Ejercicio 1

1

Resistencia R12//R13

$$R12//R13 = \frac{220\Omega \times 220\Omega}{220\Omega + 220\Omega} = 110\Omega$$

2

Resistencia Total

$$R_T = R11 + R12//R13 + R13 = 540\Omega$$

3

Corriente Total

$$I_T = \frac{5V}{540\Omega} = \frac{1}{108}A \approx 0.009A$$

4

Valores R11

$$V_{R11} = 110\Omega \times \frac{1}{108}A = \frac{55}{54}V \approx 1V$$

$$I_{R11} \approx 0.009A$$

4

Valores R14

$$V_{R11} = 330\Omega \times \frac{1}{108}A = \frac{55}{18}V \approx 3V$$

$$I_{R11} \approx 0.009A$$

4

Valores R12

$$V_{R14} = 220\Omega \times \left(\frac{1}{180}A \ \div 2\right) = \frac{55}{54}V \approx 1V$$

$$I_{R14} = \frac{1V}{220\Omega} \approx 0.0045A$$

4

Valores R12

$$V_{R13} = V_{R12}$$

$$I_{R13} = I_{R14}$$

Ejercicio 2

Valores R21//R22

1 $$R21//R22 = \frac{220\Omega \times 100\Omega}{220\Omega + 100\Omega} = \frac{275}{4}\Omega = 68.75\Omega$$

Valores R23//R24

2 $$R21//R22 = \frac{330\Omega \times 150\Omega}{330\Omega + 150\Omega} = \frac{825}{8}\Omega = 103.125\Omega$$

Resistencia total

3 $$R_T = 68.75\Omega + 103.125\Omega = 171.875\Omega$$

Corriente total

4 $$I_T = \frac{5V}{171.875\Omega} \approx 0.03A$$

Corriente R21//R22

5 $$I_{R21//R22} = 0.03A$$

Voltaje R21//R22

6 $$V_{R21//R22} = 0.03A \times 68.75\Omega = 2.06V$$

Voltaje R21 y R22

7 $$V_{R21} = V_{R22} = 2.06V$$

Corriente R23//R24

8 $$I_{R23//R24} = 0.03A$$

Voltaje R23//R24

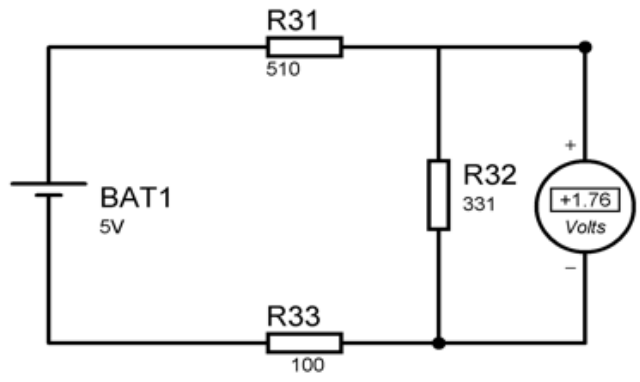
9 $$V_{R23//R24} = 0.03A \times 103.125\Omega = 3.09V$$

Voltaje R23//R24

10 $$V_{R23} = 3.09V$$

Ejercicio 3

ELEMENTO	VOLTAJE	RESISTENCIA	CORRIENTE
R31	$0.5V$	510 Ω	0.0053 A
R32	1.76 V	331 Ω	0.0053 A
R33	$2.2V$	100 Ω	0.0053 A



$$\boldsymbol{I}_{\boldsymbol{R}32} = \frac{1.76}{\boldsymbol{R}32}$$

$$\boldsymbol{I\tau} = \frac{5\boldsymbol{V}}{100 + 510 + \boldsymbol{R}32}$$

$$\frac{1.76}{\boldsymbol{R}32} = \frac{5\boldsymbol{V}}{610 + \boldsymbol{R}32}$$

$$1.76\left(610 + \boldsymbol{R}32\right) = 5(\boldsymbol{R}32)$$

$$1074 + 1.76(\boldsymbol{R}32) = 5(\boldsymbol{R}32)$$

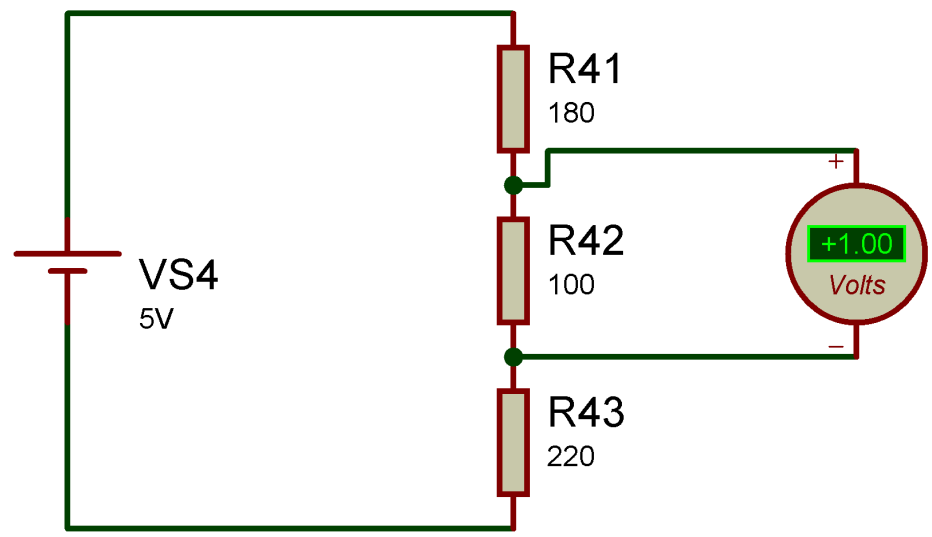
$$1074 = 5(\boldsymbol{R}32) - 1.76(\boldsymbol{R}32)$$

$$1074 = 3.24(\boldsymbol{R}32)$$

$$\frac{1074}{3.24} = \boldsymbol{R}32$$

$$331 = \boldsymbol{R}32$$

Ejercicio 4



Corriente total

1

$$I_T = \frac{1V}{100\Omega}$$

$$I_T = 0.01A$$

Voltaje Resistencia R43

2

$$I_{R43} = 220\Omega \times 0.01A$$

$$I_{R43} = 2.2V$$

Voltaje Resistencia R41

3

$$-5V + V_{R41} + 1V + 2.2V = 0$$

$$V_{R41} = 5V - 1V + 2.2V$$

$$V_{R41} = 1.8V$$

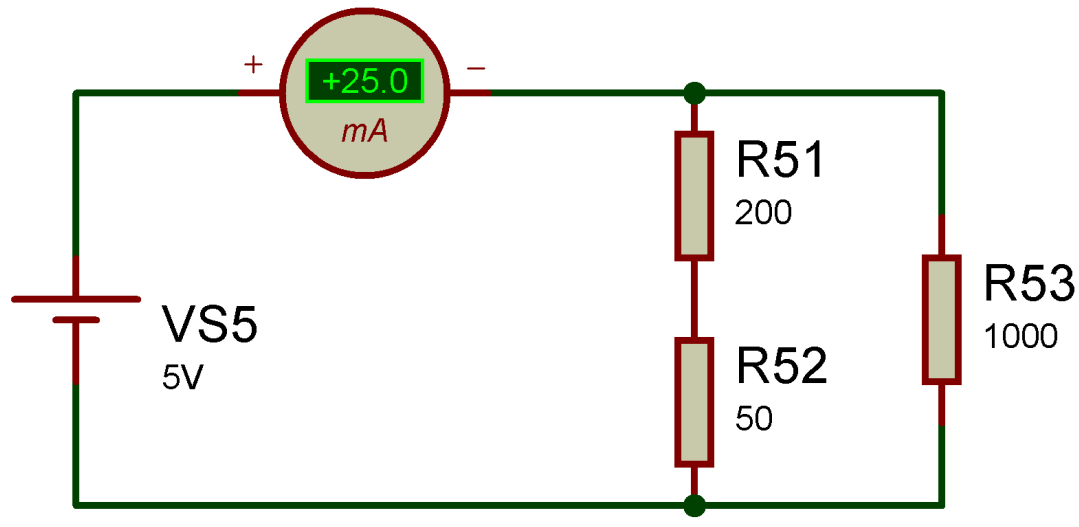
Resistencia R41

4

$$R_{R41} = \frac{1.8V}{0.01A}$$

$$\boxed{R_{R41} = 180\Omega}$$

Ejercicio 5



Corriente R53

1

$$I_{R53} = \frac{5V}{1000\Omega}$$

$$I_{R53} = 0.005A$$

Voltaje R51

2

$$V_{R51} = 1000\Omega \times 0.02A$$

$$V_{R51} = 4V$$

Voltaje R52

3

$$-5V + 4V + V_{R52} = 0$$

$$V_{R52} = 1V$$

Resistencia R52

4

$$R_{R52} = \frac{1V}{0.02A}$$

$$\boxed{R_{R52} = 50\Omega}$$

Ejercicio 6

1

Resistencia R52

$$R_{R52} = \frac{1V}{0.02A}$$

$$\boxed{R_{R52} = 50\Omega}$$