

- 9-1 If a 5-A I_1 and a 10-A I_2 flow into point X, how much is the current, I_3 , directed away from that point?
- 9-2 Applying Kirchhoff's current law, write an equation for the currents directed into and out of point X in Prob. 9-1.
- 9-3 In Fig. 9-10, solve for the unknown current, I_3 .
- 9-4 In Fig. 9-11, solve for the following unknown currents: I_3 , I_4 , and I_5 .
- 9-5 Apply Kirchhoff's current law in Fig. 9-11 by writing an equation for the currents directed into and out of the following points:
- Point X
 - Point Y
 - Point Z

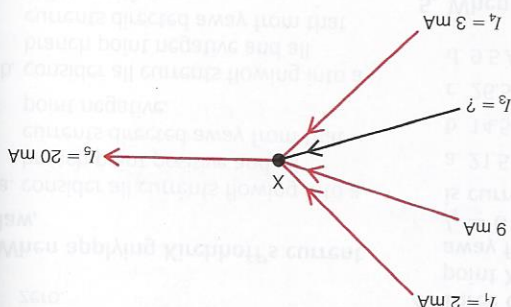


Figure 9-10

Problems

- State Kirchhoff's current law in two ways.
- State Kirchhoff's voltage law in two ways.
- What is the difference between a loop and a mesh?
- What is the difference between a branch current and a mesh current?
- Define *principal node*.
- Define *node voltage*.
- Use the values in Fig. 9-6 to show that the algebraic sum zero for all voltages around the outside loop ACEFDBA.
- Use the values in Fig. 9-6 to show that the algebraic sum is zero for all the currents into and out of node C and node D.

Essay Questions

- How many equations are necessary to solve a circuit with two principal nodes?
 - 3.
 - 2.
- The algebraic sum of +40 V and -30 V is
 - 10 V.
 - +10 V.
 - +70 V.
 - 70 V.
- The algebraic sum of +40 V and -30 V is
 - always consider all resistor voltage drops as positive and all voltage sources as negative.
 - a closed path or loop where the algebraic sum of the voltages must equal zero.
 - the simplest possible closed path around a circuit.
 - a junction where branch currents can combine or divide.
 - none of the above.
- How many equations are necessary to solve a circuit with two principal nodes?
 - 3.
 - 2.
- Using the method of mesh currents, any resistance common to two meshes has
 - two opposing mesh currents.
 - one common mesh current.
 - zero current.
 - none of the above.
- The fact that the sum of the resistor voltage drops equals the applied voltage in a series circuit is the basis for
 - Kirchhoff's current law.
 - node-voltage analysis.
- If you do not go completely around the loop when applying Kirchhoff's voltage law, then
 - the algebraic sum of the voltages will always be positive.
 - the algebraic sum is the voltage between the start and finish points.
 - the algebraic sum of the voltages will always be negative.
 - the algebraic sum of the voltages cannot be determined.
- The fact that the sum of the individual branch currents equals the total current in a parallel circuit is the basis for
 - Kirchhoff's current law.
 - node-voltage analysis.
 - Kirchhoff's voltage law.
 - the method of mesh currents.
- The fact that the sum of the mesh currents equals the total current in a parallel circuit is the basis for
 - Kirchhoff's voltage law.
 - the method of mesh currents.
- The difference between a mesh current and a branch current is an
 - a mesh current is an assumed current and a branch current is an actual current.
 - the direction of the currents themselves.
 - a mesh current does not divide at a branch point.
 - both a and c.
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 - a mesh current is an assumed current and a branch current is an actual current.
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