

Source Transformation-1 (EC_network_5.sqproj)

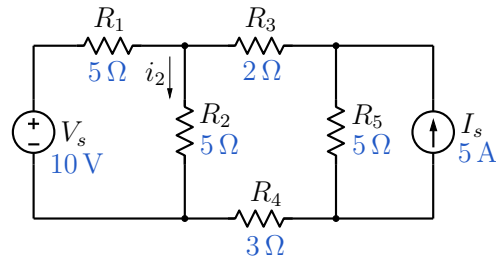


Figure 1: Source transformation example.

Question: Using source transformation, find the current i_2 in the circuit shown in Fig. 1.

Solution:

The circuit can be simplified using source transformation as shown in Figs. 2 (a)-(c). Using current division for the circuit of Fig. 2 (c), we get

$$i_2 = \frac{\frac{1}{R_2}}{\frac{1}{5} + \frac{1}{R_2} + \frac{1}{10}} \times (2 + 2.5) = \frac{0.2 \text{ U}}{(0.1 + 0.2 + 0.2) \text{ U}} \times 4.5 = 1.8 \text{ A.} \quad (1)$$

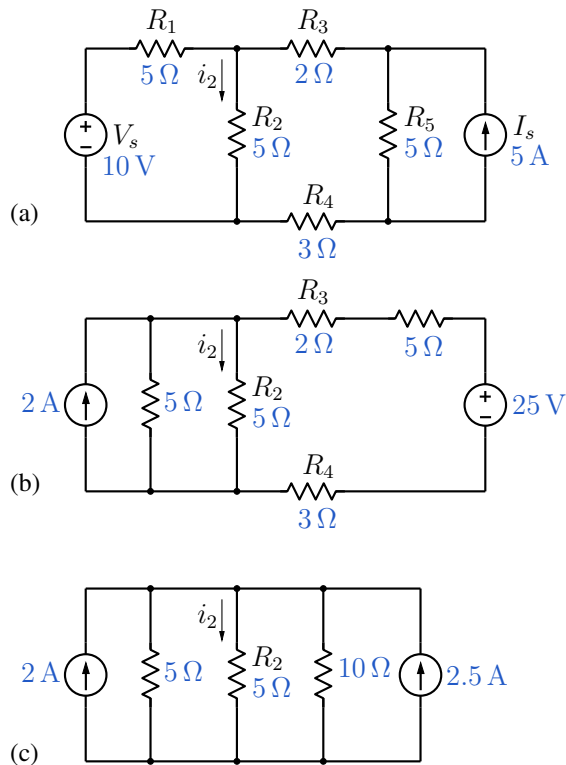


Figure 2: Simplification of the circuit of Fig. 1 using source transformation.

SequelApp Exercises:

1. Find R_2 for $i_2 = 1.125$ A (with other component values as shown in Fig. 1).
2. Find V_s for $i_2 = 1.4$ A (with other component values as shown in Fig. 1).

Verify your answers using SequelApp.