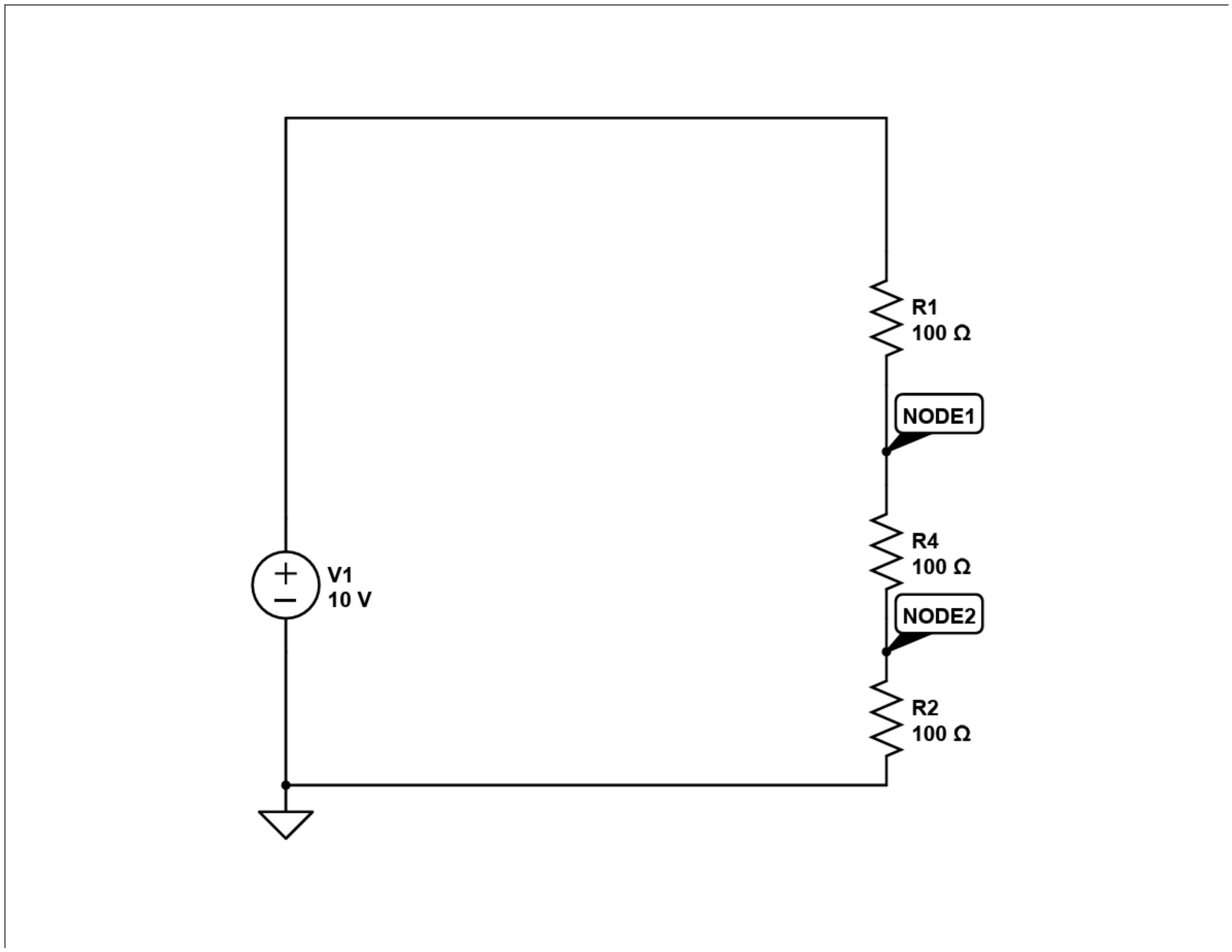
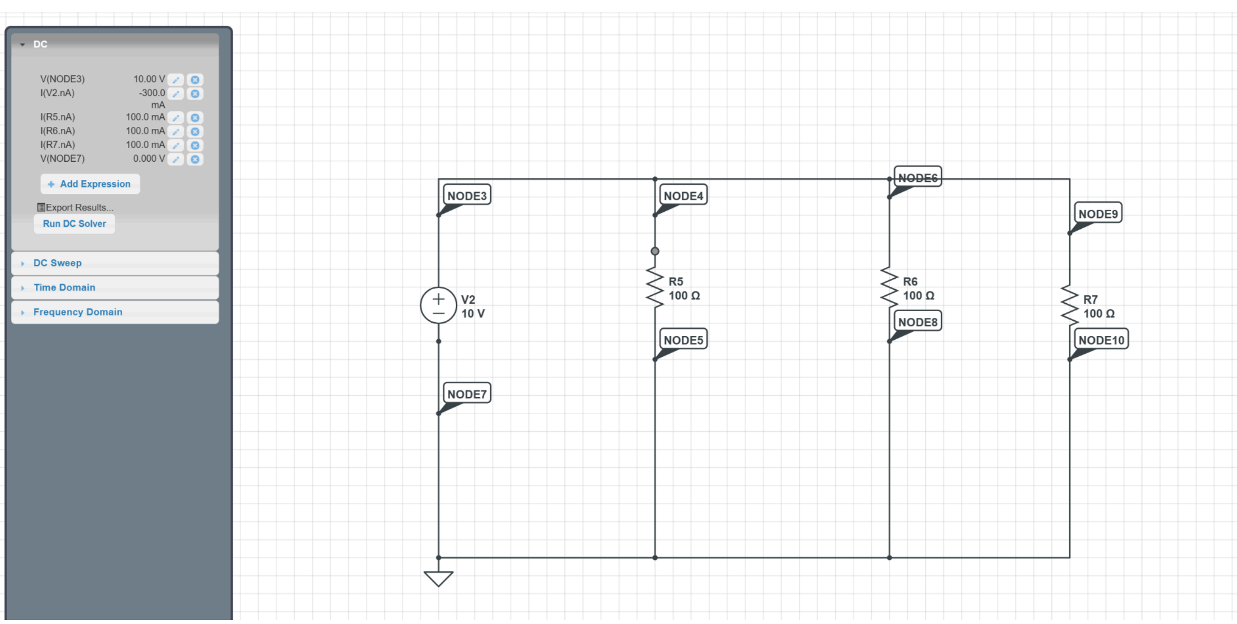
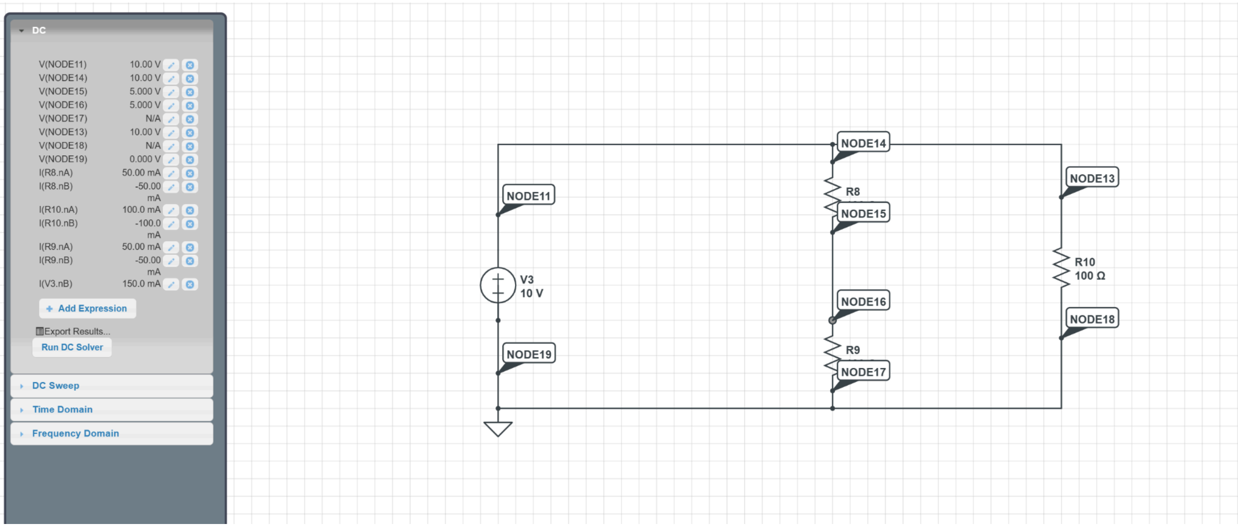
1a-d


R1
100 Ω
NODE1
R4
100 Ω
NODE2
R2
100 Ω
V1
10 V

2a-d

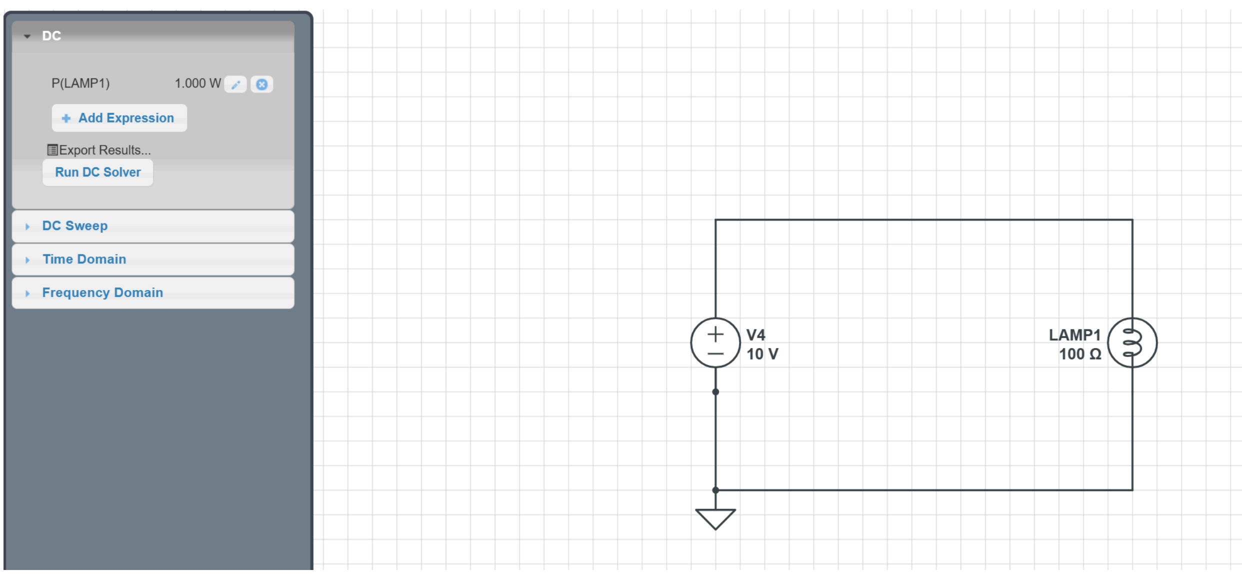

DC
V(NODE3) 10.00 V
I(V2.nA) -300.0 mA
I(R5.nA) 100.0 mA
I(R6.nA) 100.0 mA
I(R7.nA) 100.0 mA
V(NODE7) 0.000 V
Add Expression
Export Results...
Run DC Solver
DC Sweep
Time Domain
Frequency Domain
NODE3
NODE4
NODE6
NODE9
R5
100 Ω
R6
100 Ω
R7
100 Ω
V2
10 V
NODE8
NODE5
NODE10
NODE7

3a-c



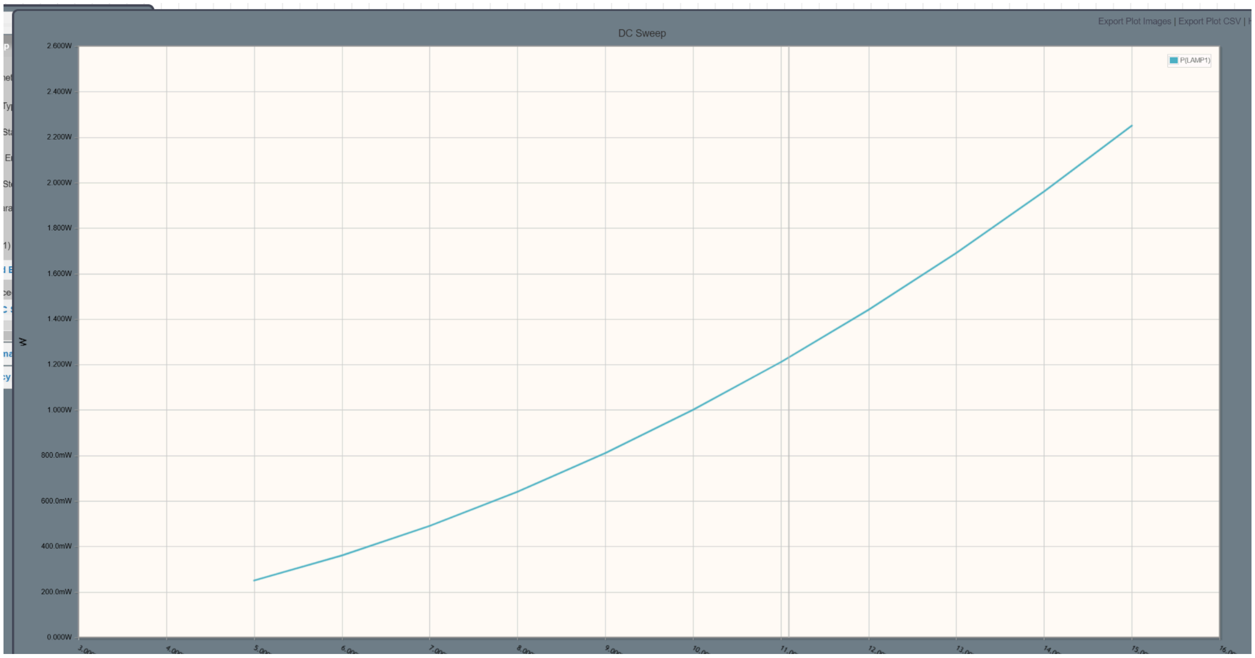
c) When compared to only in parallel, the current in the branch is less with the more resistors (higher effective resistance), the voltage is the same compared to the only parallel case. When compared to the only in series case, the current in the branch with more resistors is equal to the series circuit with the same number of resistors.

4a-b

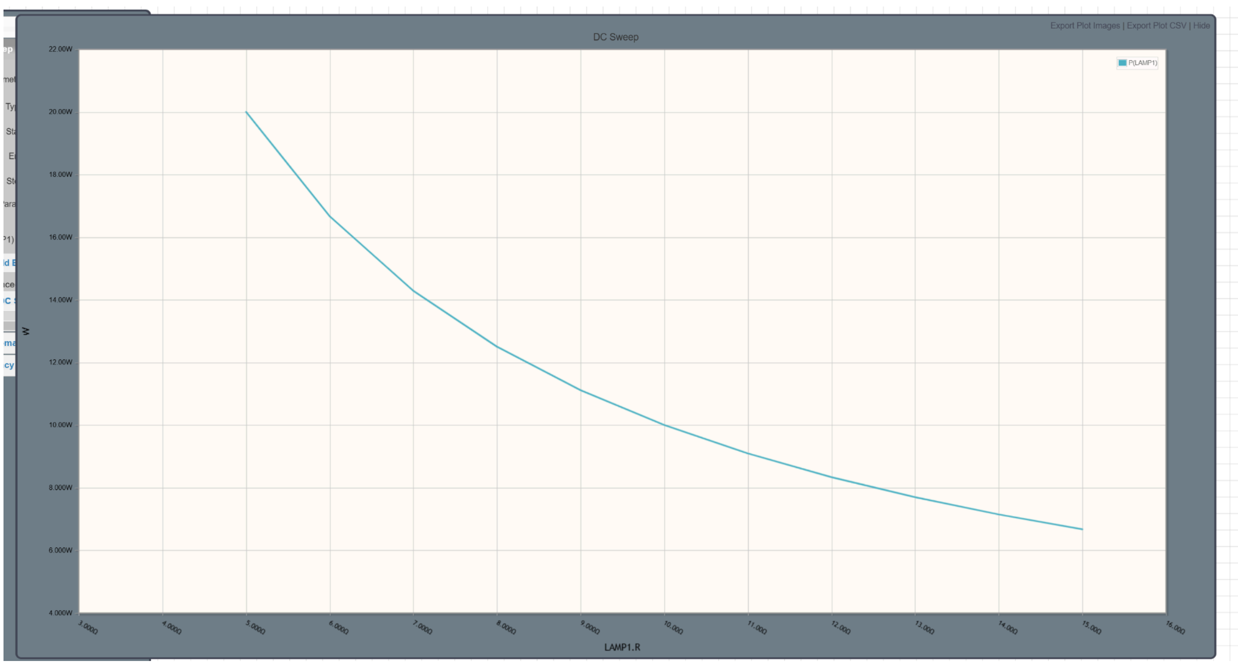


c)

Power vs Voltage

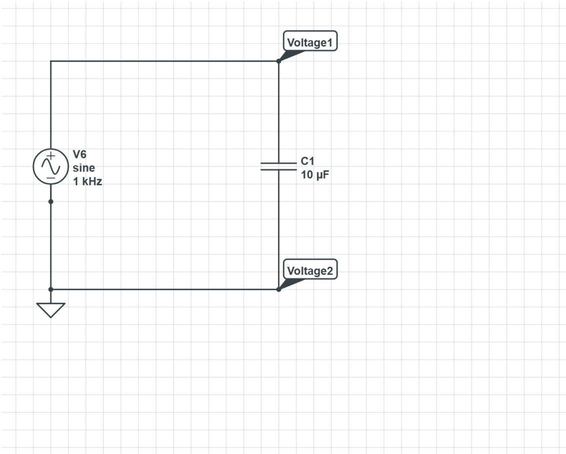


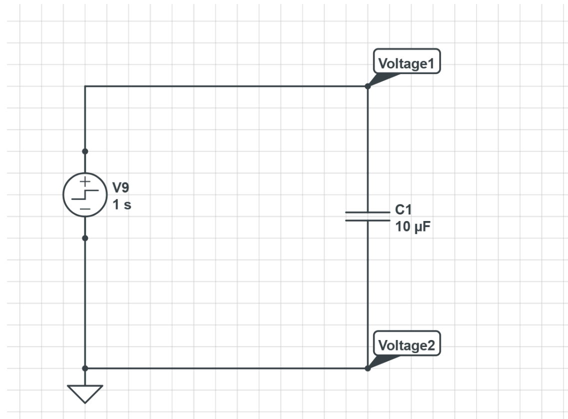
Power vs Resistance

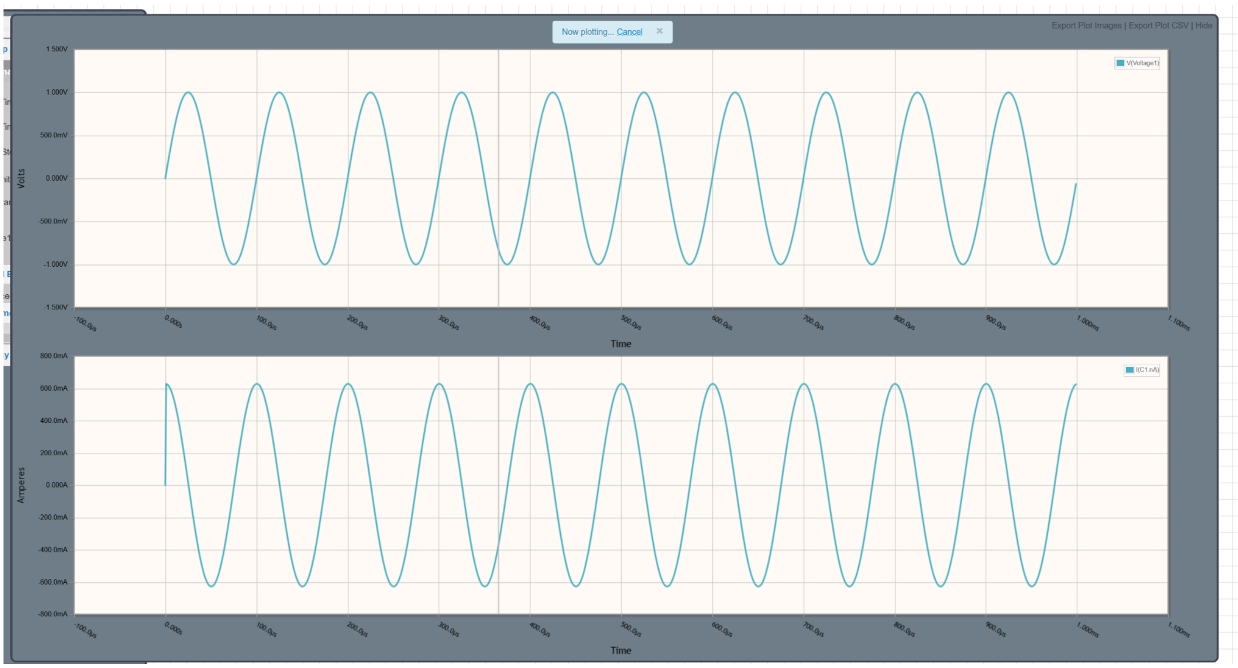


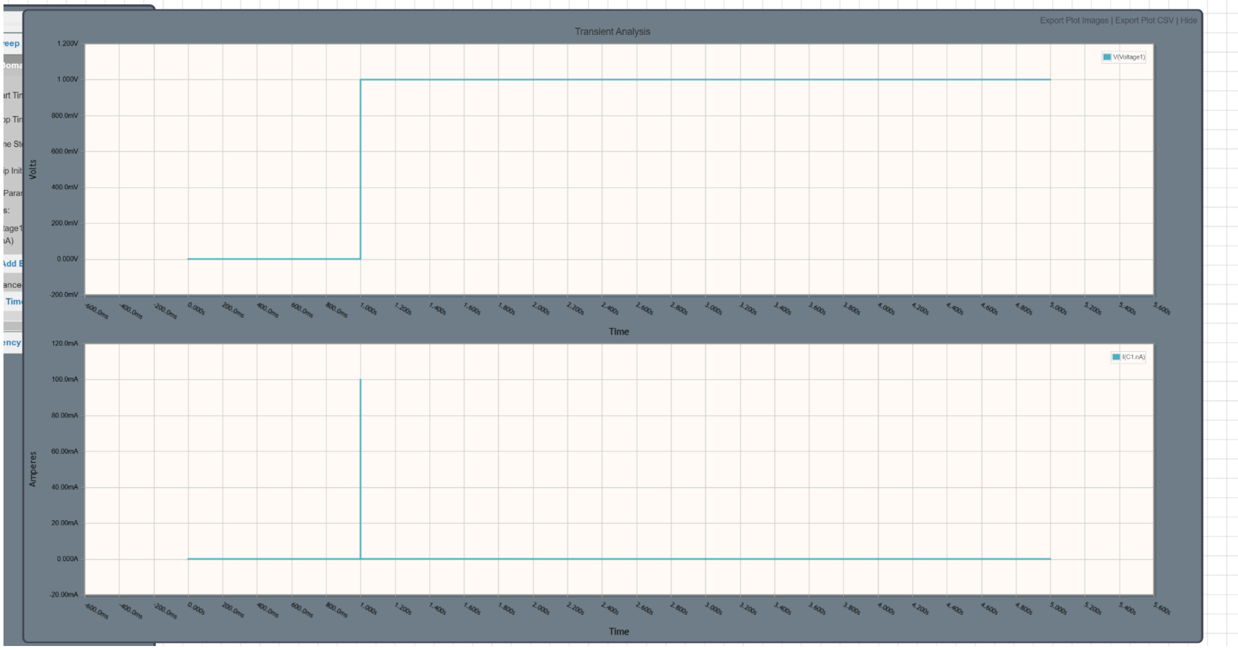
5a-b

Sine:

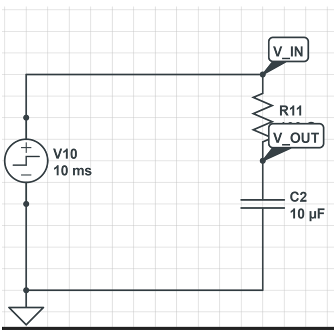

Voltage1
V6
sine
1 kHz
C1
10 µF
Voltage2


Voltage1
V9
1 s
C1
10 µF
Voltage2

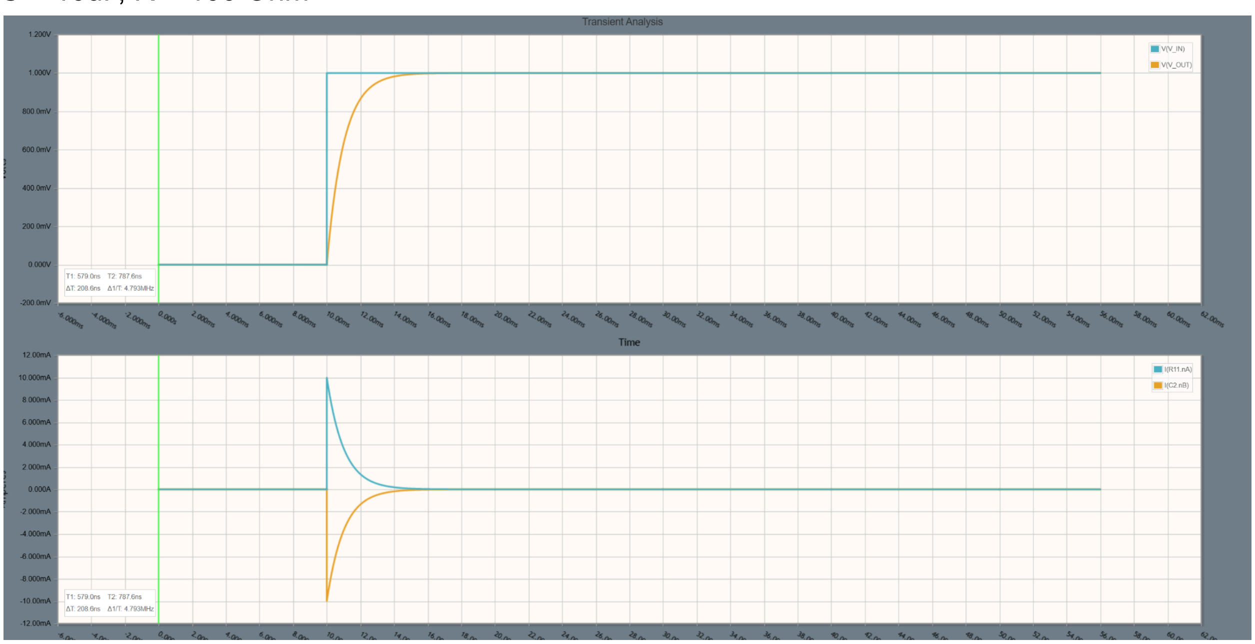

Now plotting... Cancel
Export Plot Images | Export Plot CSV | Hide
Volts
Time
Amperes
Time



6a-c



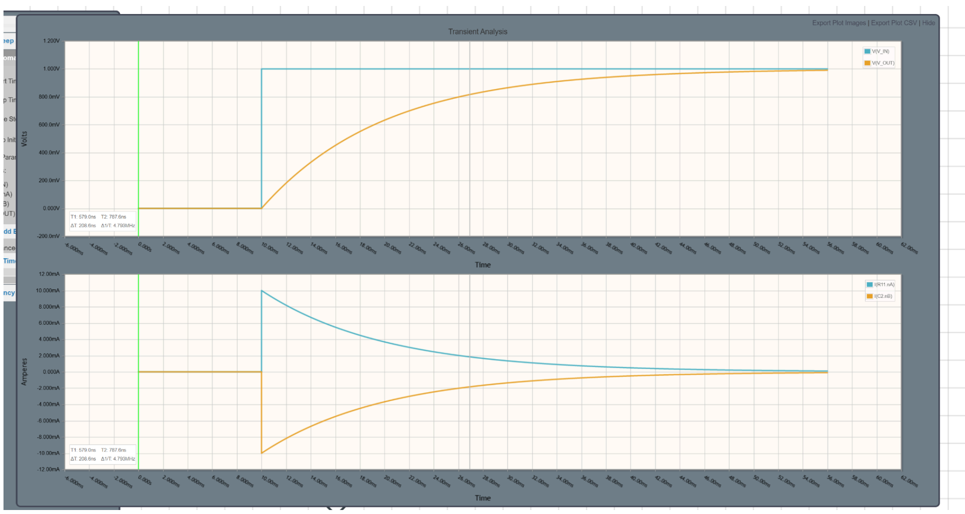
C = 10uF, R = 100 Ohm



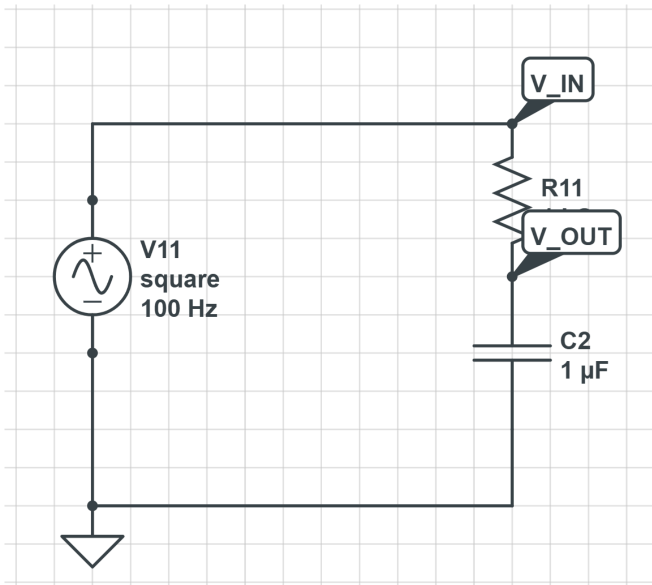
c) When decreasing the resistance, the slope of the graph becomes smaller, when increasing the capacitance, the slope decreases and vice versa.

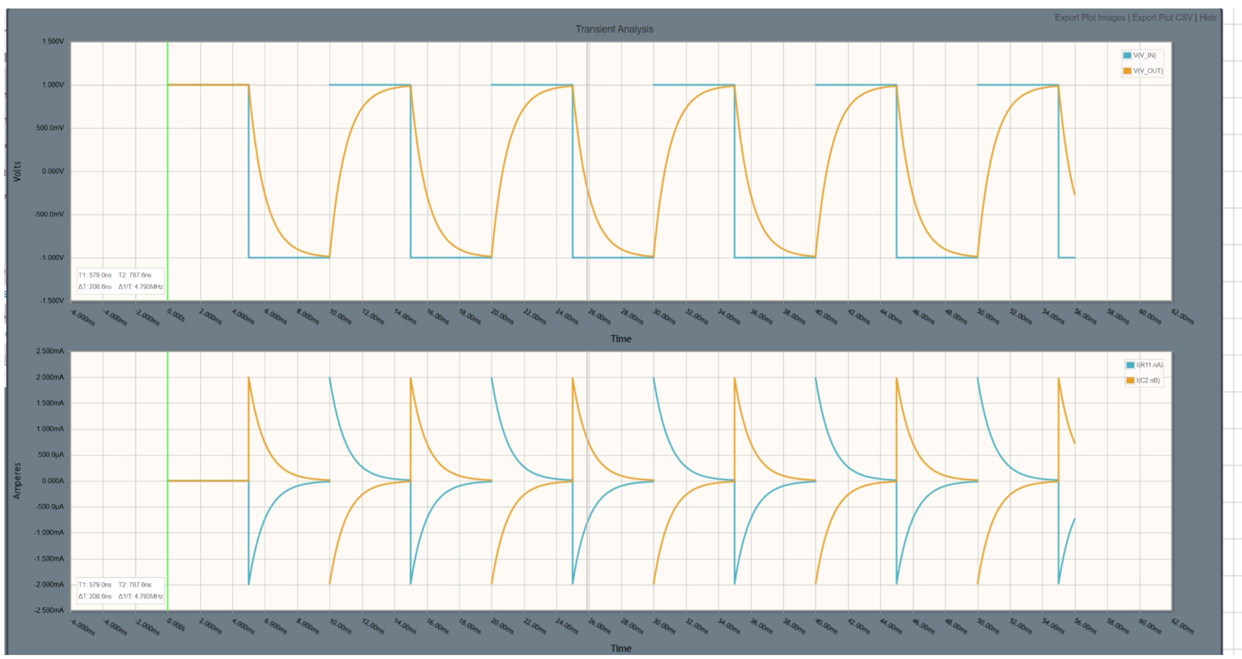
C = 10uF, R = 10 Ohm

C = 100uF, R=100 Ohm

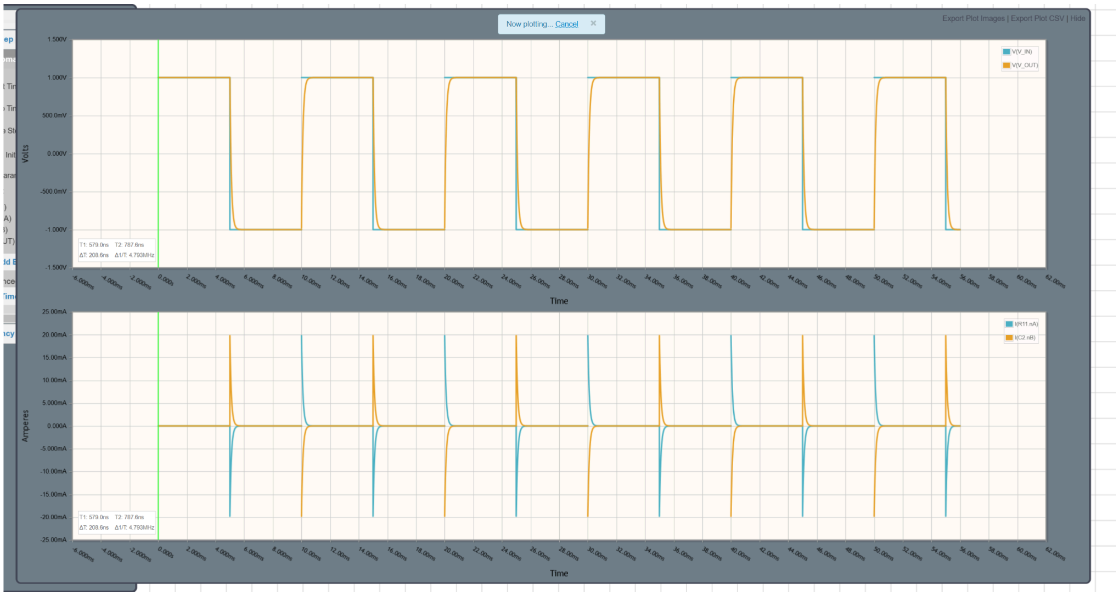


7a-b

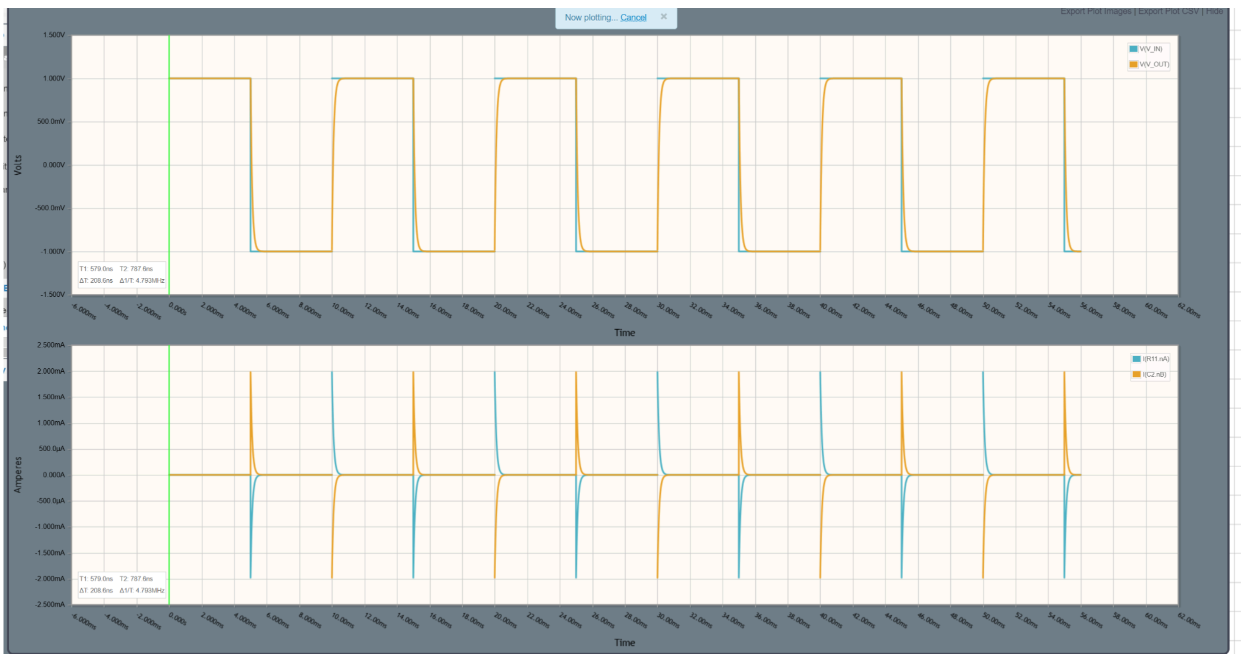




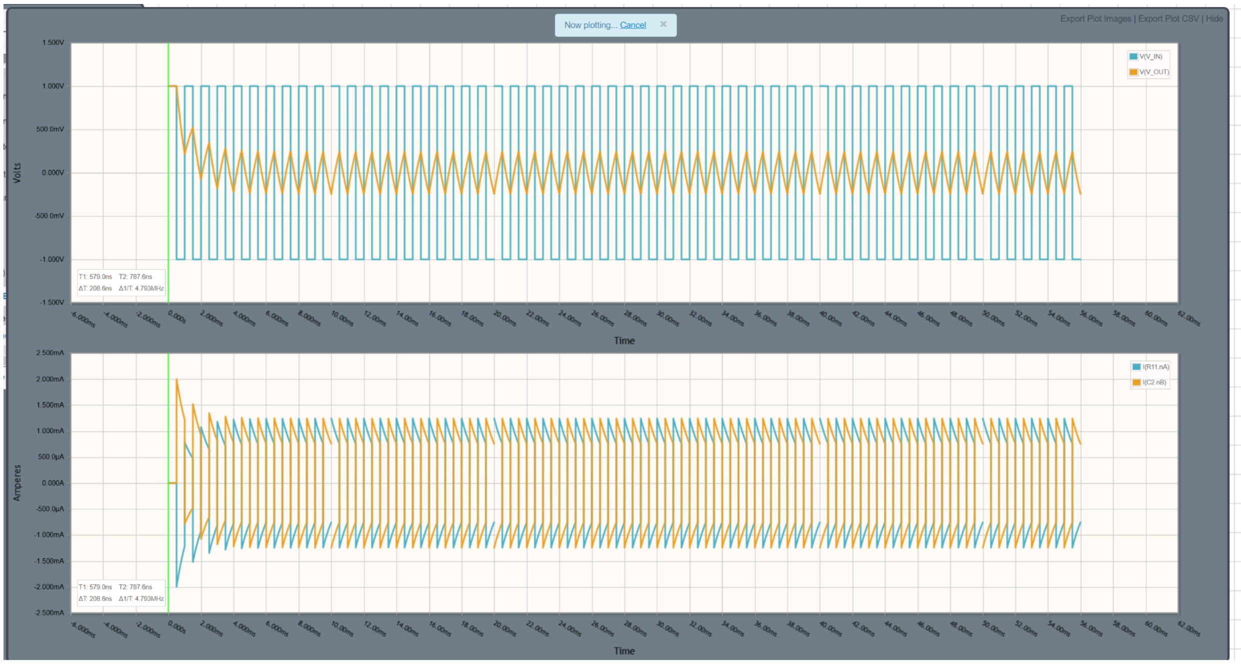
b) When decreasing the resistance, the slope increases, same with decreasing the capacitance. When increasing the voltage frequency, the slope also increases.
C = 1uF, R = 100 Ohm



C = .1uF, R = 1kOhm



C = 1uF, R = 1kOhm, Frequency = 1kHrtz


Now plotting... Cancel
Export Plot Images | Export Plot CSV | Hide
Volts
V(V_IN)
V(V_OUT)
T1: 579.0ns T2: 787.6ns
ΔT: 208.6ns Δ1/T: 4.793MHz
Time
Amperes
I(R11.nA)
I(C2.nB)
T1: 579.0ns T2: 787.6ns
ΔT: 208.6ns Δ1/T: 4.793MHz
Time