

# Circuit Analysis Techniques



# Lecture 14

## Tutorial

Lecture delivered by:



# Objectives

At the end of this lecture, student will be able to:

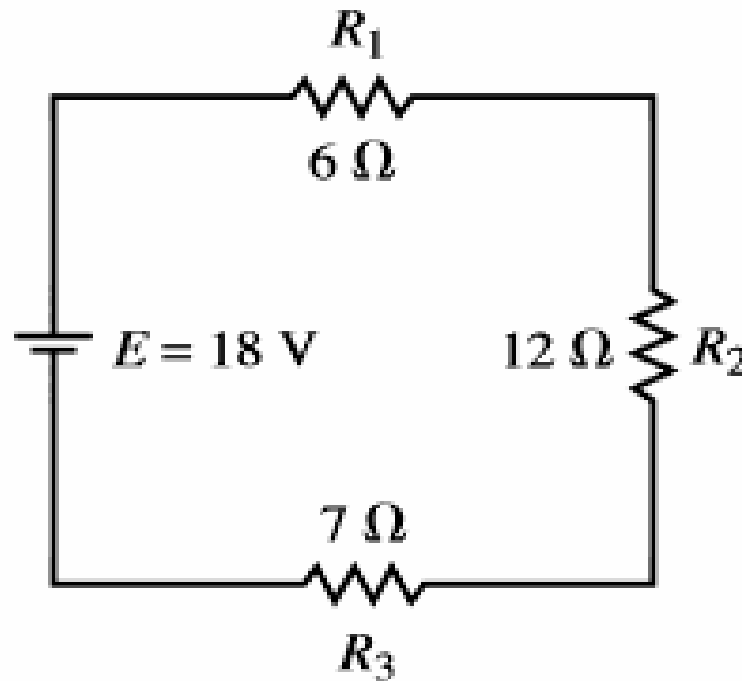
- Solve problems on Voltage divider rule
- Solve problems on KCL and KVL
- Solve problems on Star-delta conversion



# Voltage Divider Rule

## Problem 5:

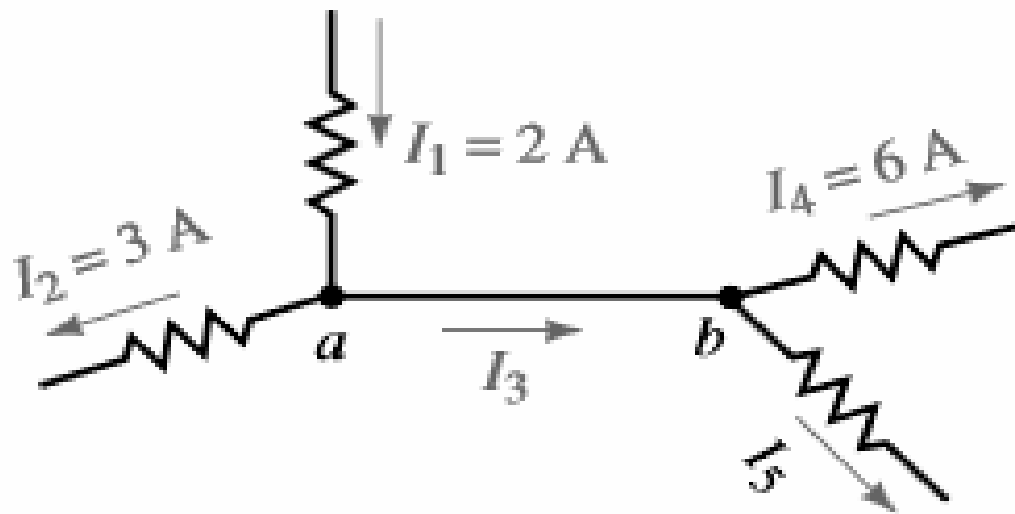
Use the voltage divider rule to determine the voltage across each of the resistors in the circuit shown in figure. And show that the summation of voltage drops is equal to the applied voltage rise in the circuit..



# Kirchhoff's current law

## Problem 6:

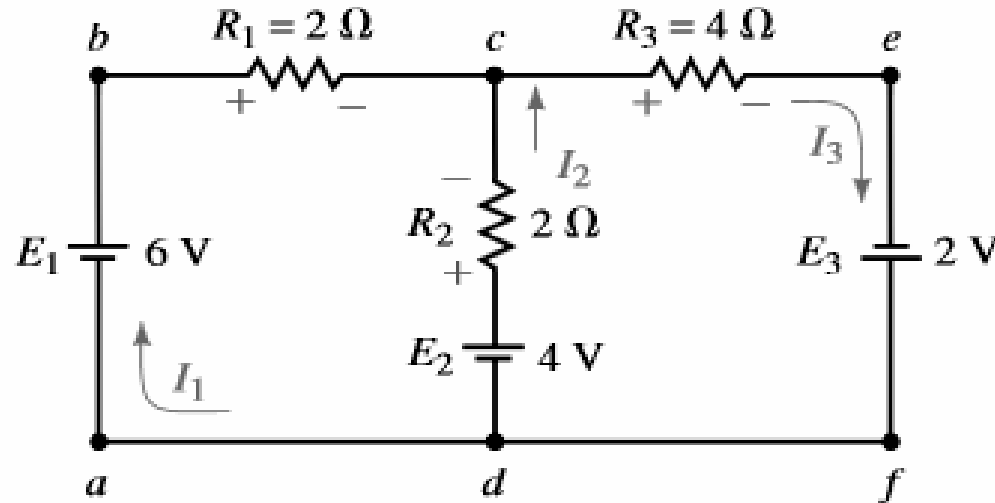
Determine the magnitude and correct direction of the currents  $I_3$  and  $I_5$  for the network of figure.



# Kirchhoff's Current Law

## Problem 7:

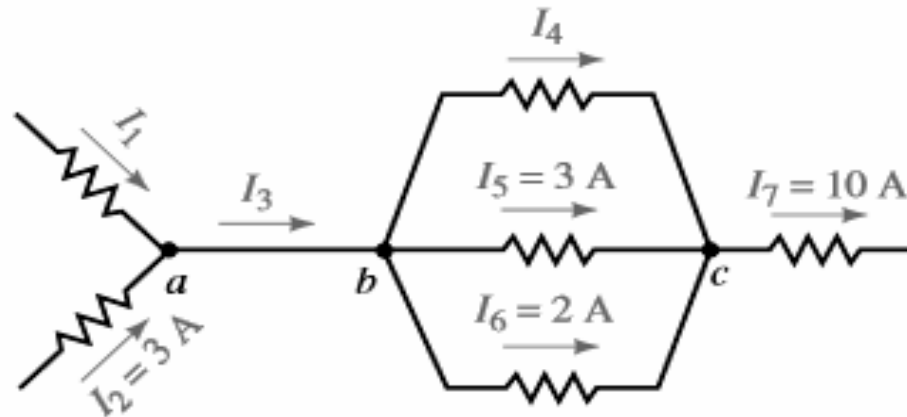
Find the current in each branch in the given circuit .



# Kirchhoff's Current Law

## Problem 8:

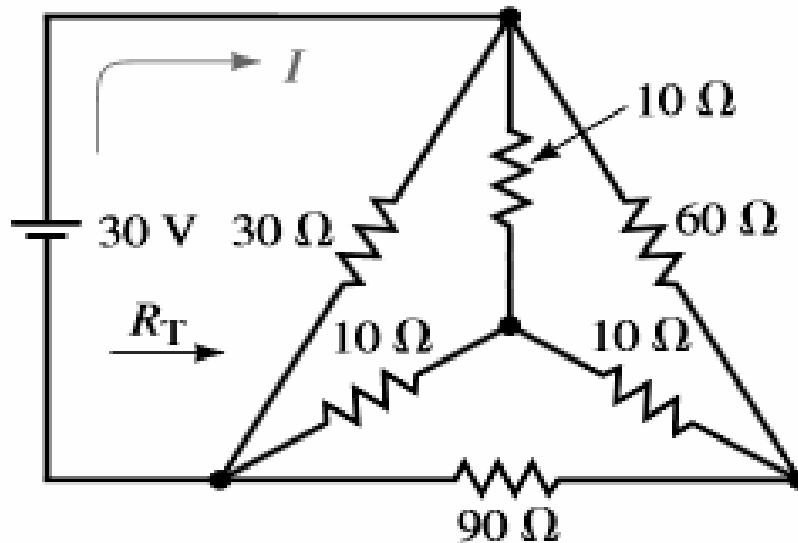
Find the magnitudes of the unknown currents for the given network.



# Star/ Delta Transformation

## Problem 28:

Find the total resistance  $R_T$  and total current  $I$  for the circuit shown in figure.



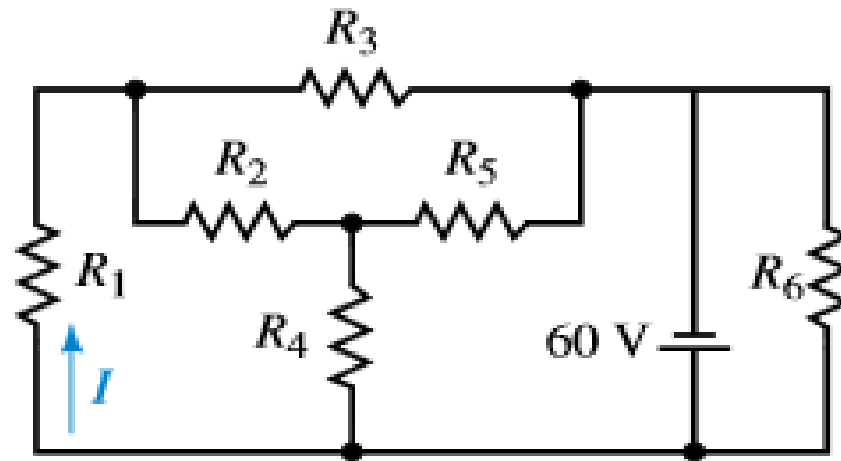
Ans:  $R_T = 11.09$  ohms and  $I = 2.706$  A



# Star/ Delta Transformation

## Problem 9:

Using  $\Delta$ -Y or Y- $\Delta$  conversion, find the current  $I$  for the given circuit.



All resistors are  $4.5 \text{ k}\Omega$

# Summary

- Understand and be able to use Voltage divider rule
- Understand and be able to use KCL and KVL
- Understand and be able to use Star-delta conversion

