

ODEs: Applications of Separable Equations

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Example-7 *LR-Series Circuit* (p-78, DGZ)

Kirchhoff's second law states that the sum of the voltage drop across the inductor ($L(di/dt)$) and the voltage drop across the resistor (iR) is the same as the impressed voltage ($E(t)$) on the circuit as shown in the figure below.

A 12-volt battery is connected to an *LR*-series circuit in which the inductance is 12 *henry* and the resistance is 10 *ohms*. Determine the current i if the initial current is zero.

