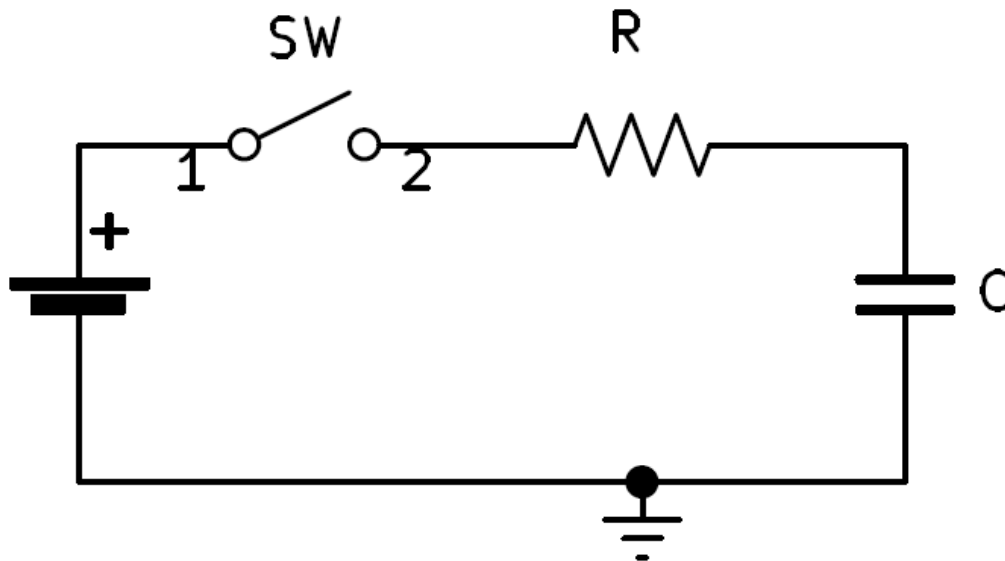After the switch is closed, how long does it take for the capacitor to fully charge?


- $VC = VFin - (VFin - Vin)e^{\frac{-t}{RC}}$
- $\tau = RC$ (seconds)

- Formula in terms of % and time vs. tau
- time = **1tau**

- $VC = 100\%VFin - (100\%VFin - 0Vin)e^{\frac{-1}{1}}$
- $VC = 100\%VFin - (100\%VFin)e^{-1}$
- $VC = 100\%VFin - (100\%VFin)(.36787944)$
- $VC = 100\%VFin - (36.787944\%VFin)$
- $VC = 63.212056\%VFin$
- @ **1tau**, $VC = 63.212056\%VFin$

- Formula in terms of % and time vs. tau
- time = **2tau**

- $VC = 100\%VFin - (100\%VFin - 0Vin)e^{\frac{-2}{1}}$
- $VC = 100\%VFin - (100\%VFin)e^{-2}$
- $VC = 100\%VFin - (100\%VFin)(.13533528)$
- $VC = 100\%VFin - (13.533528\%VFin)$
- $VC = 86.466471\%VFin$
- @ **2tau**, $VC = 86.466471\%VFin$

- Formula in terms of % and time vs. tau
- time = **3tau**

- $VC = 100\%VFin - (100\%VFin - 0Vin)e^{\frac{-3}{1}}$
- $VC = 100\%VFin - (100\%VFin)e^{-3}$
- $VC = 100\%VFin - (100\%VFin)(.049787068)$
- $VC = 100\%VFin - (4.9787068\%VFin)$
- $VC = 95.02129316\%VFin$
- @ **3tau**, $VC = 95.02129316\%VFin$

- Formula in terms of % and time vs. tau
- time = **4tau**

- $VC = 100\%VFin - (100\%VFin - 0Vin)e^{\frac{-4}{1}}$
- $VC = 100\%VFin - (100\%VFin)e^{-4}$
- $VC = 100\%VFin - (100\%VFin)(.018315639)$
- $VC = 100\%VFin - (1.8315639\%VFin)$
- $VC = 98.1684361\%VFin$
- @ **4tau**, $VC = 98.1684361\%VFin$

- Formula in terms of % and time vs. tau
- time = **5tau**

- $VC = 100\%VFin - (100\%VFin - 0Vin)e^{\frac{-5}{1}}$
- $VC = 100\%VFin - (100\%VFin)e^{-5}$
- $VC = 100\%VFin - (100\%VFin)(.006737947)$
- $VC = 100\%VFin - (.6737947\%VFin)$
- $VC = 99.3262\%VFin$
- @ **5tau**, $VC = 99.3262\%VFin$

VC % Charge of Vfin Vs. Tau
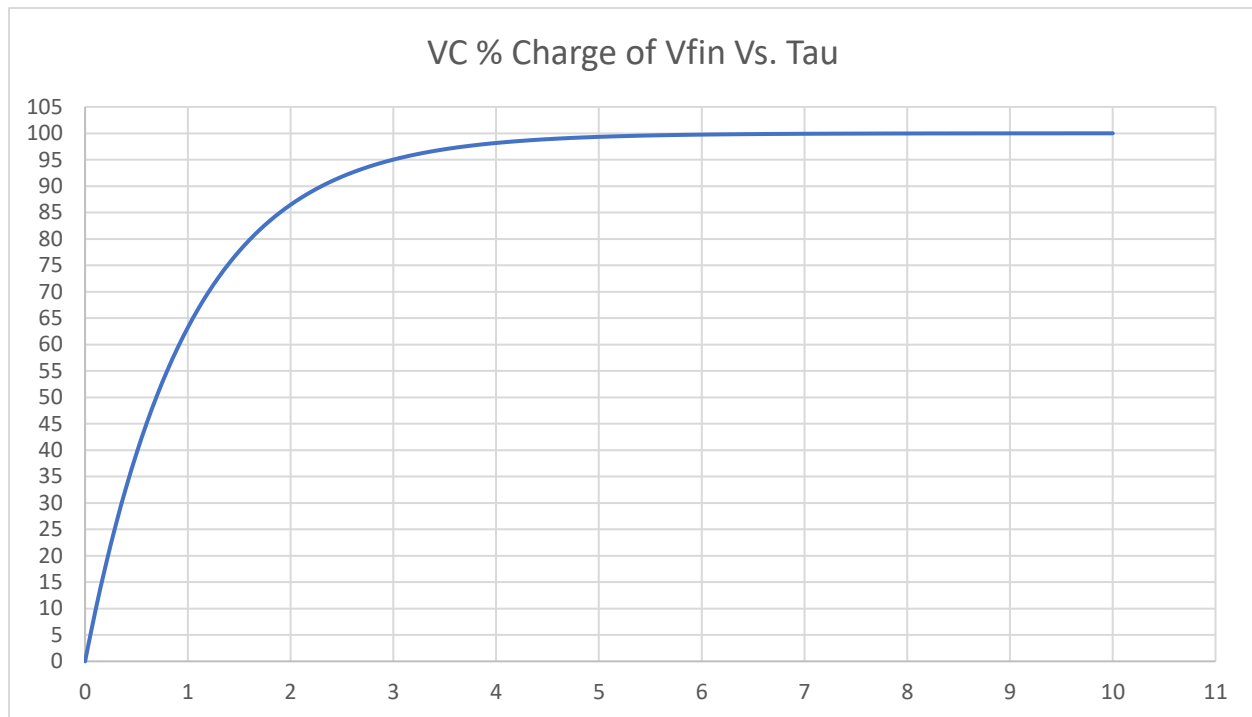
Tau	Vc % Charge of Vfin
1	63.21206%
2	86.46647%
3	95.02129%
4	98.16844%
5	99.32621%