

Name : _____ Section: _____ CWRU e-mail: _____

Department of Electrical Engineering and Computer Science
ENGR 210. Introduction to Circuits and Instruments (4)

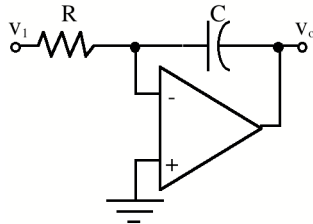
Quiz No. 10

4/1/05

PUT ANSWERS IN THE SPACE PROVIDED AND, IF APPROPRIATE, SHOW YOUR WORK. BE SURE TO STATE ANY ASSUMPTIONS

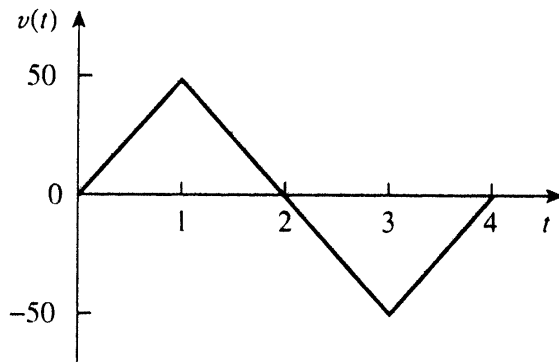
Problem 1 OP AMP integrator/differentiator (10 points)

A 10 volt dc voltage is applied to an op amp integrator with $R=50k\Omega$, $C=100\mu\text{f}$ at $t=0$. How long will it take for the op amp to saturate if the saturation voltages are +12 volts and -12 volts. Assume that the initial capacitor voltage was zero.

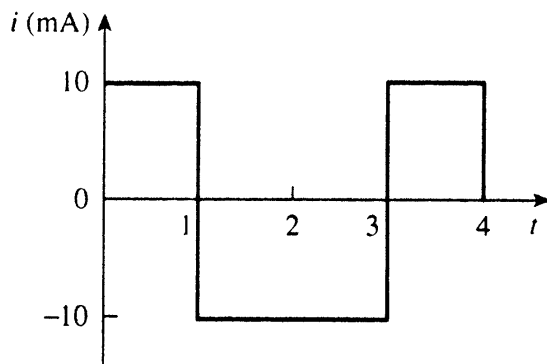


Problem 2 Inductance/Capacitance Characteristics (10 points)

The figure below shows the current through and the voltage across an unknown energy storage element.



NOTE: The voltage (y-axis) is volts.



- (a) What is the element (inductor or capacitor?) and its numerical value?
- (b) If the energy stored in the element at $t=0$ is zero, how much energy is stored in the element at $t=1$ second.