09/22/03

EE 42 – Introduction to Electronics for Computer Science

Fall 2003, **Prof. A. R. Neureuther**
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UC Berkeley **Office Hours M1, Tu, Th 10:30-11:30, F 11**
Course Web Site **http://www - inst.eecs.berkeley.edu/~ee42/**

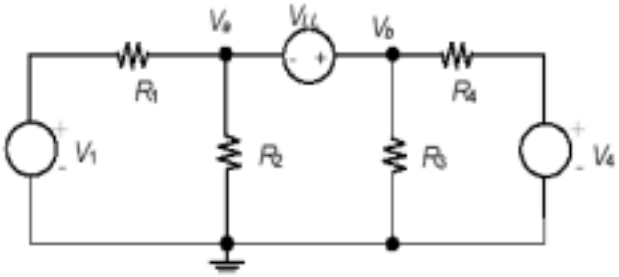
Problem Set # 5

Due: 1 PM Oct 1st, 2003 in box outside 240 Cory

Announcements:
Midterm in class on Thursday, 10/2/03
Covers lectures 1-9, closed book and notes, bring calculator, paper provided
Reading Week #5: Review Schwarz and Oldham 2.3, 2.4, 3.1, 4.1, 8.1
Review Sessions for Midterm: Tuesday, Sept 30th and Wed, Oct 1st

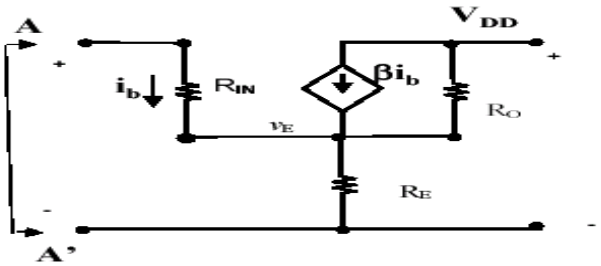
5.1 Super-node Use the circuit to the right.

a) Find Va and Vb if R1= R2 = R3 = R4 = 10kΩ, and V1 = V4 =1.5V with VLL = 1V
b) Check your answers using KCL



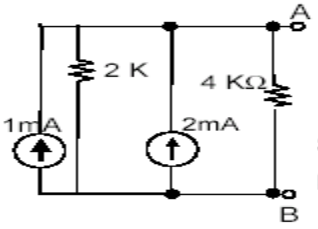
5.2 Dependent Sources Use the circuit to the right.

a) Use KCL, find V_E
b) Find the voltage across the AA' terminal, Vtest
c) Find the resistance seen looking into AA'



5.3 Thevenin and Norton Equivalents Use the circuit to the right

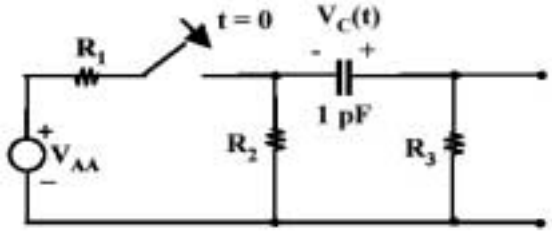
a) Find RN
b) Find RTH
c) Find the Thevenin equivalent circuit
d) Find the Norton equivalent circuit



5.4 Review of Transients Use the circuit to the right

The switch in the circuit closes at t = 0. Just before switching, the capacitor is charged to 2V

a) Find the voltage on the capacitor V_C (t) for t > 0
b) Find $dV_C(t)/dt$ just before the switch closes at t = 0



$R_1 = 1k\Omega$ $R_2 = 2\,k\Omega$ $R_3 = 3\,k\Omega$
$V_{AA} = 5\,V$