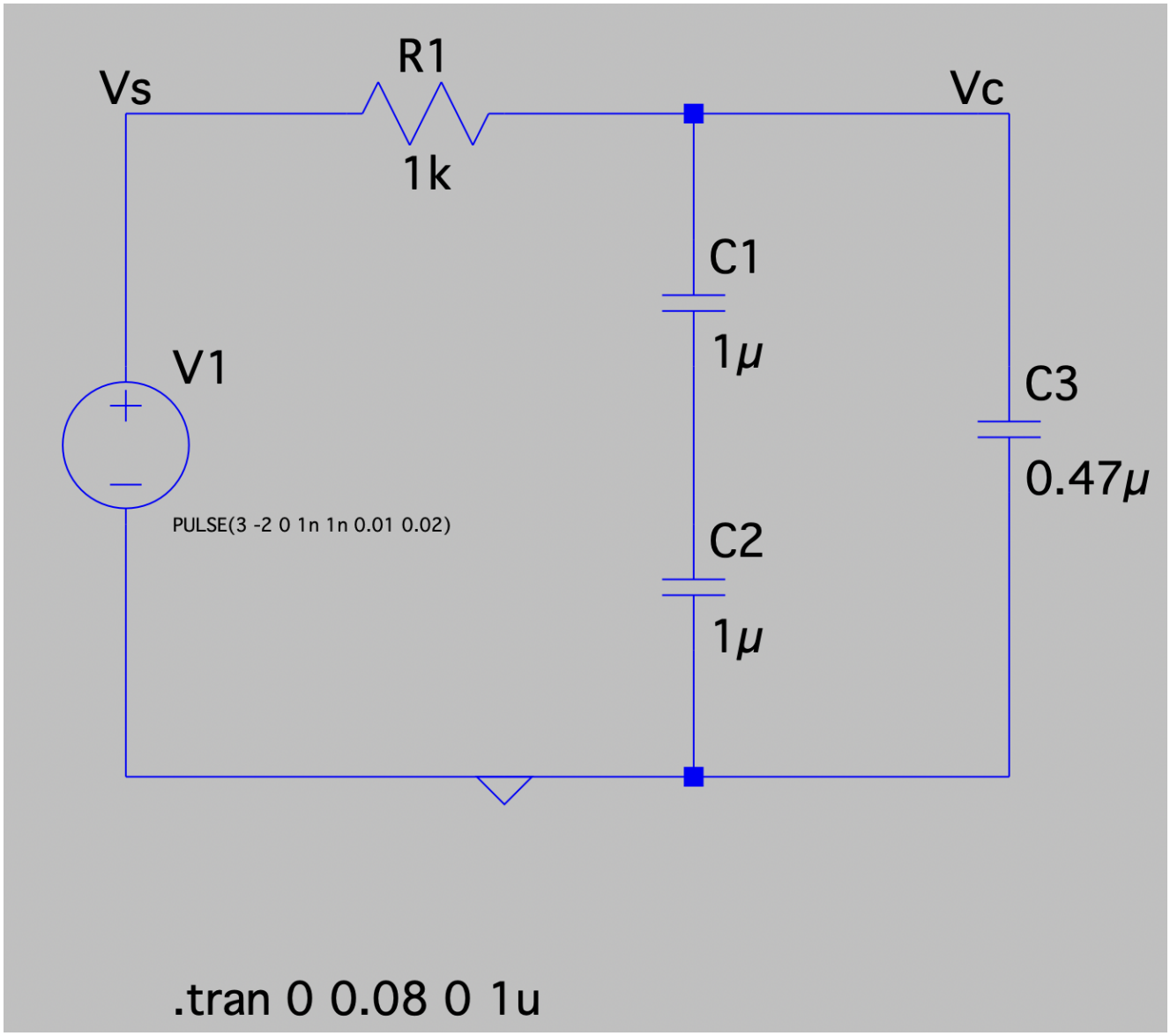
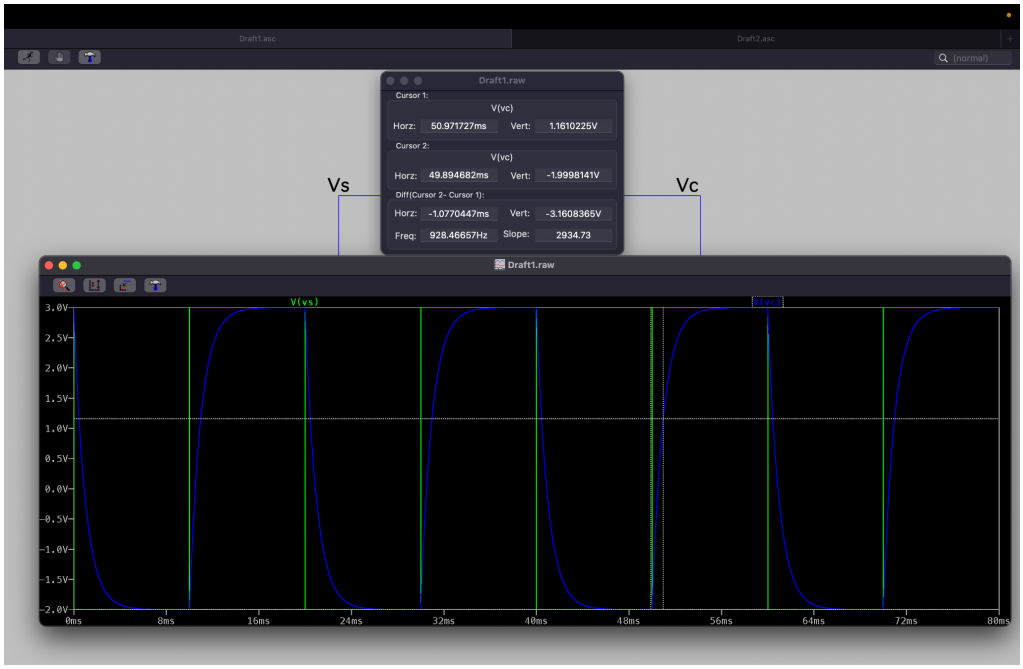
EXPERIMENT 8:



Graph:

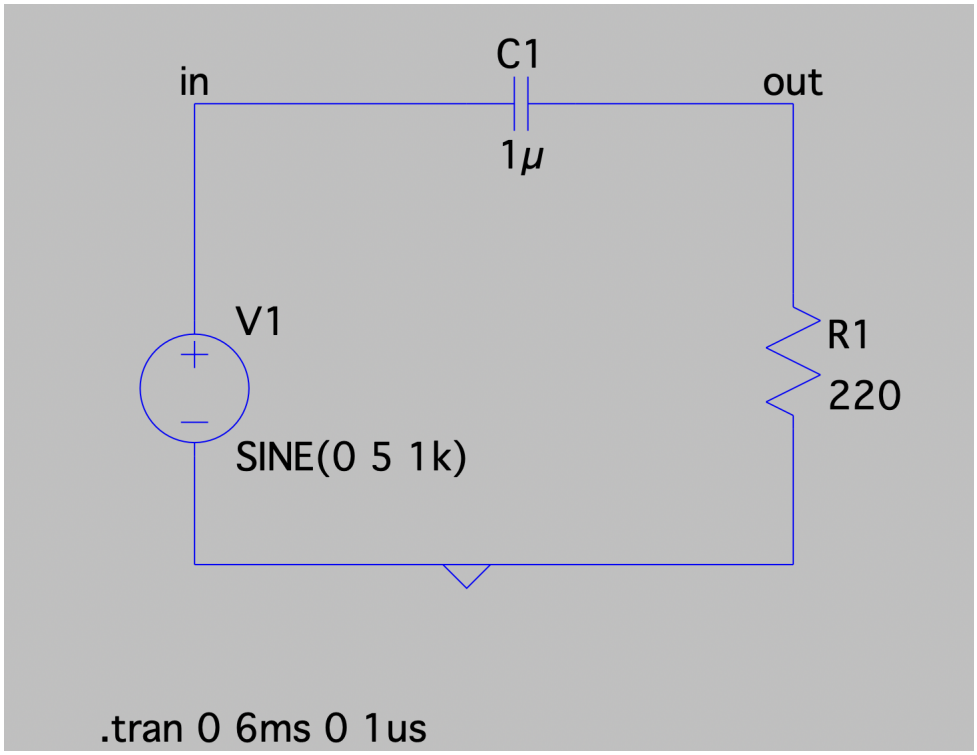


From the circuit, Time constant, τ = (time_diff) = 1.07 ms

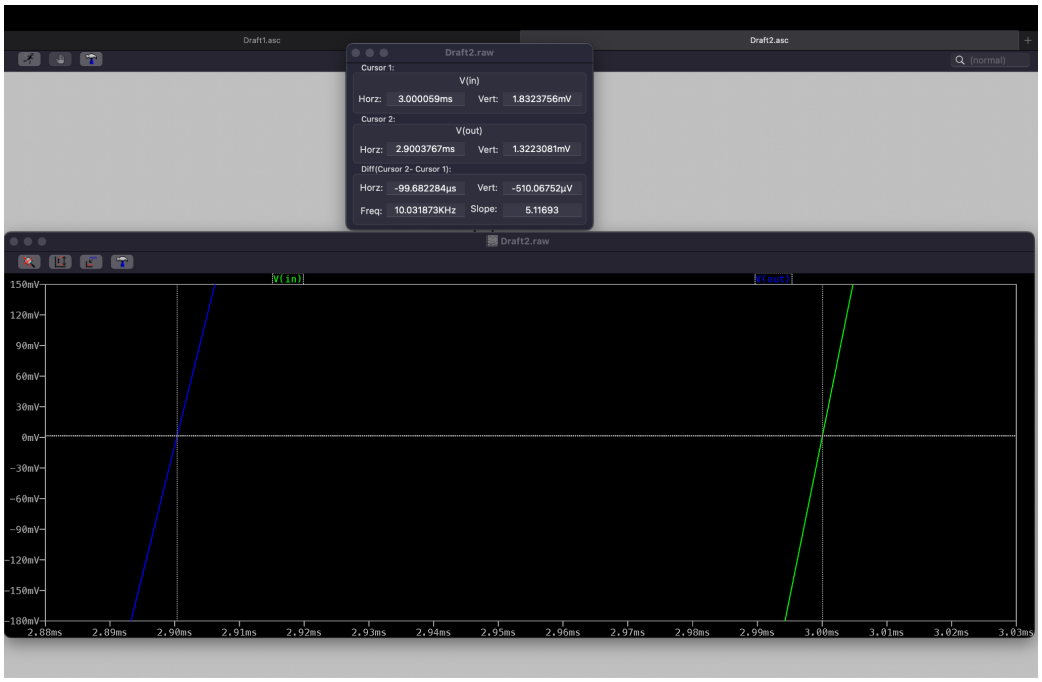
From theory, τ = RC(eq) = 1 ms

Observation: The simulated time constant and theoretical time constant are close to each other.

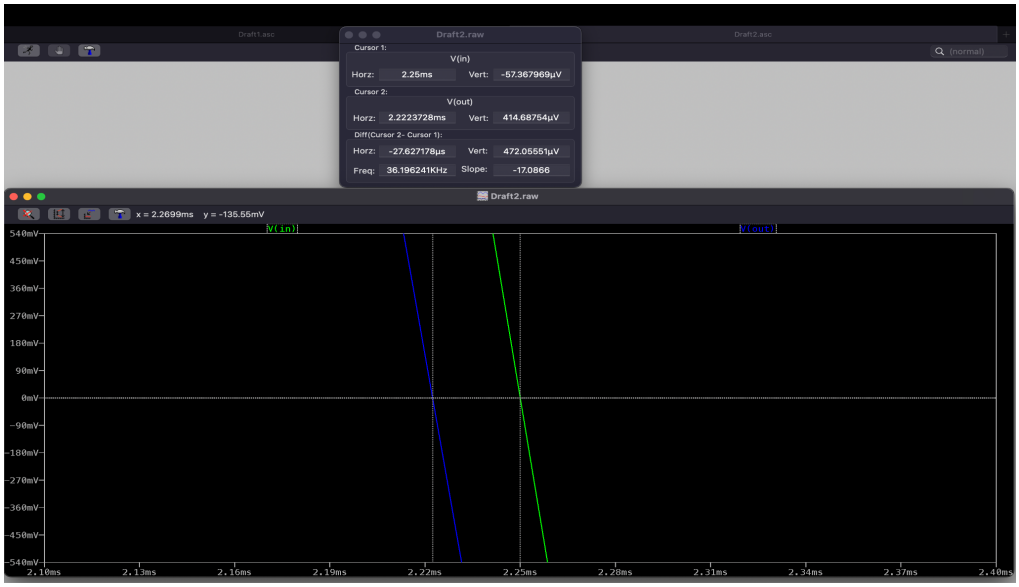
EXPERIMENT 9:



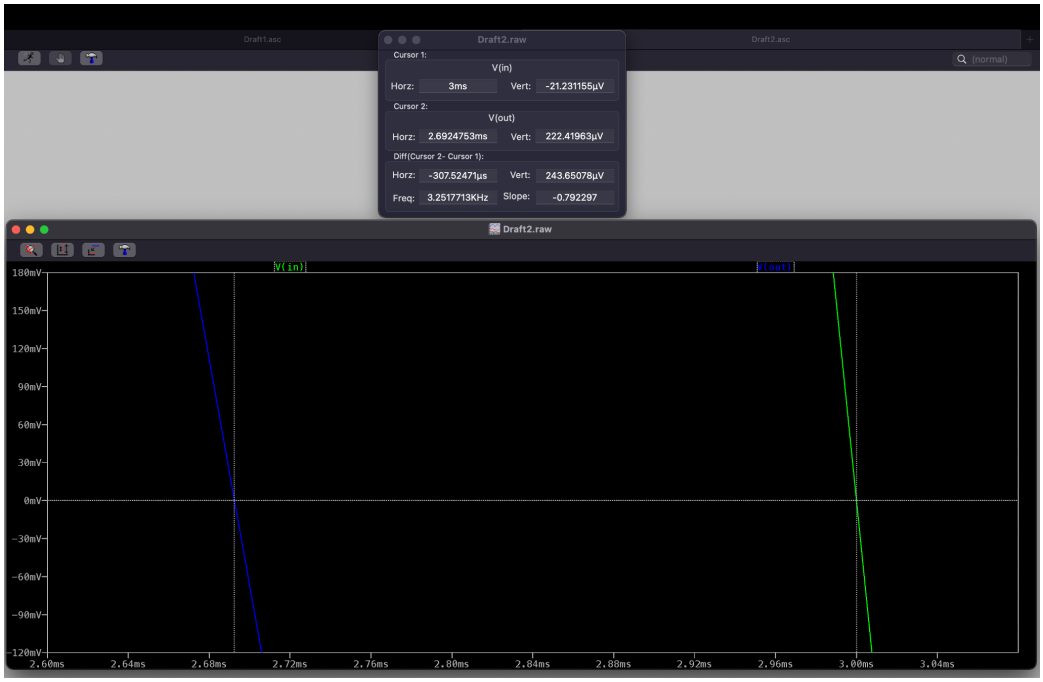
GRAPH:
(For 1kHz frequency):



(For 2kHz frequency):



(FOR 500 Hz frequency):



Phase Difference Calculation:

- **For 1 kHz:**
  Phase difference = 99.68 * (10^-6) * 1000 * 360
  Phase difference = 35.89°

- **For 2 kHz:**
  Phase difference = 27.62 * (10^-6) * 2000 * 360
  Phase difference = 19.89°

- **For 500 Hz:**
  Phase difference = 307.52 * (10^-6) * 500 * 360
  Phase difference = 55.36°