Faculty Of Engineering and Technology

Electrical and Computer Engineering Department

CIRCUITS AND ELECTRONICS LABORATORY

ENEE 2103

Experiment #: 2

Circuit Laws and Theorems

Prepared by:

Rahaf Naser 1201319

Instructor:

Dr. Mahran Quraan

Teacher assistant:

Eng. Rafah Rahhal

Date: 8/4/2023

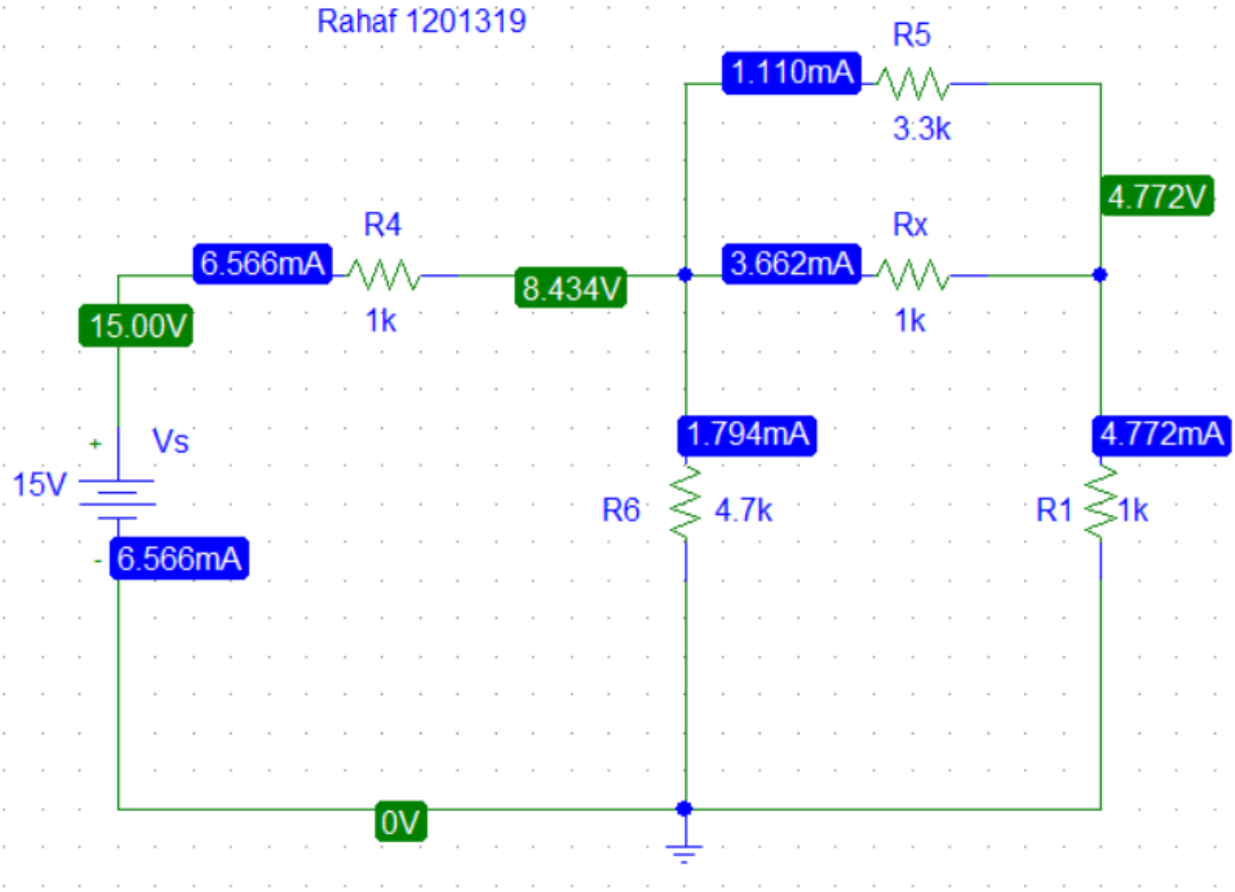
Table of contents:

Table of Figures:

Table of Tables:

1.KVL and KCL

First when RX = 1k

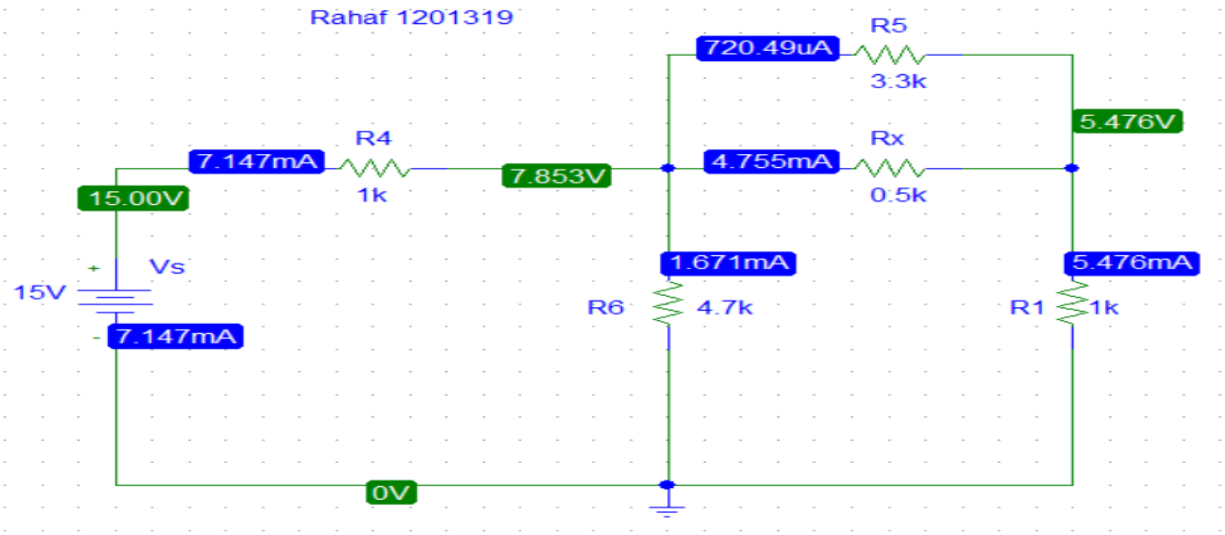


Fig(1.1)

V1	I1	V4	I4	V5	I5	V6	I6	VX	IX
4.77	4.77	6.6	6.56	3.63	1.11	8.4	1.79	3.64	3.66

Table(1.1)

Second when Rx = 0.5k



Fig(1.2)

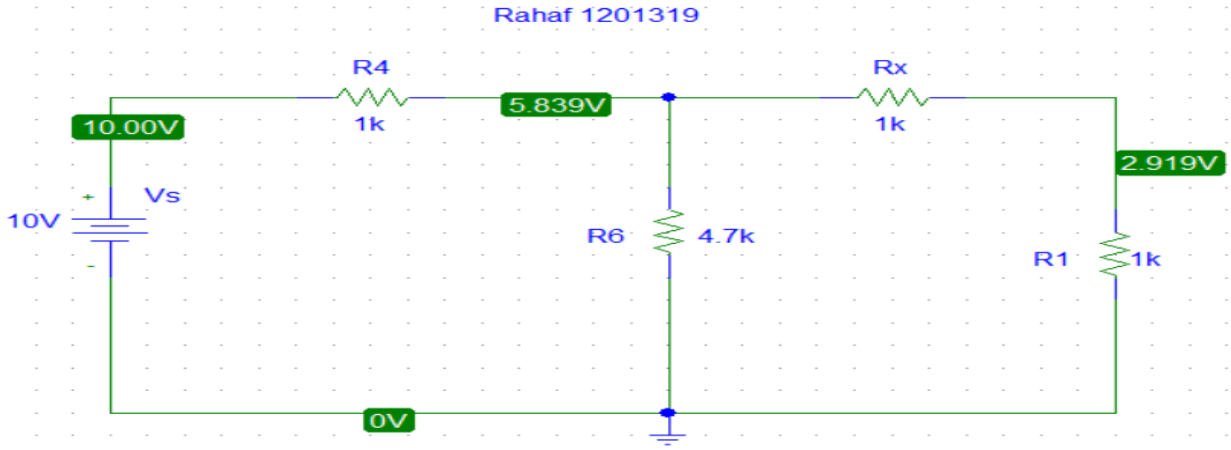
V1	I1	V4	I4	V5	I5	V6	I6	VX	IX
5.4	5.4	7.1	7.1	2.37	0.72	7.8	1.67	2.4	4.755

Table(1.2)

2.voltage and current division

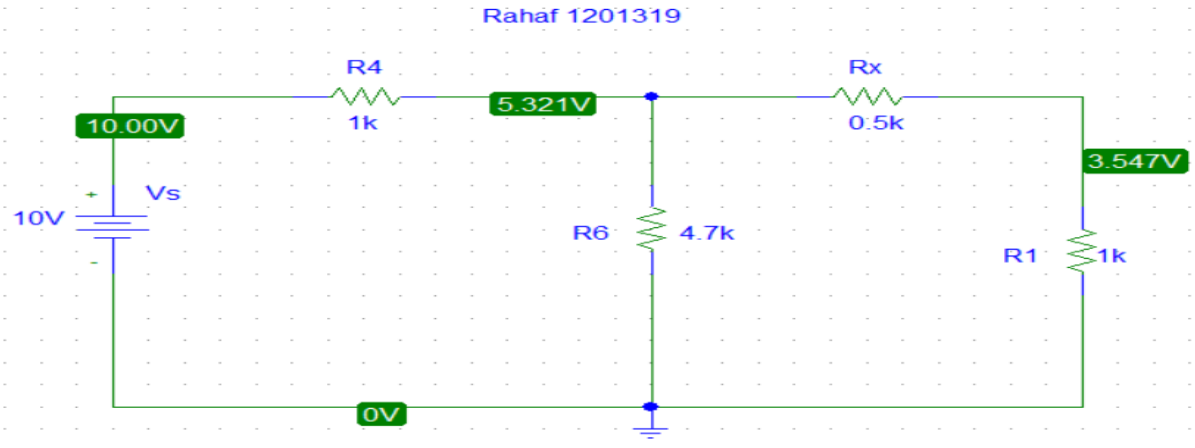
2.1. voltage division

First when Rx = 1k



Fig(2.1.1)

Second when Rx = 0.5k



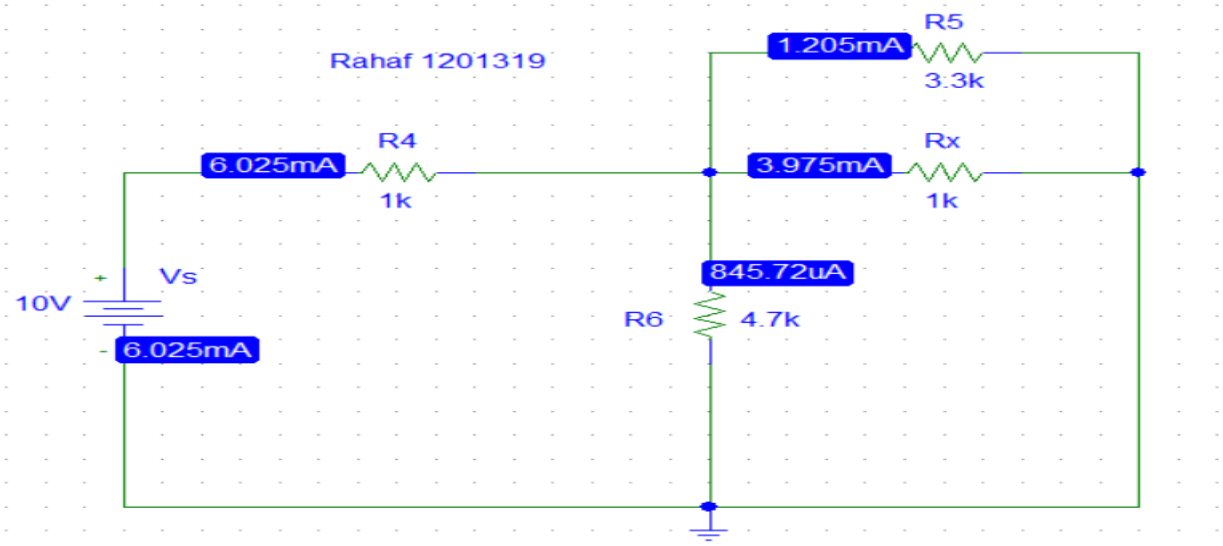
Fig(2.1.2)

pot	V1	V4	V6	vx
Rx	2.91	4.2	5.839	2.9
0.5Rx	3.55	4.7	5,3	1.77

Table(2.1)

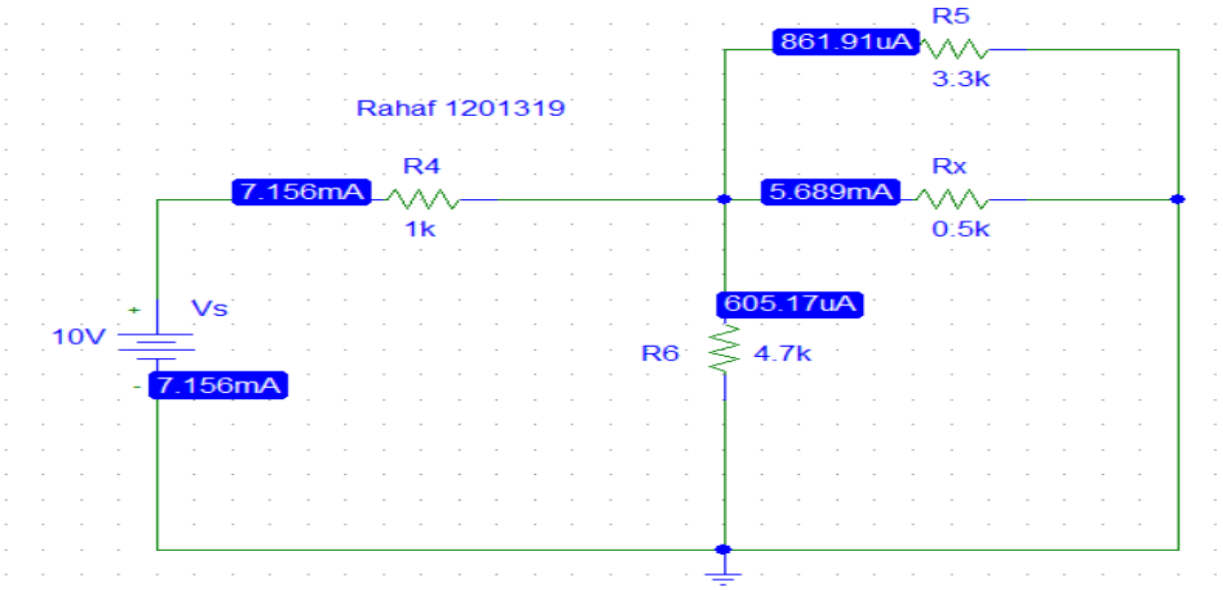
2.2.current division

First when Rx = 1k



Fig(2.2.1)

Second when RX = 0.5



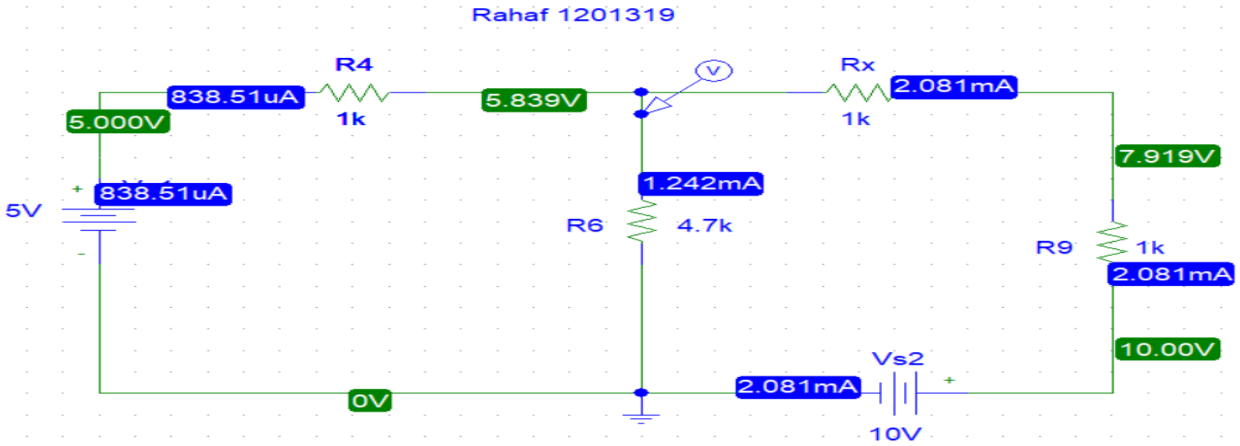
Fig(2.2.2)

Pot.	I4	I5	I6	IX
RX	6.025	1.205	845.7u	3.98
0.5RX	7.2	861.9u	605.17u	5.69

Table(2.2)

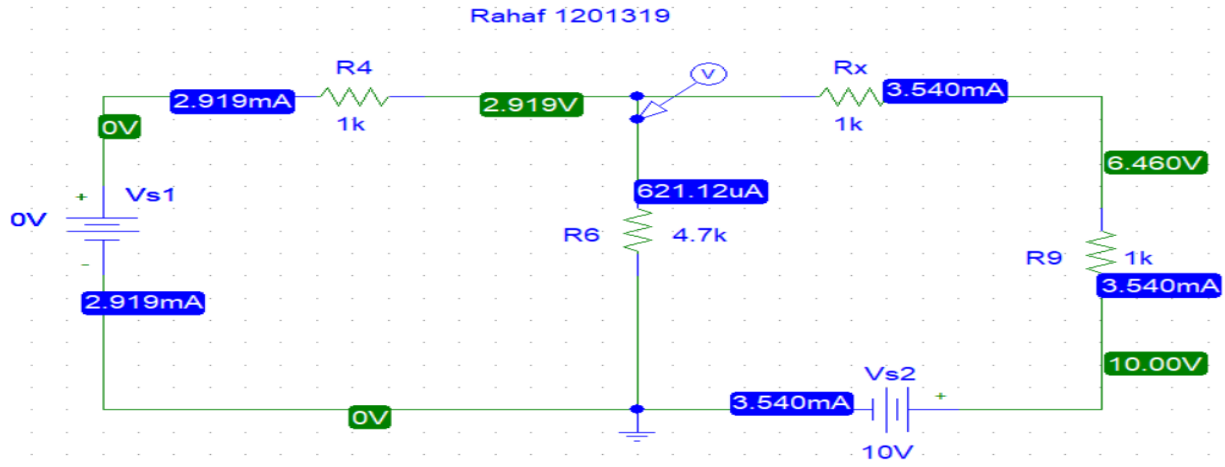
3.Superposition

First when VS1=5v and VS2 = 10N



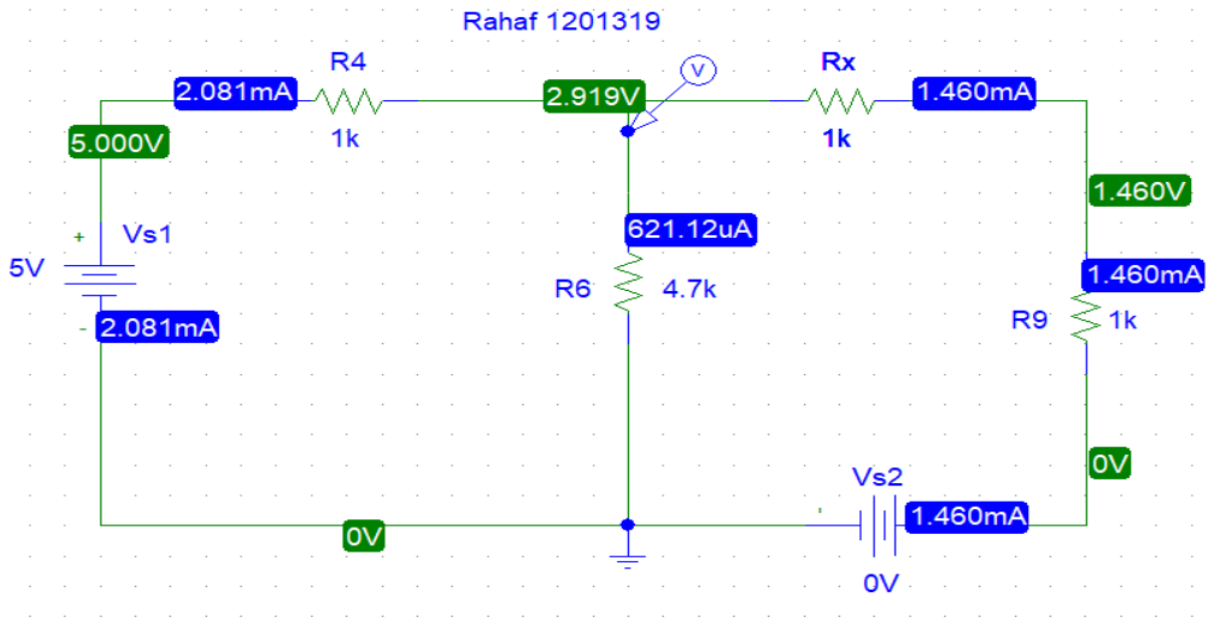
Fig(3.1)

Second when VS1 = 0V and VS2 = 10v



Fig(3.2)

Third when VS1 = 5V and VS2 = 0v

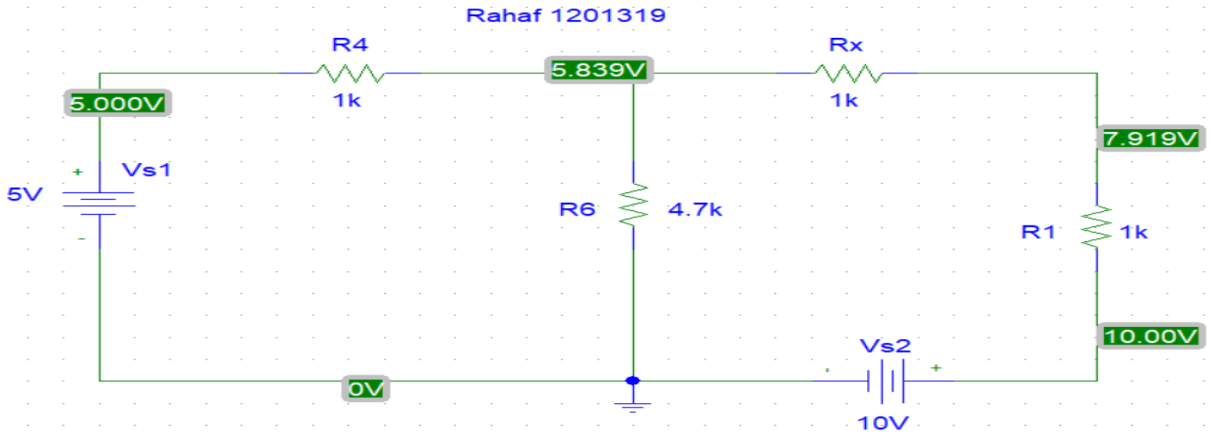


Fig(3.3)

VS1(volt)	VS2(volt)	V6(volt)	I6(mA)
5	10	5.84	1.242
0	10	2.92	0.621
5	00	2.919	0.621

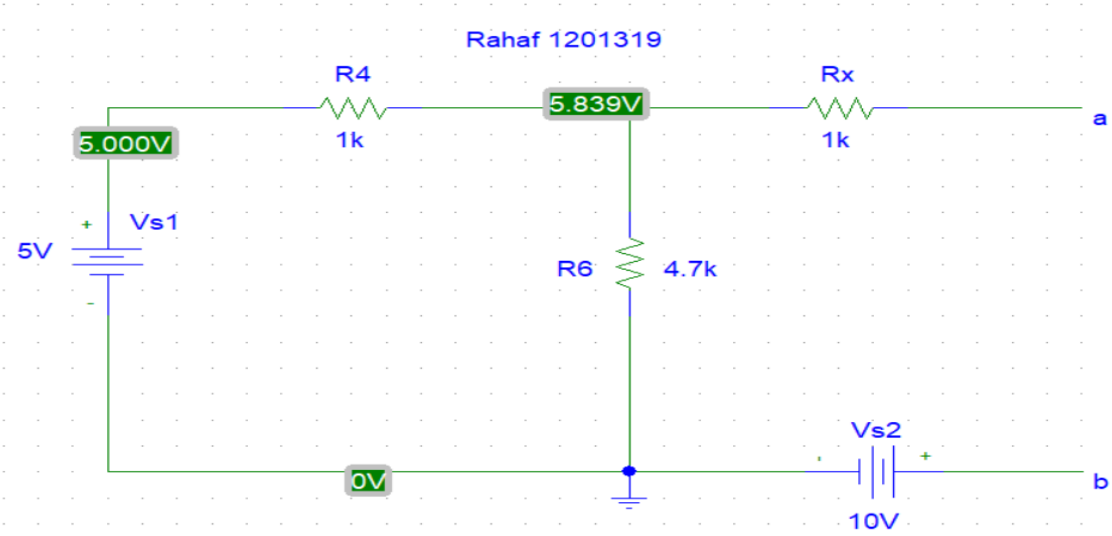
Table(3.1)

4.Thevinin and Norton



Fig(4.1)

Voltage across R1 = 10-7.919=2.1v

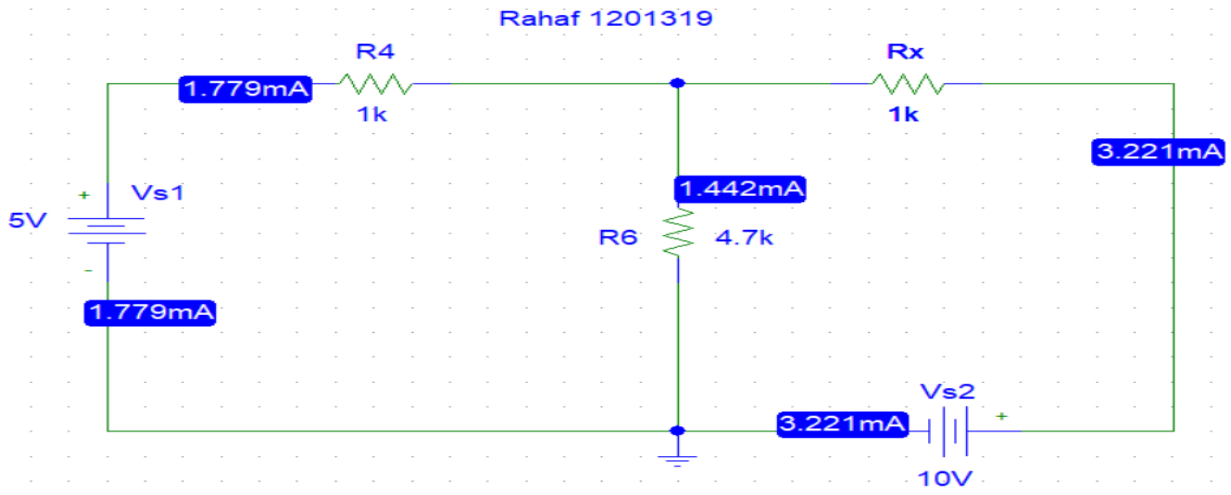


Fig(4.2)

Voltage on the terminals a and b = v of Rx -10

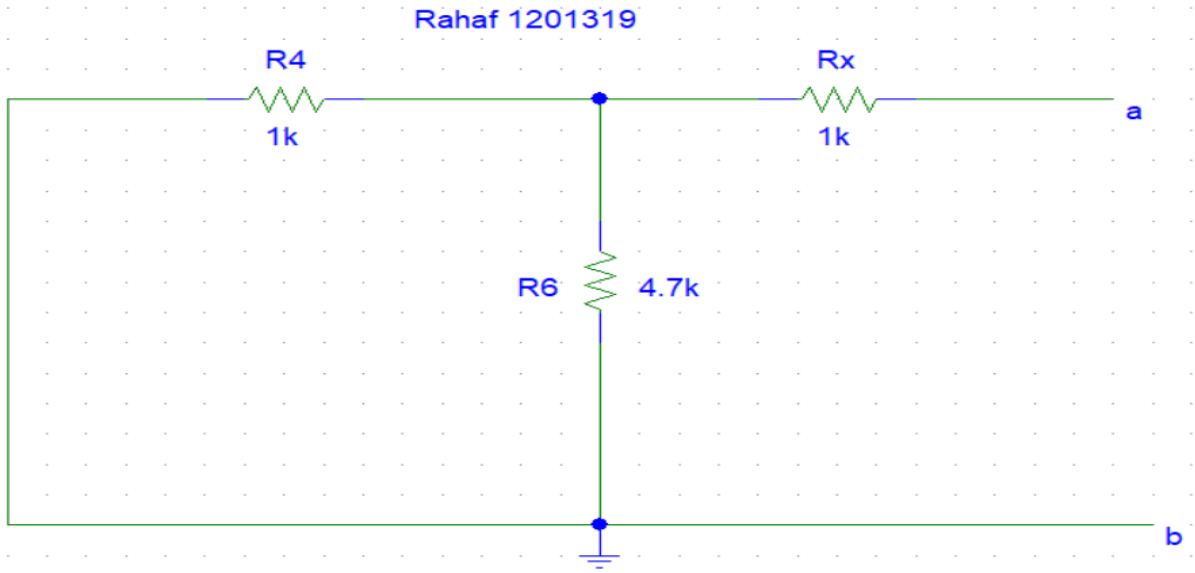
Voltage across R6 = (4.7/5.7)*5=4.122v (voltage divider)

Voltage on the terminals a and b = 4.122-10=-5.877v



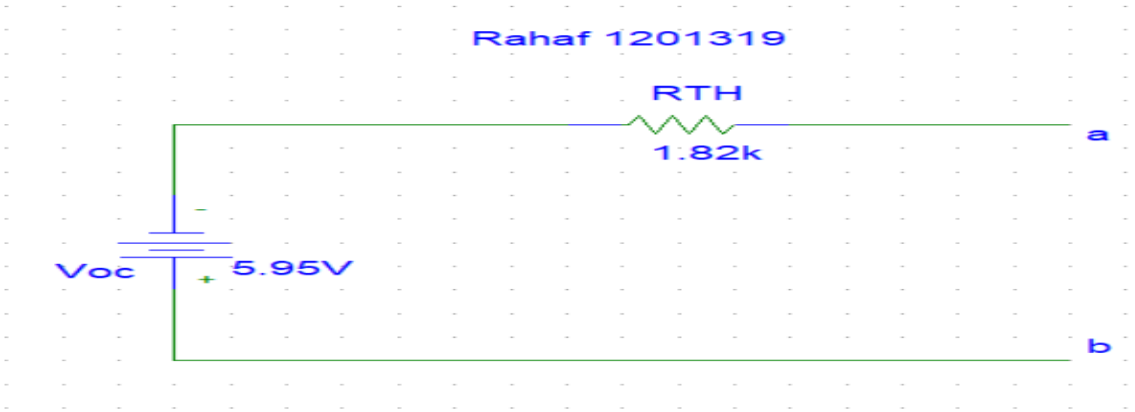
Fig(4.3)

The current in short circuit (Isc) = 3.221mA



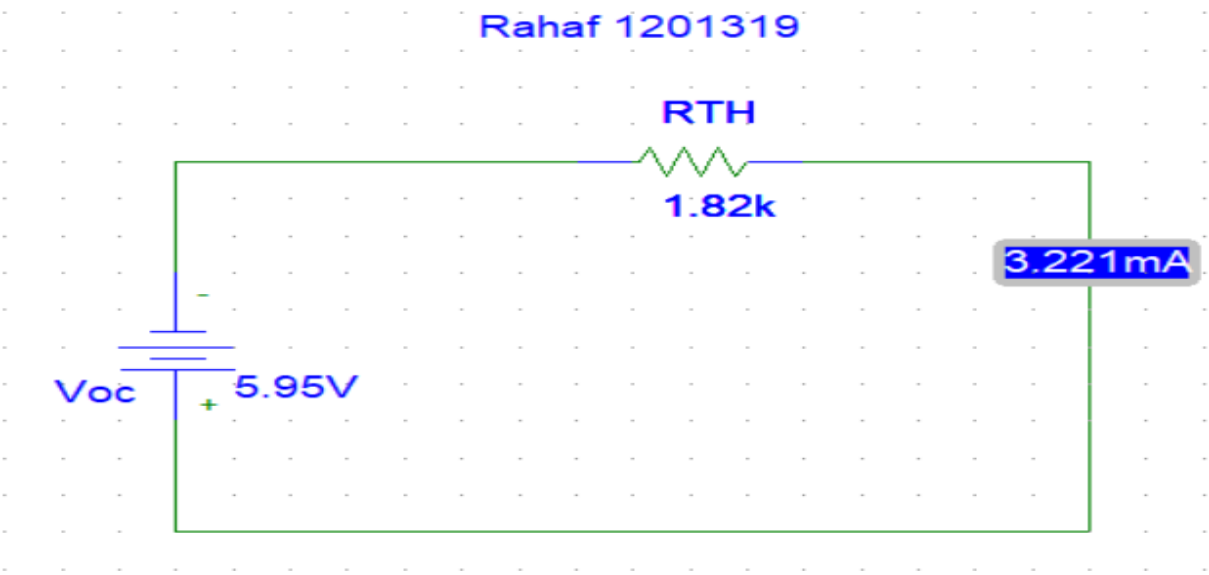
Fig(4.4)

RTH = (R4//R6)+Rx=1.82k



Fig(4.5)

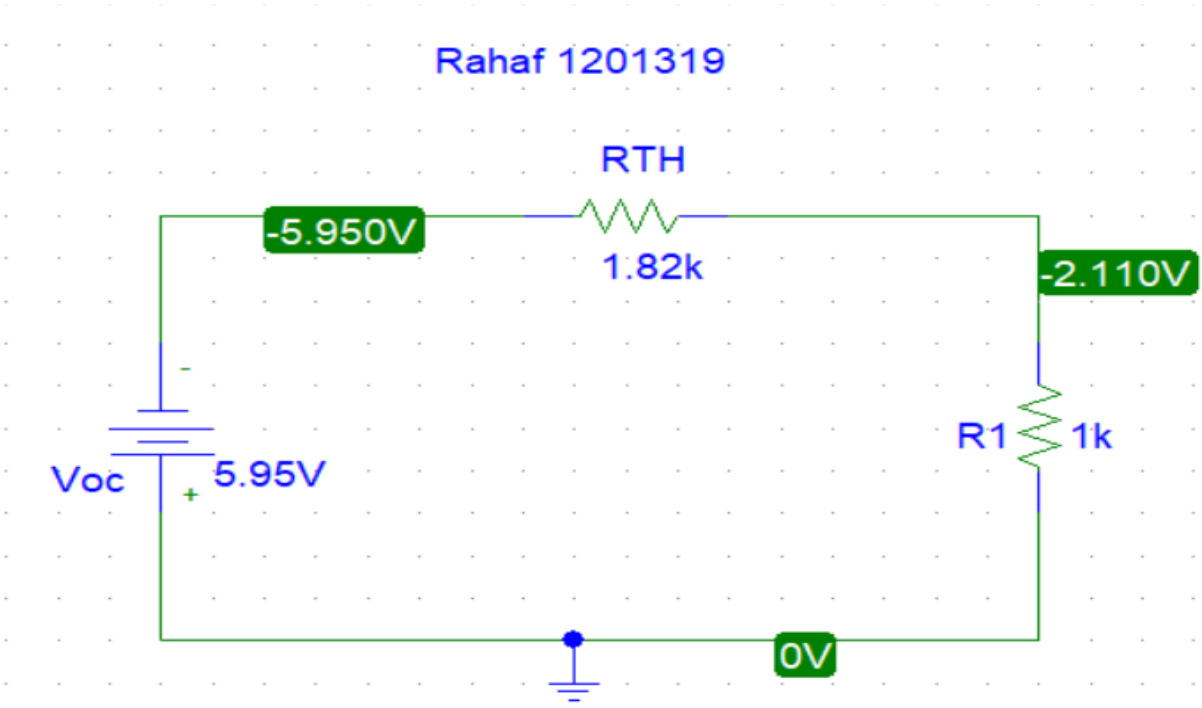
Voltage between a and b = -5.95v



Fig(4.6)

Current in short circuit = 3.221mA

After connect R1 across terminals a-b



Fig(4.7)

Voltage across R1 = -2.110v