

1. In the circuit of **Fig. 1**, the box contains only resistors to construct a network. If $i_A = 10$ A and $i_B = 25$ A, then $v_4 = 100$ V, while $v_4 = -50$ V if $i_A = 25$ A and $i_B = 10$ A. Find v_4 if $i_A = 20$ A and $i_B = -10$ A.

(sol: $-\frac{1000}{7}$ V)

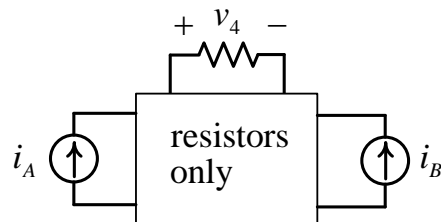


Fig. 1

Given

$$10 \cdot a + 25 \cdot b = 100$$

$$25 \cdot a + 10 \cdot b = -50$$

$$\begin{pmatrix} A \\ B \end{pmatrix} := \text{find}(a, b) = \begin{pmatrix} -4.2857143 \\ 5.7142857 \end{pmatrix}$$

$$20 \cdot A - 10 \cdot B = -142.857$$