EE 206: Homework #11

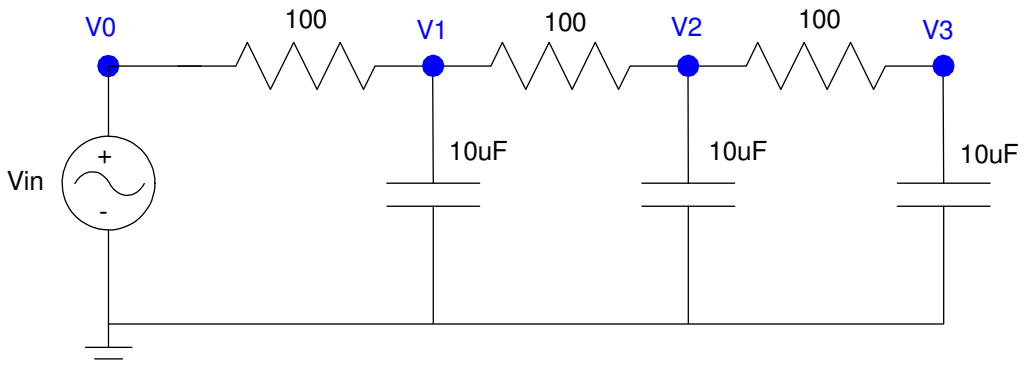
Superposition with Phasors. Due Monday, April 27th

Please make the subject "EE 206 HW#11" if submitting homework electronically to Jacob_Glower@yahoo.com (or on blackboard)

Assume Vin is a 10Vpp, 477Hz (3000 rad/sec) square wave

$$V_{in} = \begin{cases} +10 & \cos(3000t) > 0 \\ 0 & \cos(3000t) < 0 \end{cases}$$

Find V3(t) using superposition



Problem 1) Approximate Vin(t) as

$$V_{in} \approx a_0 + a_1\cos(3000t) + b_1\sin(3000t) + a_2\cos(6000t) + b_2\sin(6000t) + a_3\cos(9000t) + b_3\sin(9000t)$$

Problem 2) Use superposition and phasor analysis to determine V3(t) at

- 0 rad/sec
- 3000 rad/sec
- 6000 rad/sec
- 9000 rad/sec

(essentialy, threat this as four separate problems).

Problem 3) Simulate this circuit using PartSim and compare the transient response in PartSim to your computed results in problem #2