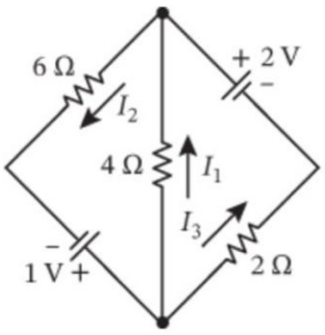
1.10 – Applications of Linear Systems

A **battery** is a source of electric energy, and a **resistor** dissipates electric energy. A **node** is where three or more wires join in a circuit. A **closed loop** begins and ends at the same node.

Ohm's Law: $E = IR$, where E (volts) is voltage drop at a resistor with resistance R (ohms) in a circuit with current I (amperes).

Kirchhoff's Laws (summary): Net current (in and out) at a node is zero, and net voltage change (rises and drops) in a closed loop is zero.

6. Analyze the given electrical circuit by finding the unknown currents.



10. Write a balanced equation for the given chemical reaction.

$C_6H_{12}0_6 \rightarrow C0_2 + C_2H_50H$ [fermentation of sugar]

Theorem 1.10.1 Polynomial Interpolation
Given any n points in the xy-plane that have distinct x-coordinates, there is a unique polynomial of degree $n - 1$ or less whose graph passes through those points.

16. The accompanying figure shows the graph of a cubic polynomial. Find the polynomial.