum to zero. Hence, I_x = 0 and the two resistors can be removed. The equivalent resistance seen by the source is (2 + 2)||(2 + 2) = 2 Ω. It follows that $I_{SRC} = V_{SRC}/2$.

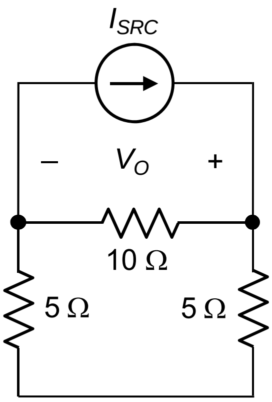


3. Determine V_O assuming I_{SRC} = 1 A.

   A. 7.5 V
   B. 12.5 V
   C. 5 V
   D. 15 V
   E. 10 V

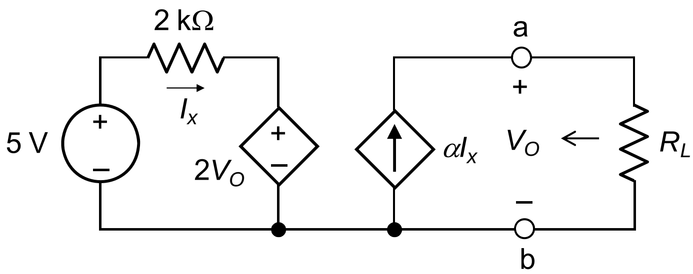


Solution: The two current sources are equivalent to a current source I_{SRC} connected as shown, since KCL is the same at the two nodes. The resistance seen by the source is 10||(5 + 5) = 5 Ω. Hence, $V_O = 5I_{SRC}$.



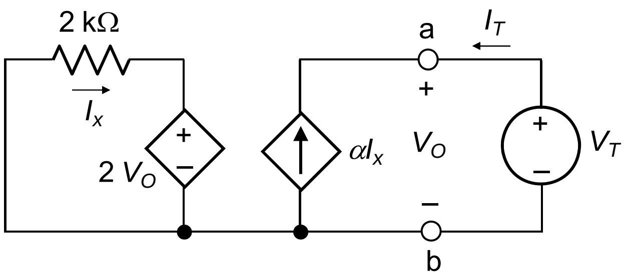
4. Determine Thevenin's resistance looking into terminals ab, assuming α = 10.

   A. 50 Ω
   B. 25 Ω
   C. 100 Ω
   D. 200 Ω
   E. 20 Ω

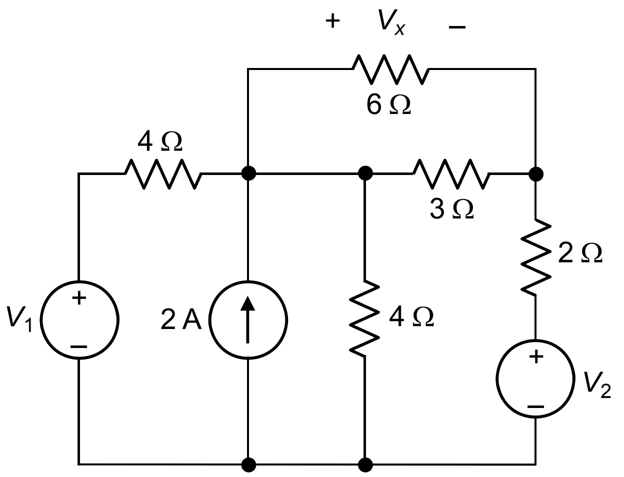


Solution: When a test source V_T is applied at terminals ab, with the independent voltage source set to zero, it follows from the circuit that:

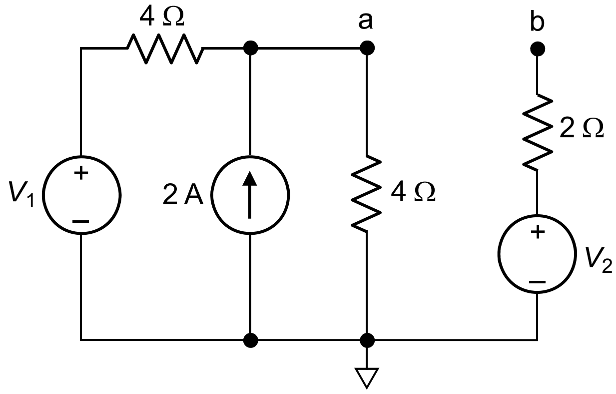
$I_x = -\frac{2V_O}{2} = -V_O = -V_T$ mA. $I_T = -\alpha I_x = \alpha V_T$ mA. Hence, $\frac{V_T}{I_T} = \frac{1}{\alpha}\,\text{k}\Omega \equiv \frac{1000}{\alpha}\,\Omega$.



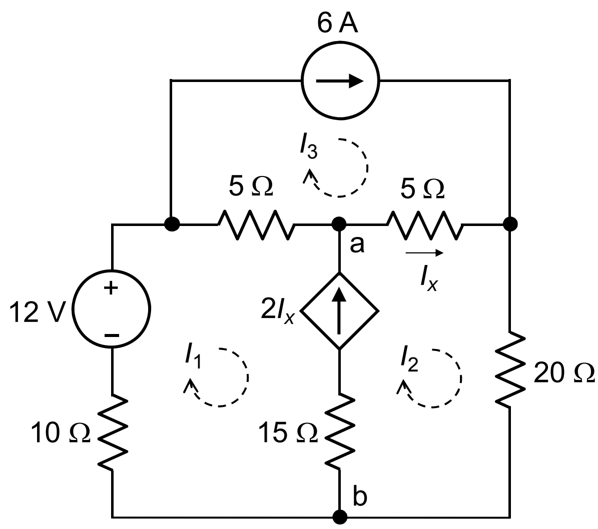
5. Determine V_2 so that $V_x = 0$, assuming $V_1 = 4$ V.
   A. 8 V
   B. 6 V
   C. 6.5 V
   D. 7.5 V
   E. 7 V



Solution: The 6 Ω and 3 Ω resistors do not carry any current. They can removed from the circuit, with nodes a and b being at the same voltage. V_1 can be transformed to a current source $V_1/4$ A in parallel with a 4 Ω resistor. The total current is $(0.25V_1 + 2)$ A in parallel with 2 Ω. V_2 is the voltage of node a, which gives: $V_2 = 2(0.25V_1 + 2) = (0.5V_1 + 4)$ V.



6. Derive the mesh current equations in terms of I_1, I_2, and I_3. DO NOT SOLVE THE EQUATIONS



Solution: Considering the voltage drop V_{ab} as a unit, the equation for mesh 1 is:

$(10 + 5)I_1 - 5I_3 = 12 - V_{ab}$

The mesh-current equation for mesh 2 is:

$(20 + 5)I_2 - 5I_3 = V_{ab}$

Adding these two equations:

$15I_1 + 25I_2 - 10I_3 = 12$

The remaining equations are:

$I_3 = 6$, and

$I_2 - I_1 = 2I_x = 2(I_2 - I_3)$, or

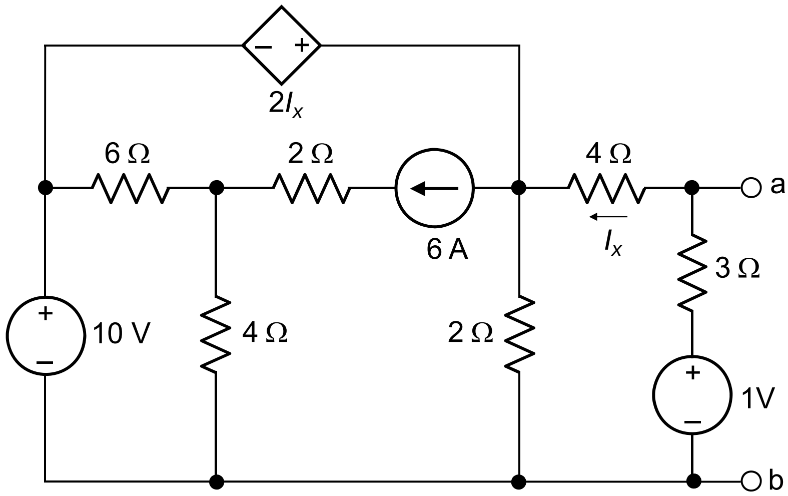
$I_1 + I_2 - 2I_3 = 0$

Note that if the 15 Ω resistor is denoted by R and the conventional mesh-current procedure is applied, the term in R cancels out. Thus, for mesh 1:

$(10 + 5 + R)I_1 – RI_2 – 5I_3 = 12 – V_x$, where V_x is the voltage drop across dependent current source in the direction of I_1. For mesh 2, $-RI_1 + (20 + 5 + R)I_2 – 5I_3 = V_x$. Adding these two equations gives the same equation as before.

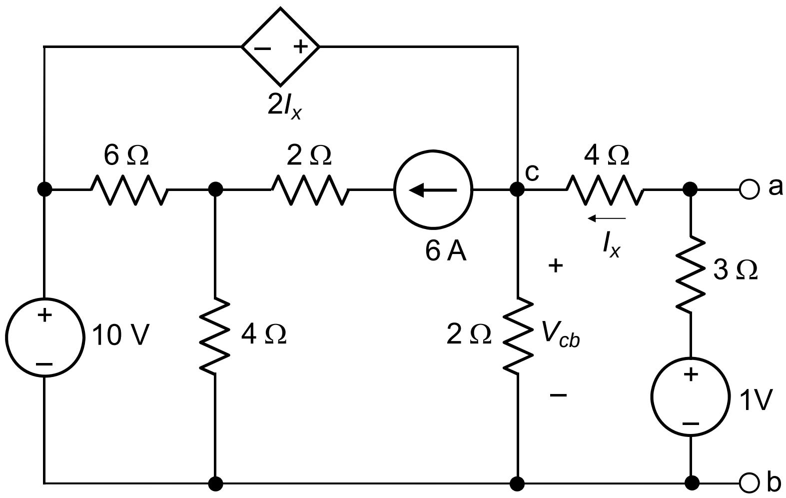
If these equations are solved, $I_1 = 22.8$ A, $I_2 = -10.8$ A, $I_x = -16.8$ A, $V_x = -804$ V.

7. Determine Thevenin's equivalent circuit seen between terminals a and b

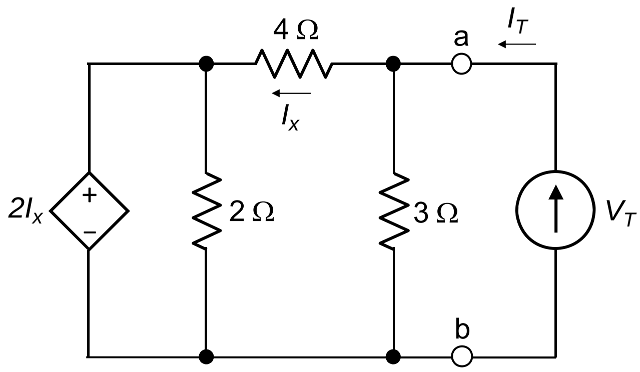


Solution:

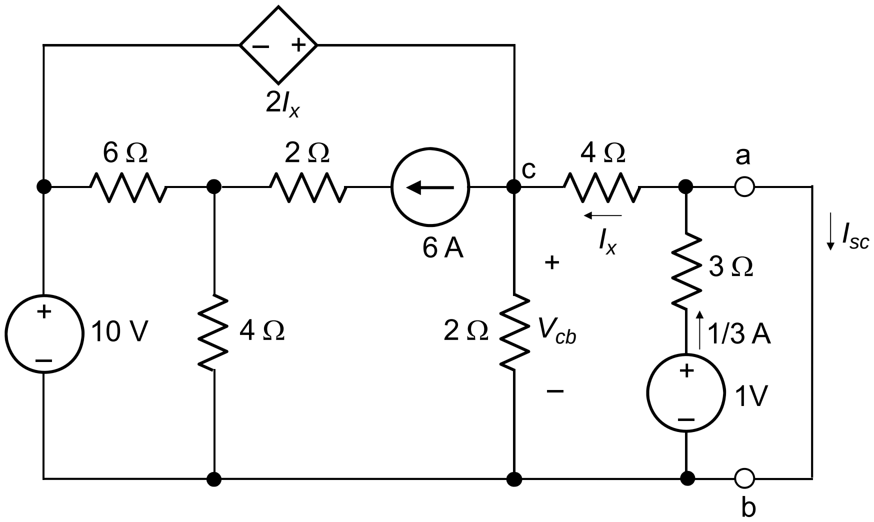
Method 1: Leave the circuit as it is. Considering the mesh on the RHS, $1 = 3I_x + 4I_x + V_{cb}$, where $V_{cb} = 10 + 2I_x$. Substituting for V_{cb} gives $I_x = -1$ A, so that $V_{Th} = 4$ V.



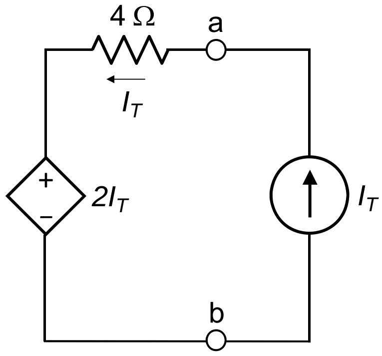
Applying a test source with the independent sources set to zero, the branch containing the 6 A source is open circuited. The 6 Ω and 4 Ω resistors are in parallel with one terminal at node b and the other terminal connected to an open circuit. They do not carry any current and can be removed. The circuit reduces to that shown. $V_T = 4I_x + 2I_x = 6I_x$, and $I_T = I_x + V_T/3$. Substituting for I_x gives $V_T/I_T = R_{Th} = 2$ Ω.



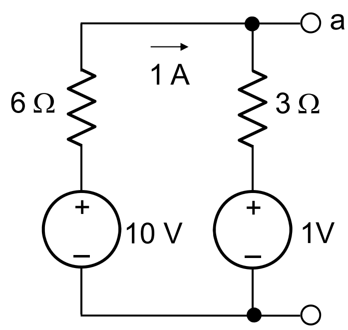
If terminals ab are short circuited, KVL around the outermost loop gives: $10 + 2I_x + 4I_x = 0$, so that $I_x = -5/3$ A; $I_{sc} = -I_x + 1/3 = 2$ A. It follows that $R_{Th} = 4/2 = 2\ \Omega$.



Method 2: If the branch consisting of the 1 V source in series with 3 Ω is removed, $I_x = 0$, the dependent source becomes a short circuit, and the open-circuit voltage between terminals a and b is the same as that of the 10 V source. Hence $V_{Th1} = 10$ V.



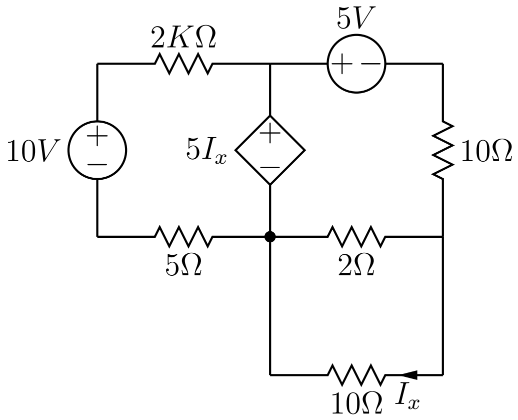
If a test current source I_T is applied between terminals a and b, with the independent sources set to zero, as before, and the 2 Ω resistor removed because it is in parallel with the $2I_x$ ideal voltage source and is redundant as far as V_{ab} is concerned, the circuit reduces to that shown. The $2I_T$ CCVS is equivalent to a 2 Ω resistor, which in series with the 4 Ω resistor gives $R_{Th1} = 6\ \Omega$.



When the branch between terminals a and b is reintroduced, the circuit becomes as shown. With terminals a and b open circuited, the current in the circuit is 1 A in the direction shown and $V_{ab} = 4$ V. If the voltage sources are set to zero, the resistance seen between terminals ab is (6||3) = 2 Ω. Hence, $V_{Th} = 4$ V and $R_{Th} = 2\ \Omega$.

Problem 3

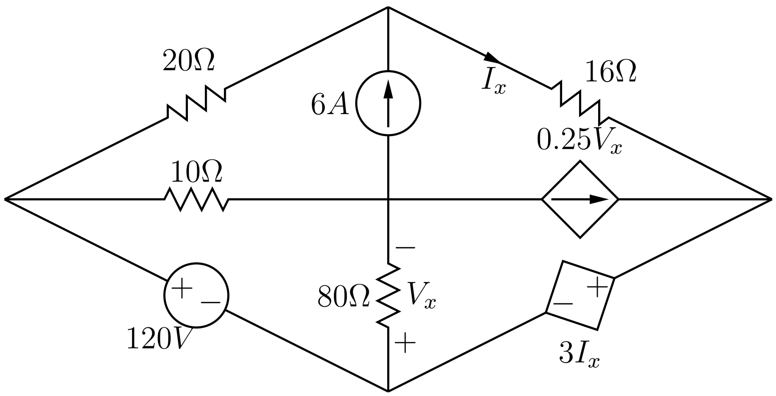
Find I_x.



A) 230.8A
B) 76.92A
C) -76.92A
D) -230.8A
E) None of the above

Problem 4

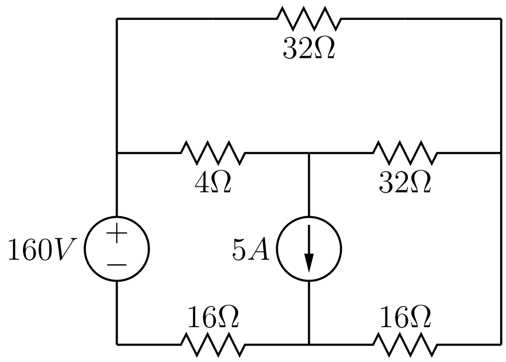
Find V_x.



A) 130.9V
B) -43.64V
C) 43.64V
D) -130.9V
E) None of the above

Problem 5

Find the power associated with the current source.



A) 256W

B) -200W

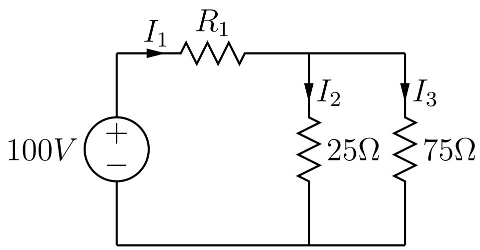
C) 200W

D) -256W

E) None of the above

Problem 6

In the circuit below R_1 is chosen such that $I_3 = 1A$. Find R_1.



A) 12.5Ω

B) 16Ω

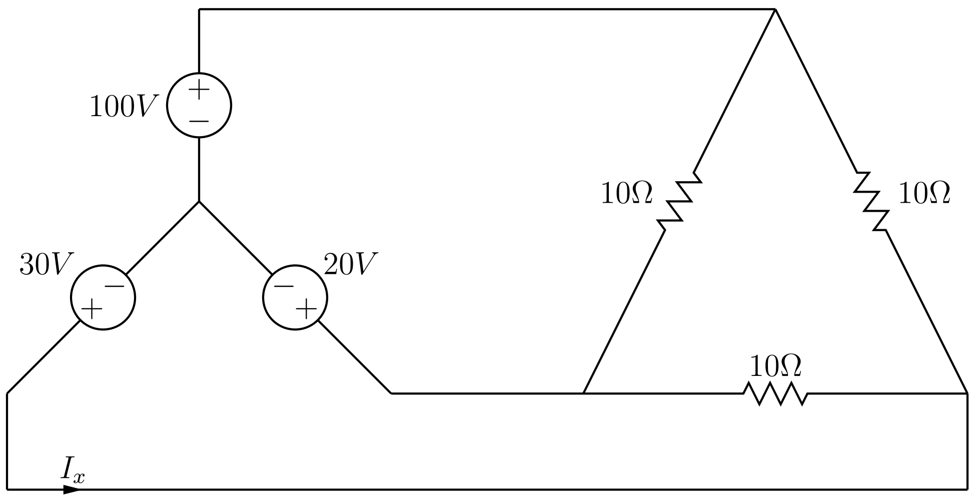
C) 25Ω

D) 6.25Ω

E) None of the above

Problem 7

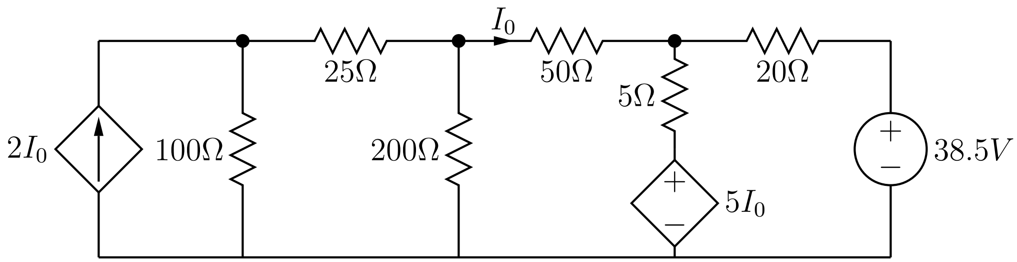
Find I_x.



A) -6A
B) 6A
C) 16A
D) -16A
E) None of the above

Problem 8

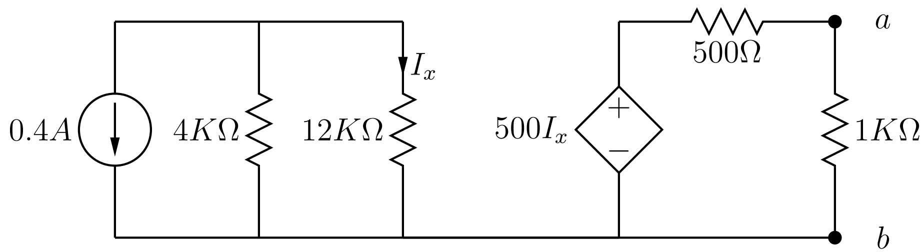
Find I_0.



A) 1.15A
B) -0.65A
C) -1.15A
D) 0.65A
E) None of the above

Problem 9

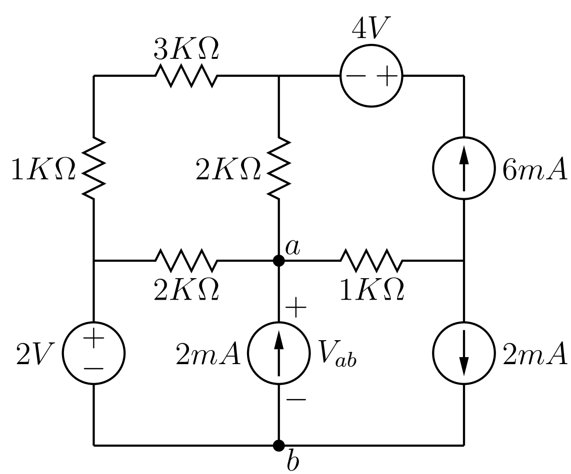
Find the Thevenin equivalent resistance between a and b.



A) 333.33Ω
B) 250Ω
C) 83.33Ω
D) 740.46Ω
E) None of the above

Problem 10

Find the Thevenin equivalent voltage between a and b (V_{ab}).



Problem 11

Find the Thevenin equivalent resistance between a and b of the previous figure.

A) 6KΩ

B) 8KΩ

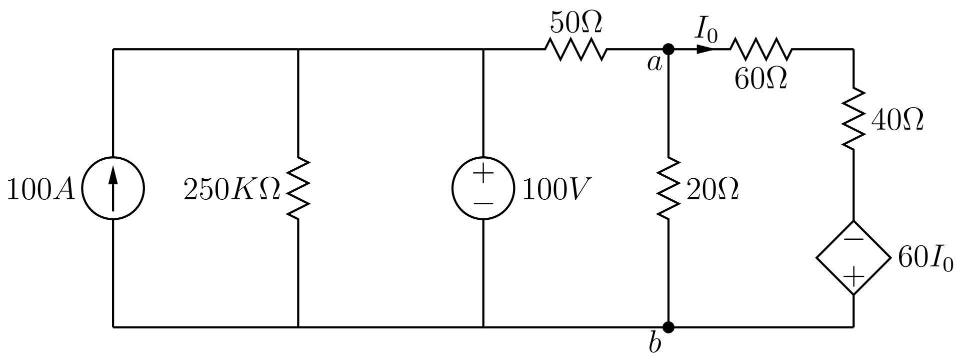
C) 4.5KΩ

D) 1.5KΩ

E) None of the above

Problem 12

Find the Thevenin equivalent resistance between a and b.



A) 6Ω

B) 8.52Ω

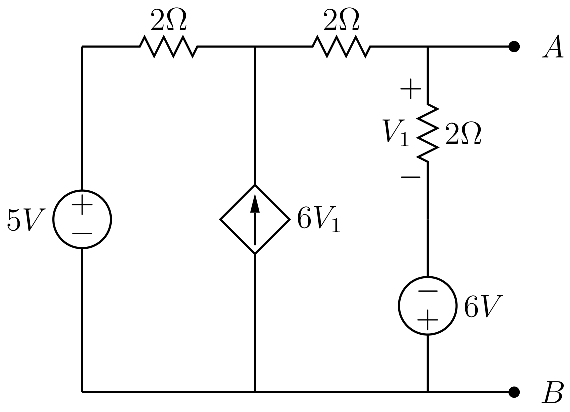
C) 14.28Ω

D) 10.52Ω

E) None of the above

Problem 4

Find V_1.



A) -1.22V

B) 1.22V

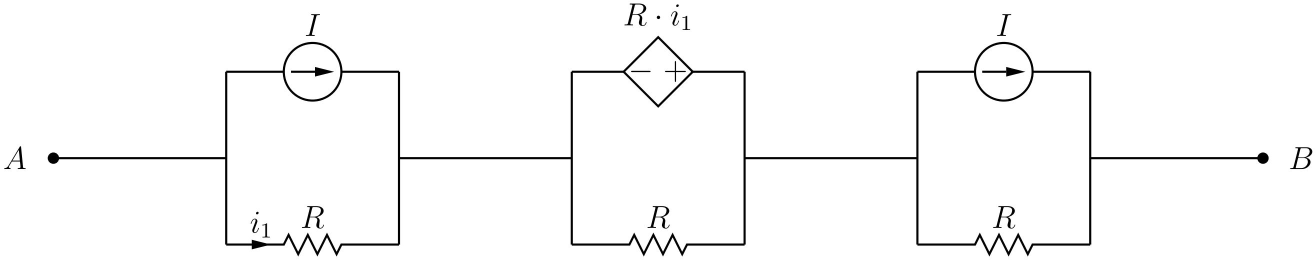
C) -1.57V

D) 1.57V

E) None of the above

Problem 5

Find the Thevenin Equivalent Voltage between A and B (V_{AB}).



A) RI

B) -3RI

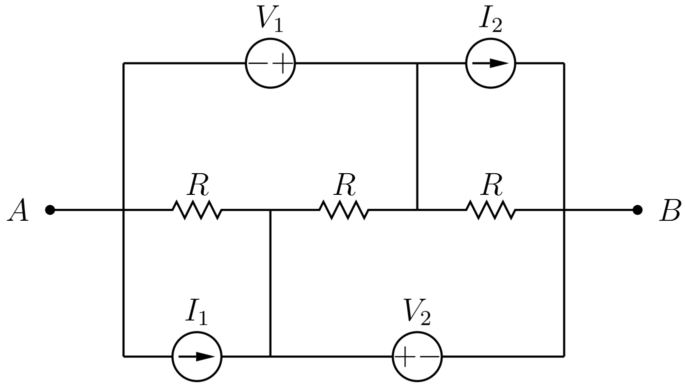
C) -RI

D) 3RI

E) None of the above

Problem 6

Find the Norton equivalent resistance between A and B.



A) 3R

B) 3R/2

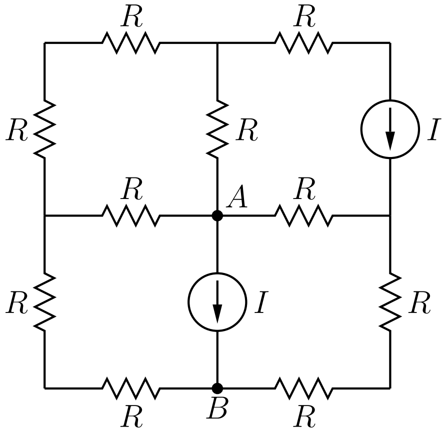
C) R/3

D) R

E) None of the above

Problem 7

Find the Norton equivalent current source between A and B.



A) -2.28I(A)

B) -1.24I(A)

C) -3.21I(A)

D) -6.42I(A)

E) None of the above