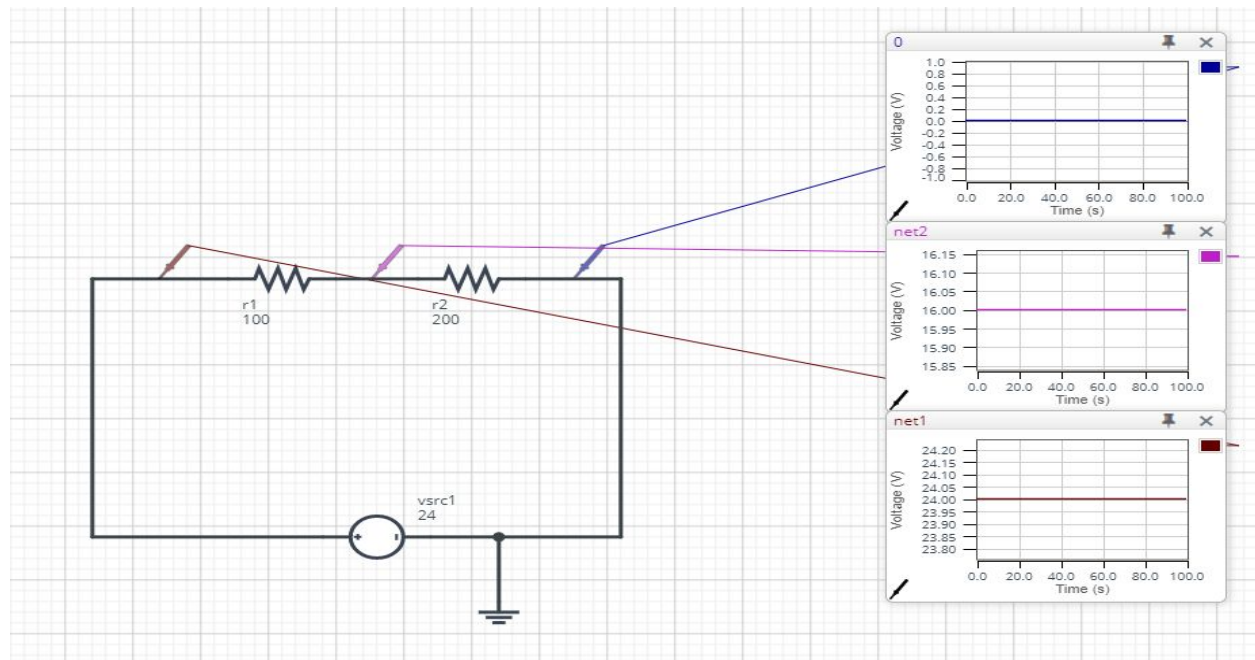


Aaron Bursten

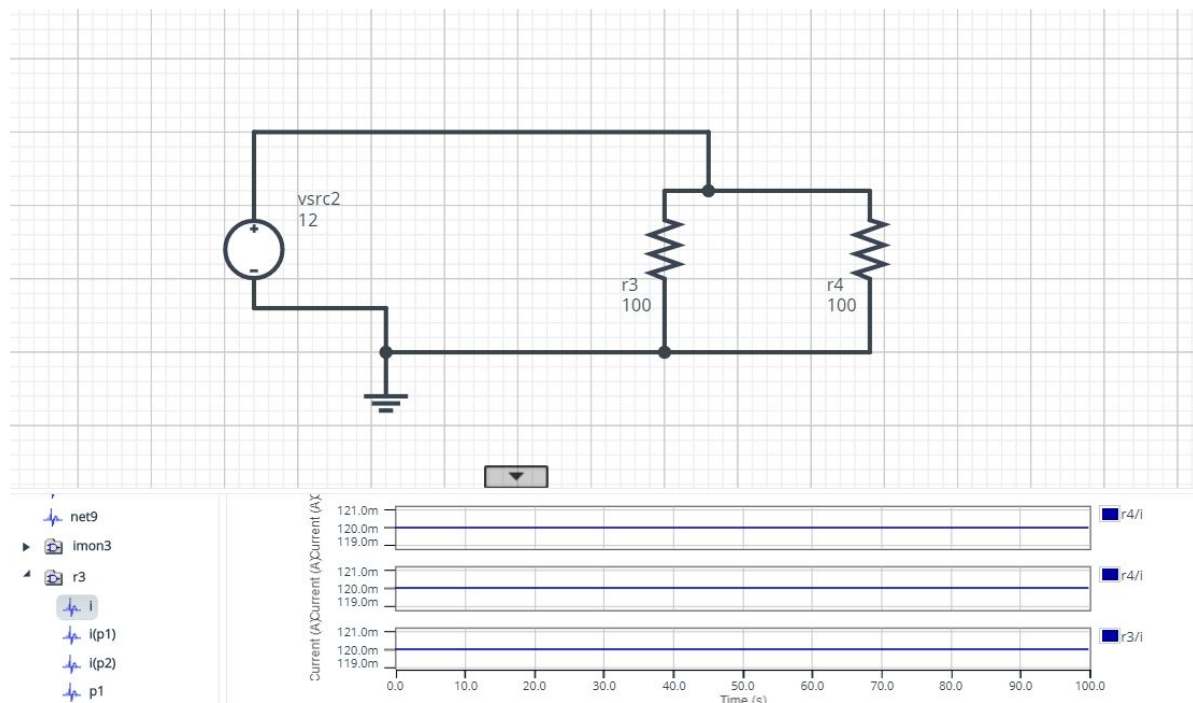
Lab 9

4/30/20

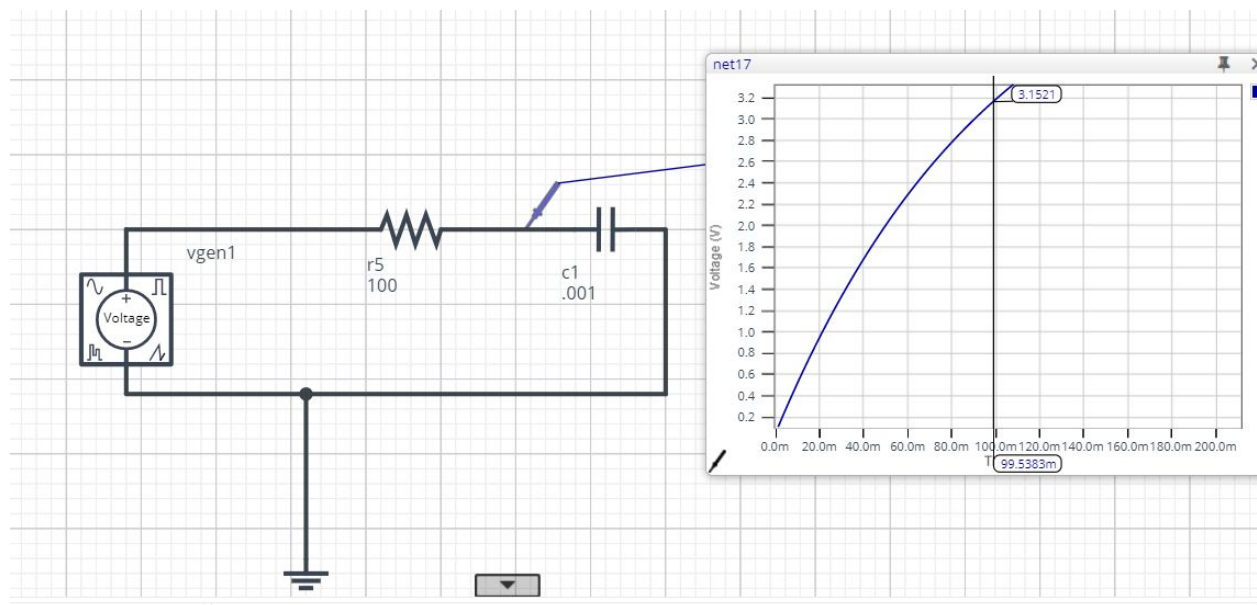
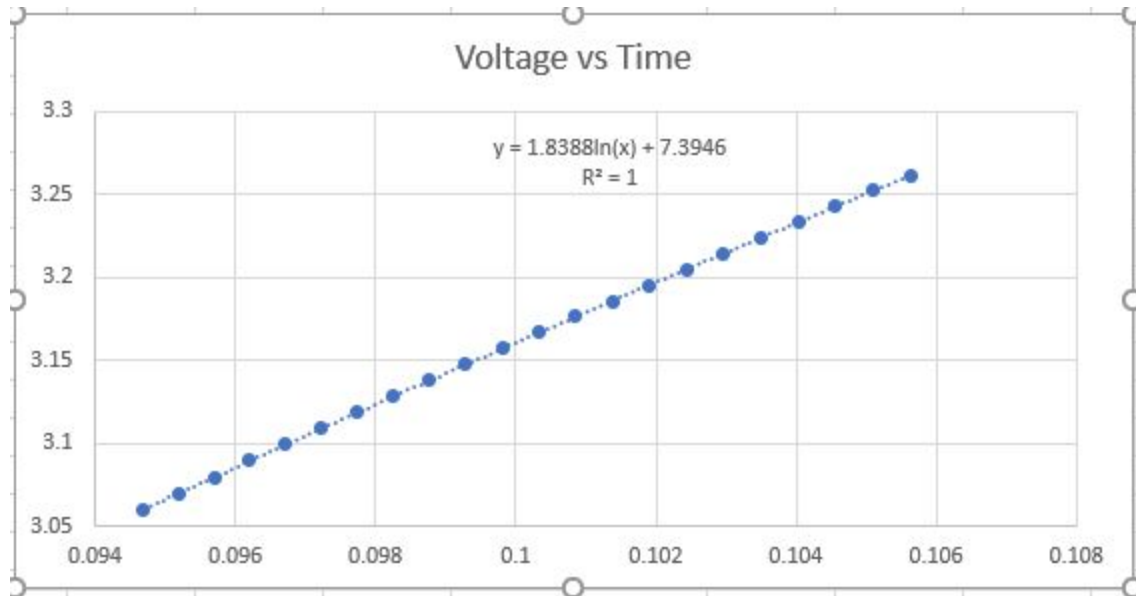
**4. Build a voltage divider circuit (Figure 1 – left side). Confirm the Kirchhoff's voltage and current law on the circuit.**



**5. Build a current divider circuit (Figure 1 – right side). Confirm the KVL and KCL on the circuit using different closed paths for voltage law and nodes for current law.**

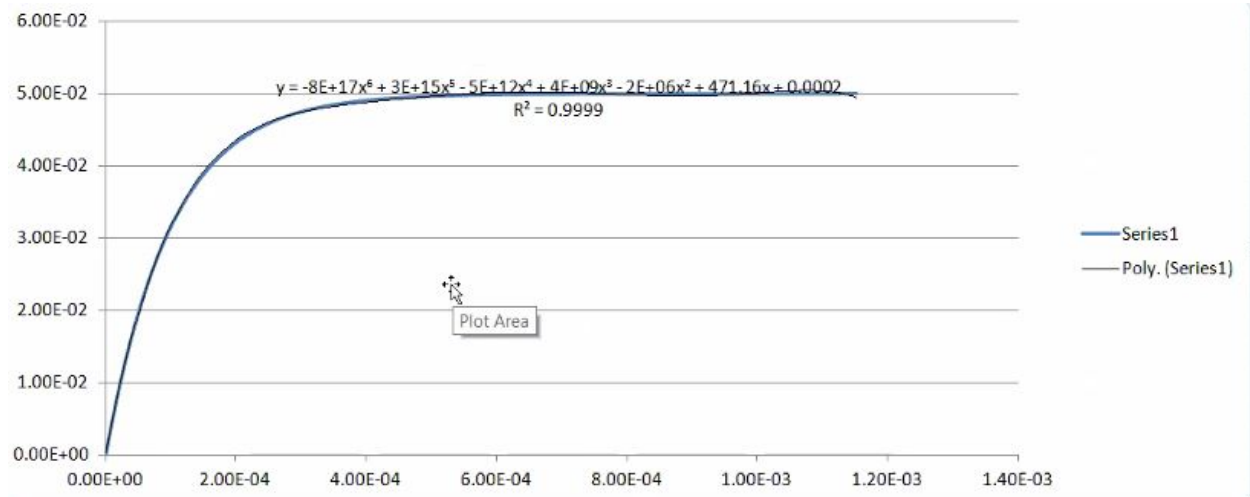


6. In the RC circuit, measure the pulse response: input voltage is  $V_s(t)$  which can be connected to a function generator to generate a square (or rectangular) wave signal instead of using battery and mechanical switch and output is voltage across the capacitor. Measure the time constant of the response,  $\tau$ : the time duration during which output voltage reaches 63% of its steady state value. Note  $\tau = R \cdot C$  for this RC circuit input-output transfer function.



63% X 5v = 3.15  
0.0994248 Seconds

7. Do the same for the RL circuit for step response. This time measure the voltage across L to measure the time constant. Note:  $\tau = L/R$  is the time constant for RL circuit input-output transfer function. V = 5 V Period = 4s Pulse width = 2s R = 100 Ohms C = 0.001 F L = 0.01 H



$$y = -8E+17x^6 + 3E+15x^5 - 5E+12x^4 + 4E+09x^3 - 2E+06x^2 + 471.16x + 0.0002$$

$$63\% \times 0.05 = 0.0315$$

$$\text{Time} = 0.000103886$$