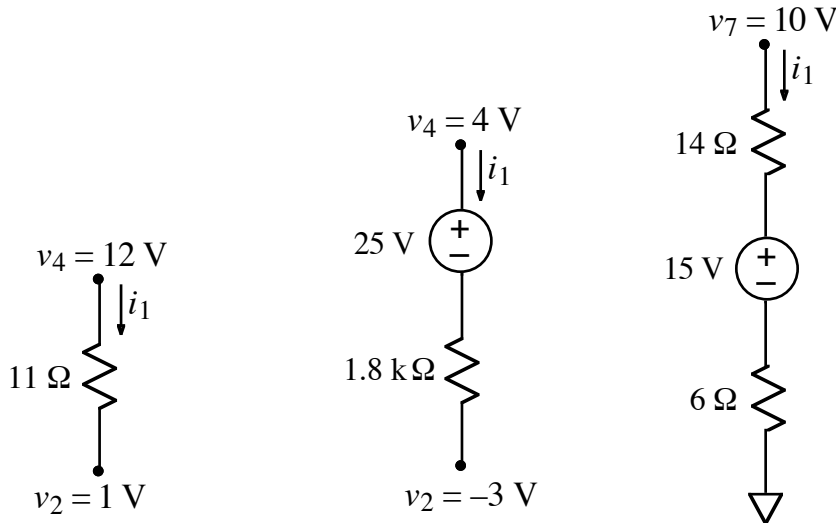


Ex:



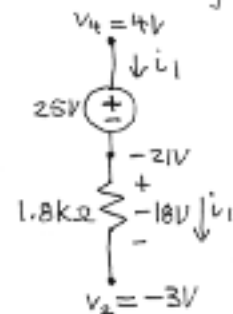
Find the value of current,  $i_1$ , for each of the above circuits.

SOL'N: The current for the circuit on the left is given by Ohm's law:

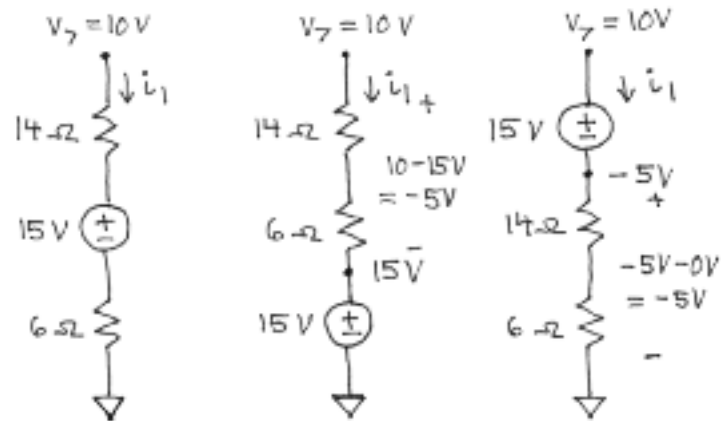
$$i_1 = \frac{12V - 1V}{11\Omega} = \frac{11V}{11\Omega} = 1A$$

For the circuit in the center, the voltage below the 25V source is  $4V - 25V = -21V$ . The voltage drop across the  $1.8k\Omega$  is  $-21V - (-3V) = -18V$ . By Ohm's law, the current in the  $1.8k\Omega$  is the voltage drop over the resistance:

$$i_1 = \frac{-18V}{1.8k\Omega} = -10mA$$



For the circuit on the right, we get the same current,  $i_1$ , if we slide resistors thru the v-source. The following three circuits have the same current,  $i_1$ .



Combining resistors,  $6\ \Omega + 14\ \Omega = 20\ \Omega$ , we have the current  $i_1$  from Ohm's law:

$$i_1 = \frac{-5\text{V}}{20\ \Omega} = -0,25\text{ A}$$