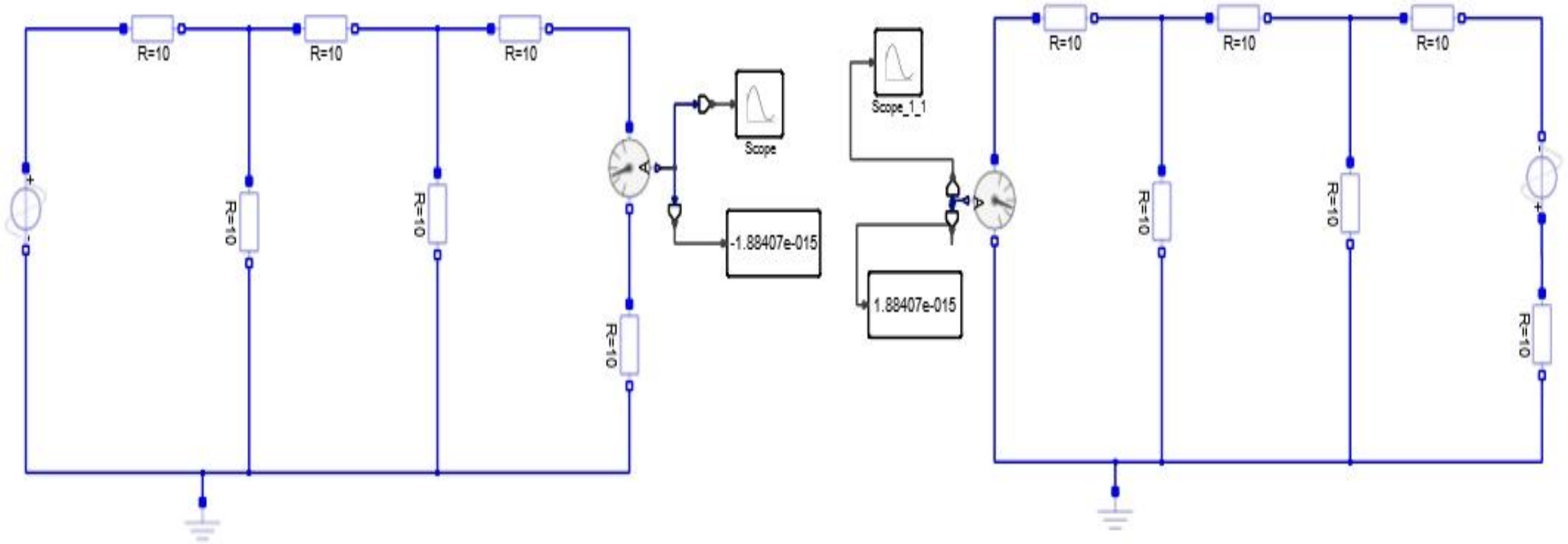
Verification Of Reciprocity Theorem

Reciprocity Theorem

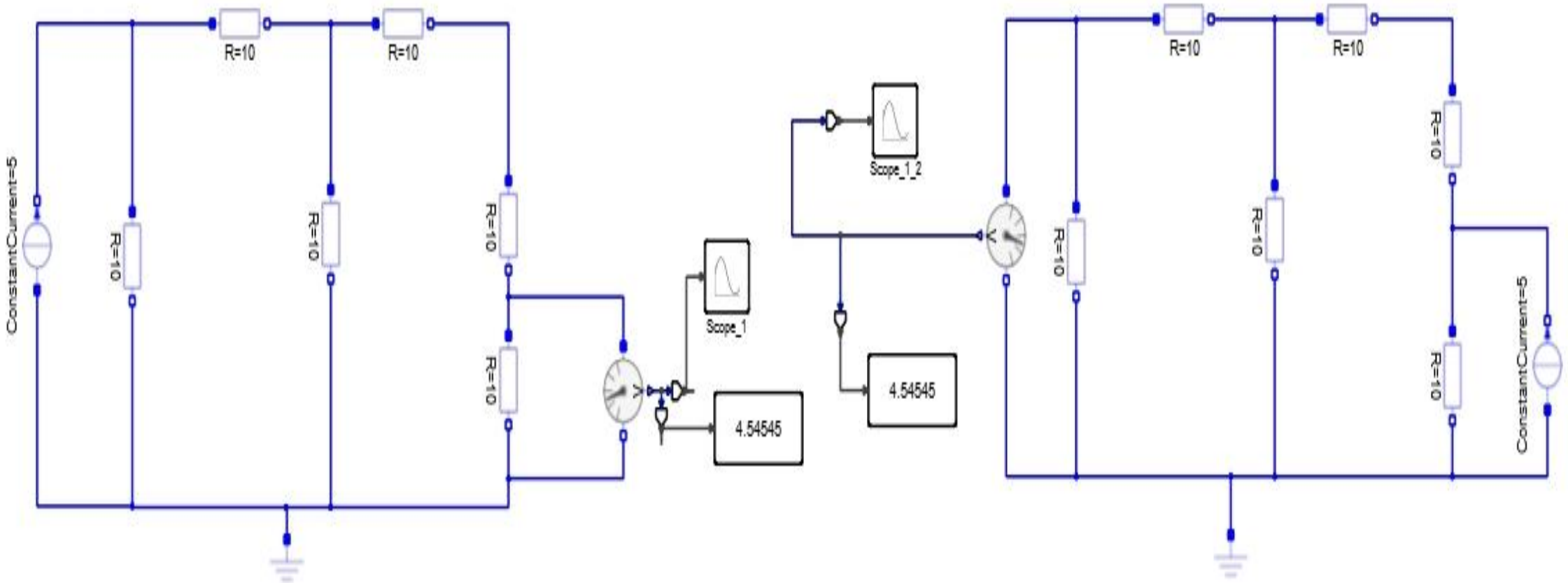
- The reciprocity theorem is applicable only to single-source networks and states the following:
- The current I in any branch of a network, due to a single voltage source V anywhere in the network, will equal the current through the branch in which the source was originally located if the source is placed in the branch in which the current I was originally measured.
- The location of the voltage source and the resulting current may be interchanged without a change in current

Circuit Topology For Reciprocity Theorem

Circuit with the Voltage Source



Circuit with the Current Source



Conclusion

- From the above described circuits we can clearly observe that the Current level of the circuit when the voltage sources are connected.
- The Current level of the circuit is same when the voltage and the load is interchanged from the source end and the load end in case of the sine wave voltage as a source.
- The Current level of the circuit is same when the current source and the load is interchanged from the source end and the load end in case of the Constant current source.
- We can clearly observe that the Current in the circuit is equal in case of the voltage source or the current source, when the load end and the source end are interchanged. Hence the Reciprocity theorem is verified.