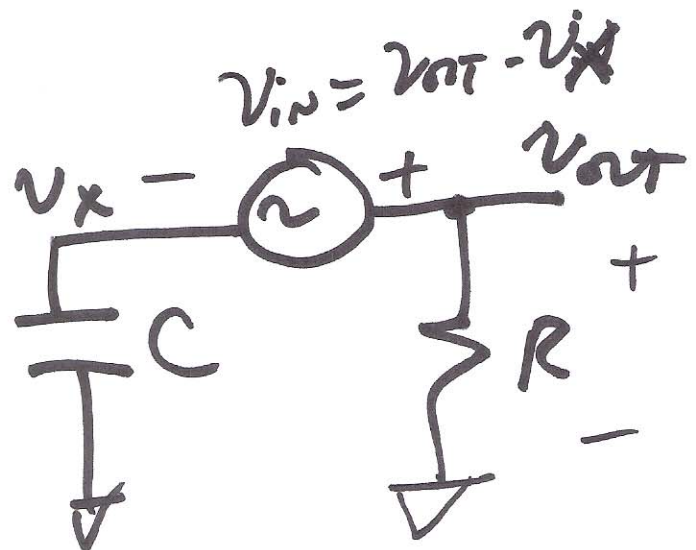
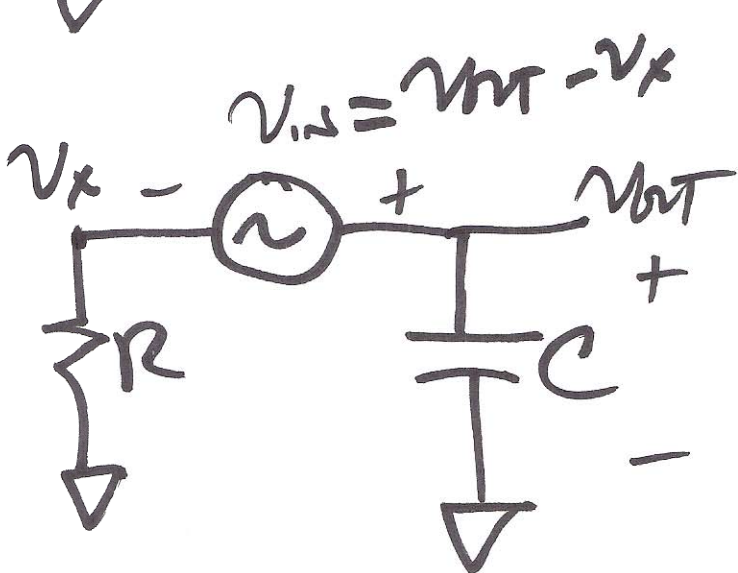
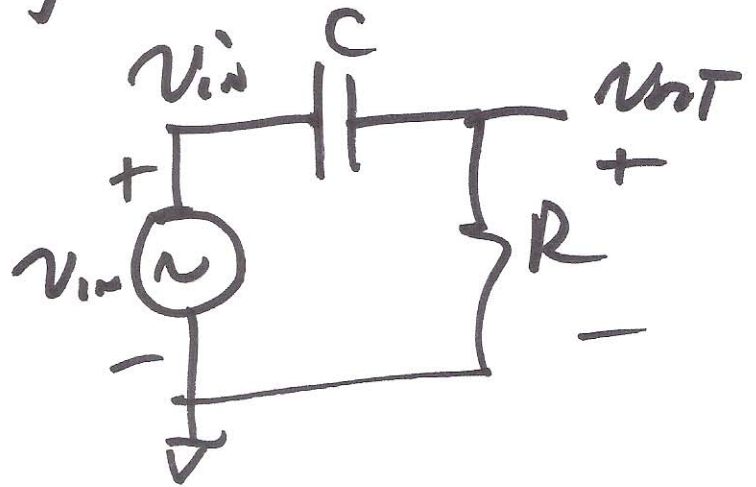
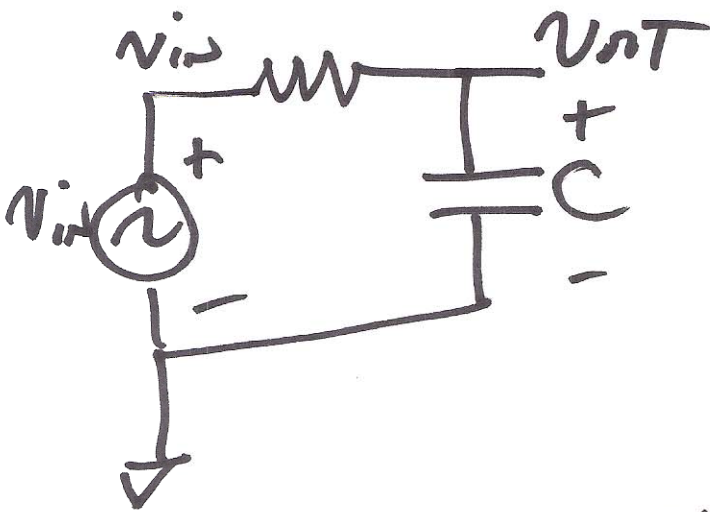


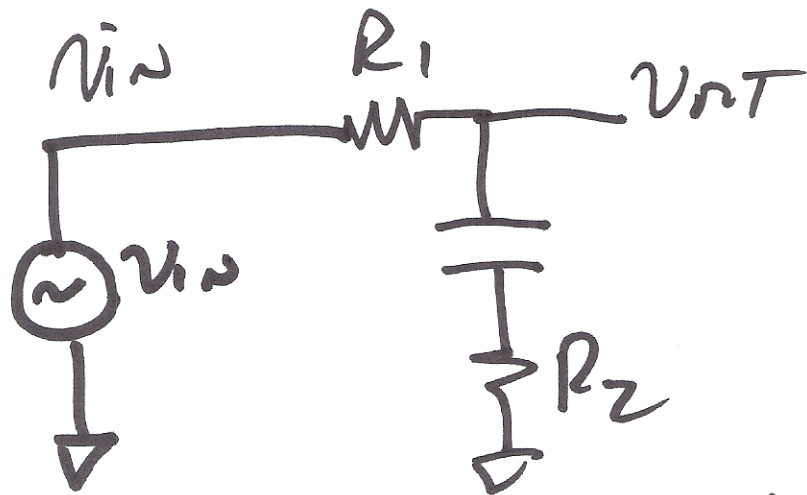
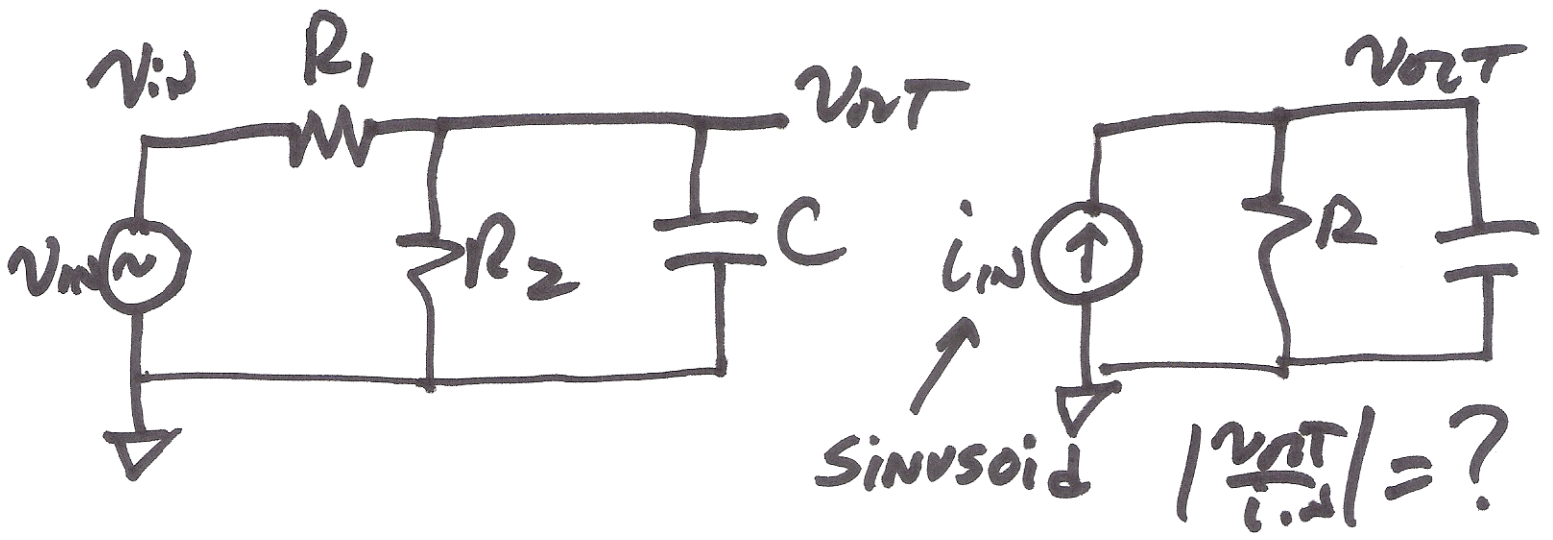
EE 320, Spring 2015

final exam study questions

* study quizzes & H.W. problems

* find v_{out} and plot with v_{in} vs. t
* find $|\frac{v_{out}}{v_{in}}|$ & $\angle \frac{v_{out}}{v_{in}}$ for
the following circuits.





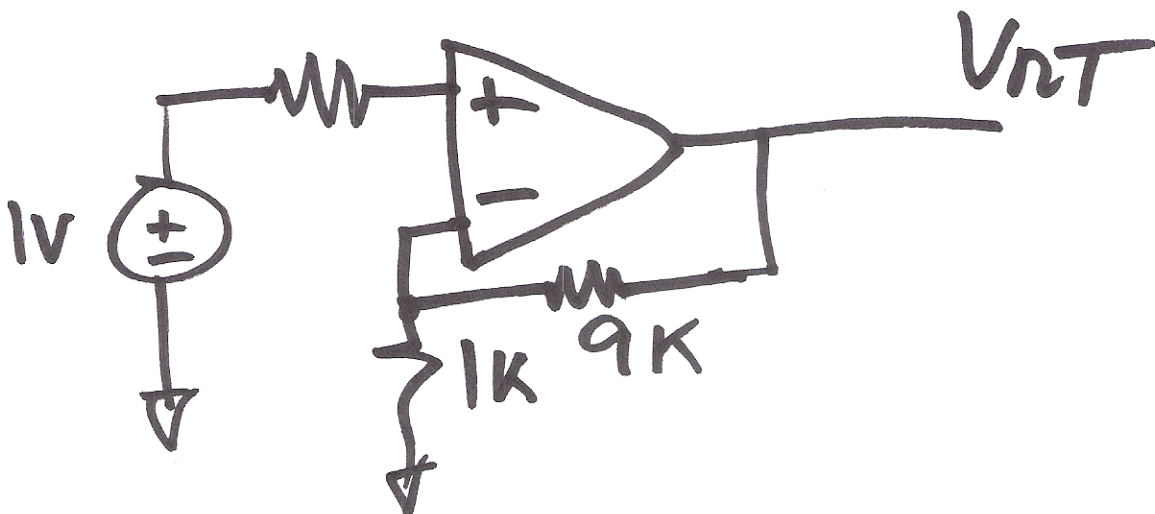
for numerical practice use

$$R = 1k, C = 1\mu$$

$$f_{in} = 200Hz$$

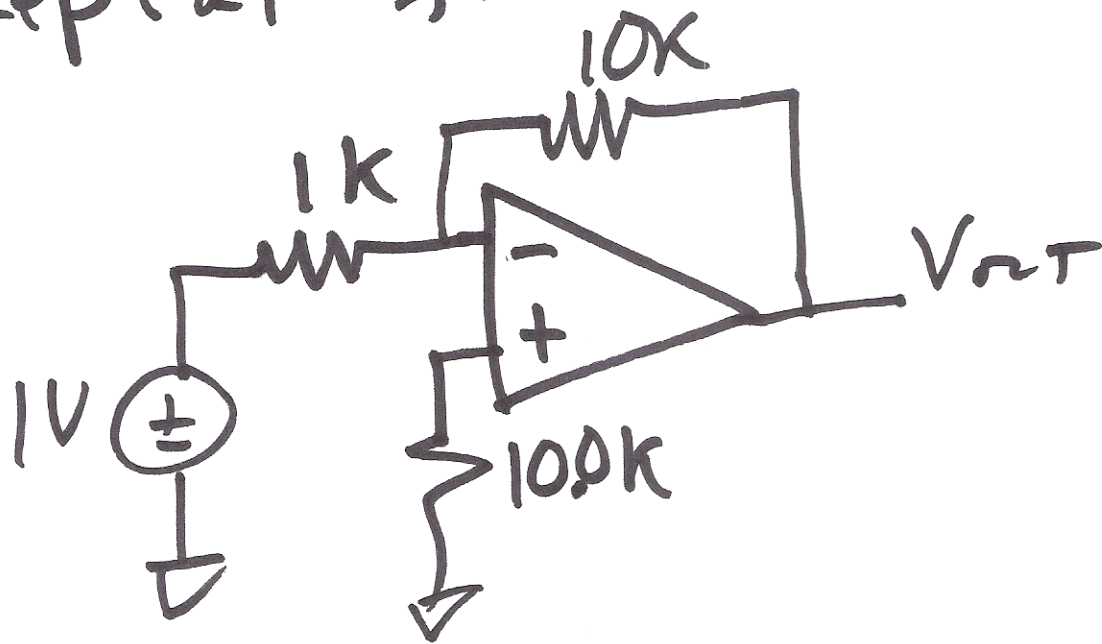
also show $\left| \frac{v_{OT}}{v_{in}} \right| \left(\frac{200}{20} \right)$

find v_{OT} if $A_{OL} = 100$, if $v_{OS} = 10mV$
 if $A_{OL} = 100 \neq v_{OS} = 10mV$



2)

Repeat for



Suppose an op-amp has a gain, A_{OL} , of 60 dB and a unity gain of 1 MHz

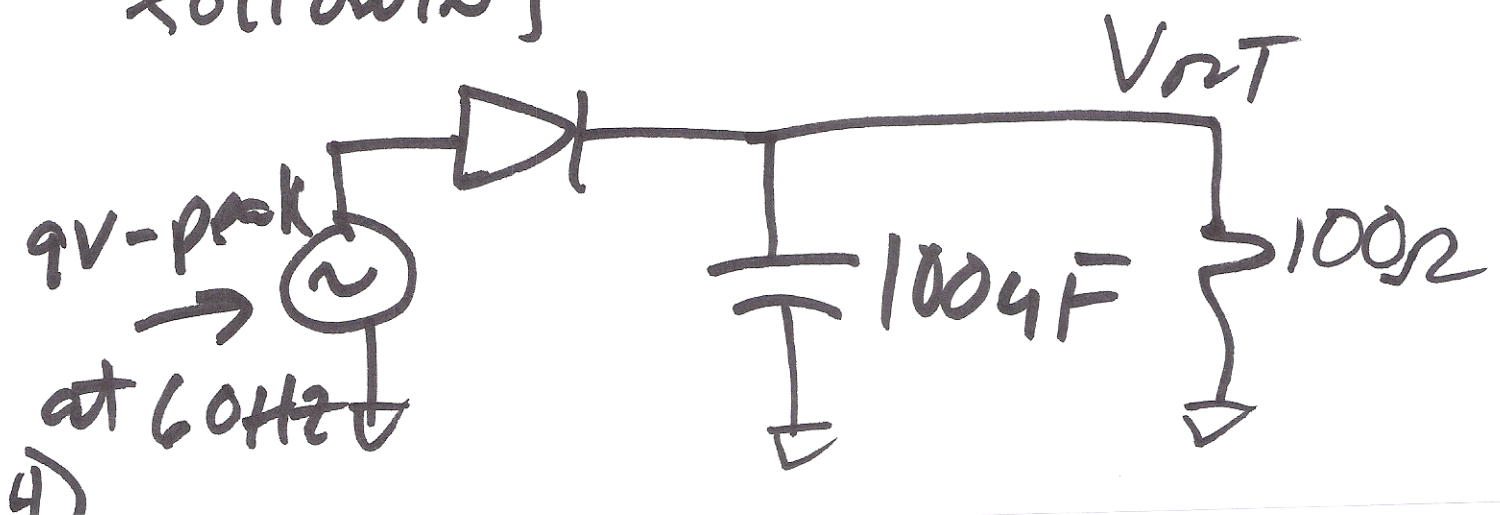
* Sketch the op-amp's open loop response. Write an equation for the op-amp's open-loop response.

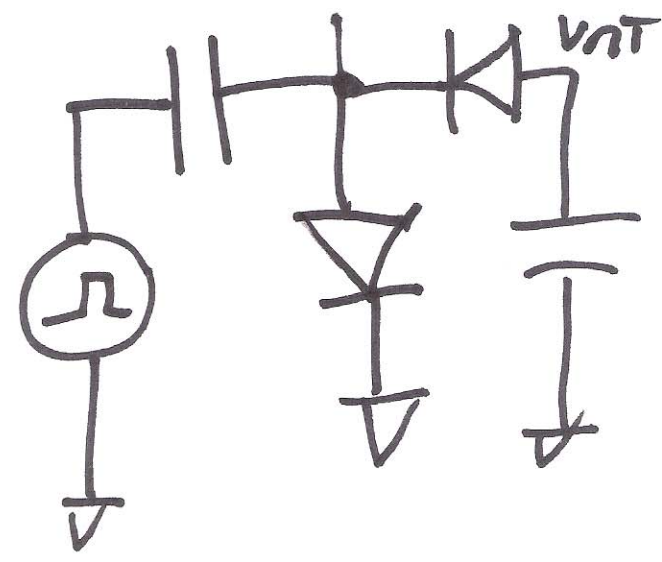
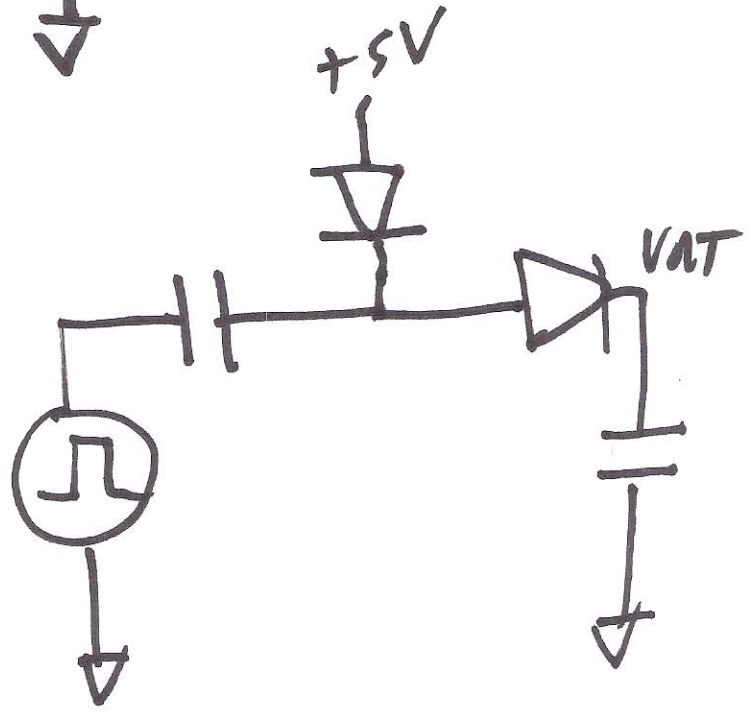
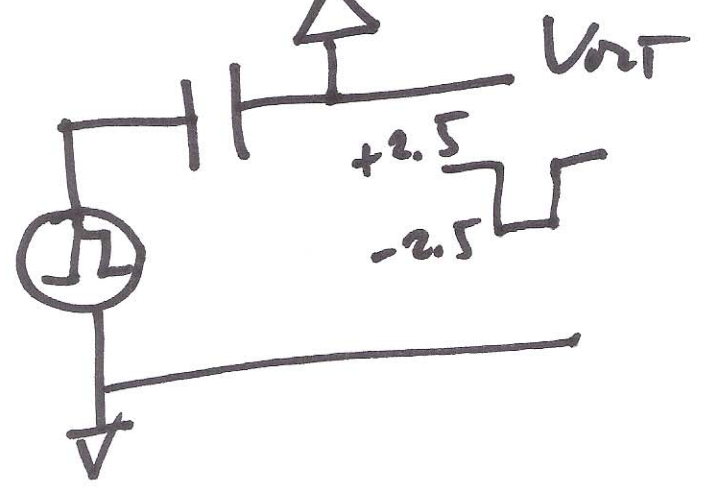
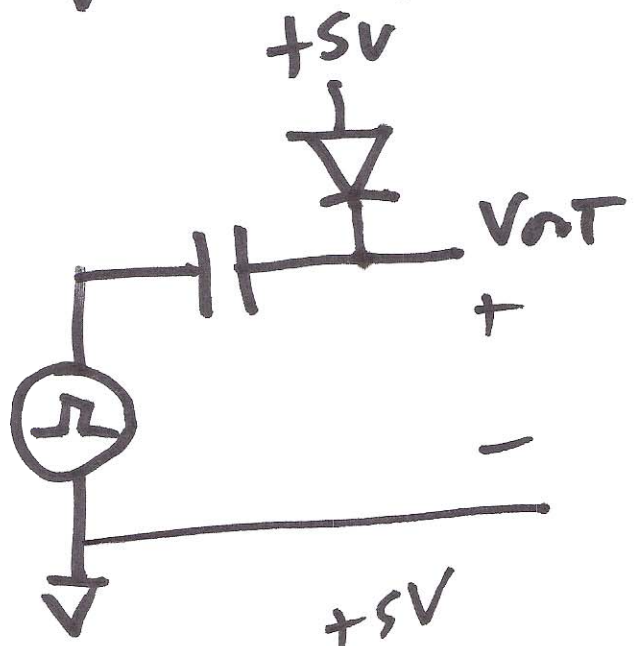
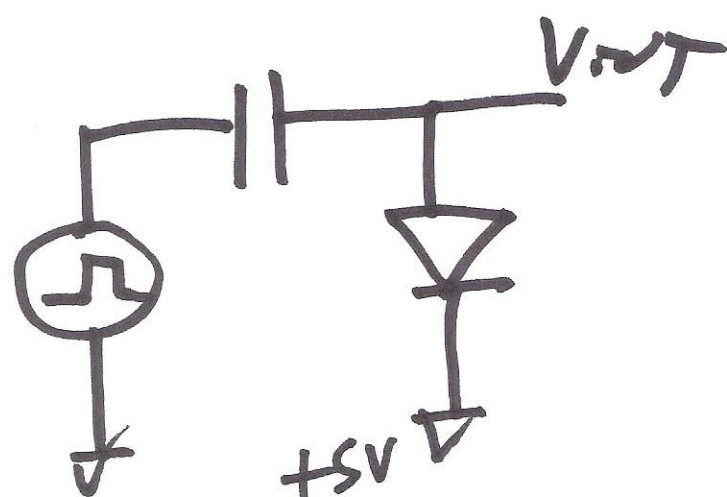
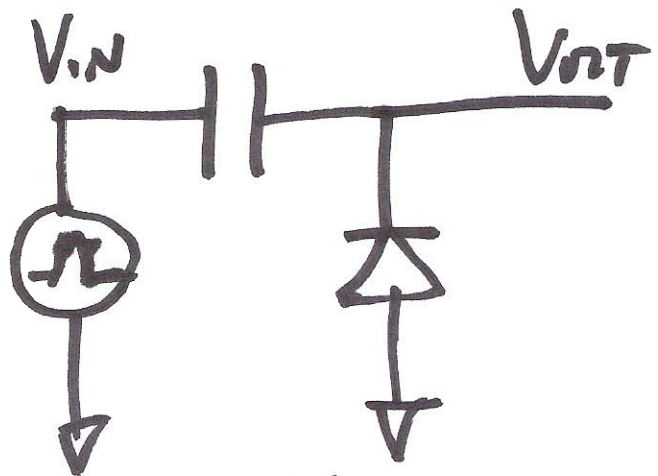
* if the op-amp is put in a closed-loop gain of 10 what is its bandwidth? sketch it.

3)

* Study semiconductor questions from quizzes & tests. Know: reverse recovery time, how depletion cap in a pn junction changes with reverse bias, carrier movement in a forward biased pn-junction, why leakage current increases in a diode with increasing reverse bias. Again, study H.W., quizzes, & tests.

Sketch wave forms in the following





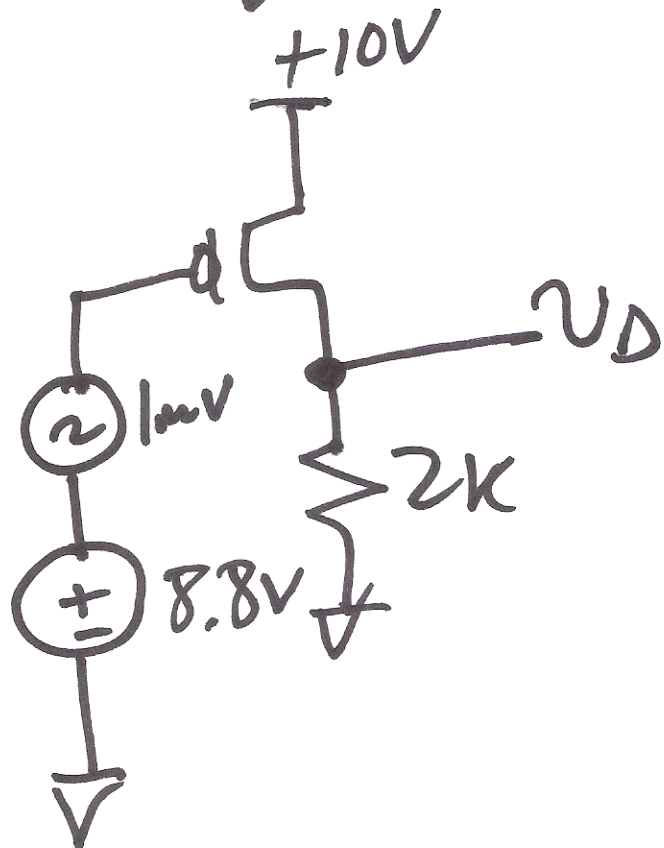
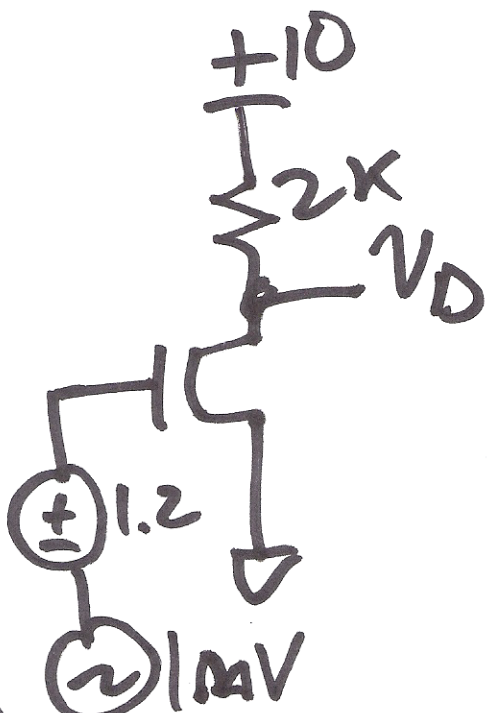
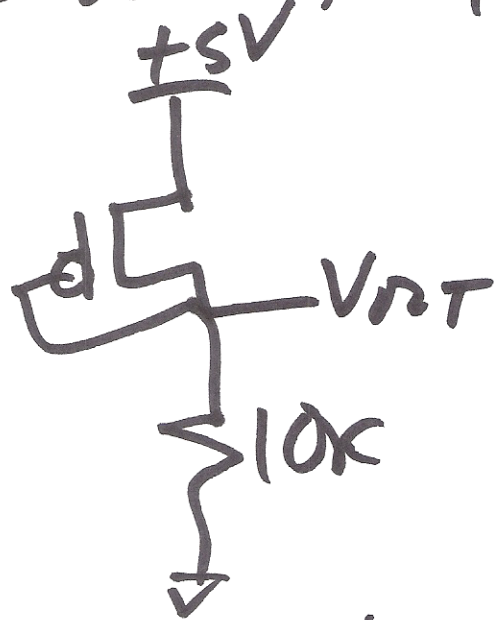
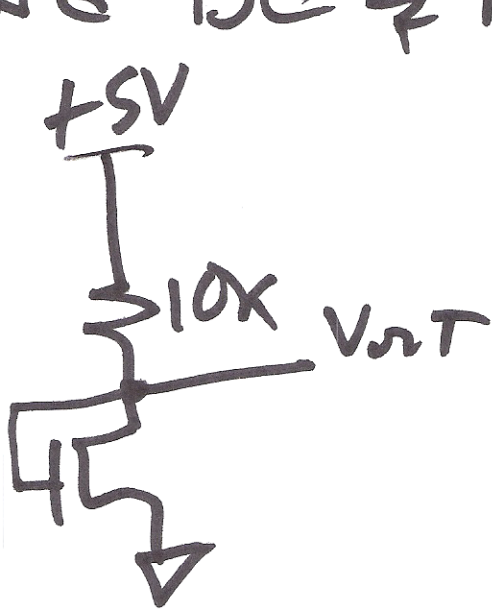
5)

Again study H.W.

Assume $\frac{W}{L} = 100$, $K_{PN} = 100 \frac{\mu A}{V^2}$, $K_{PP} = 50 \frac{\mu A}{V^2}$

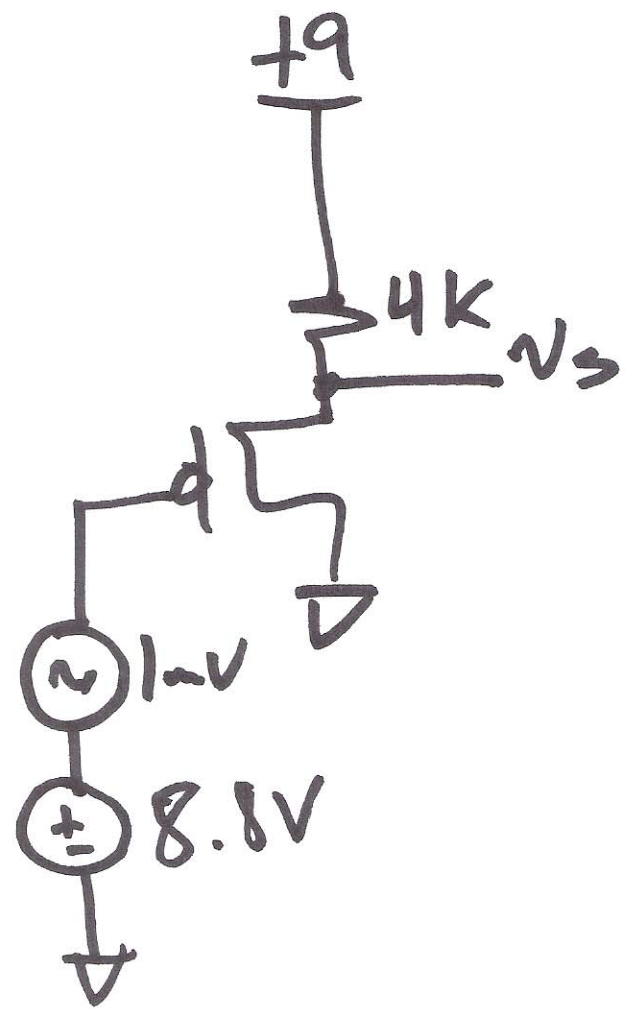
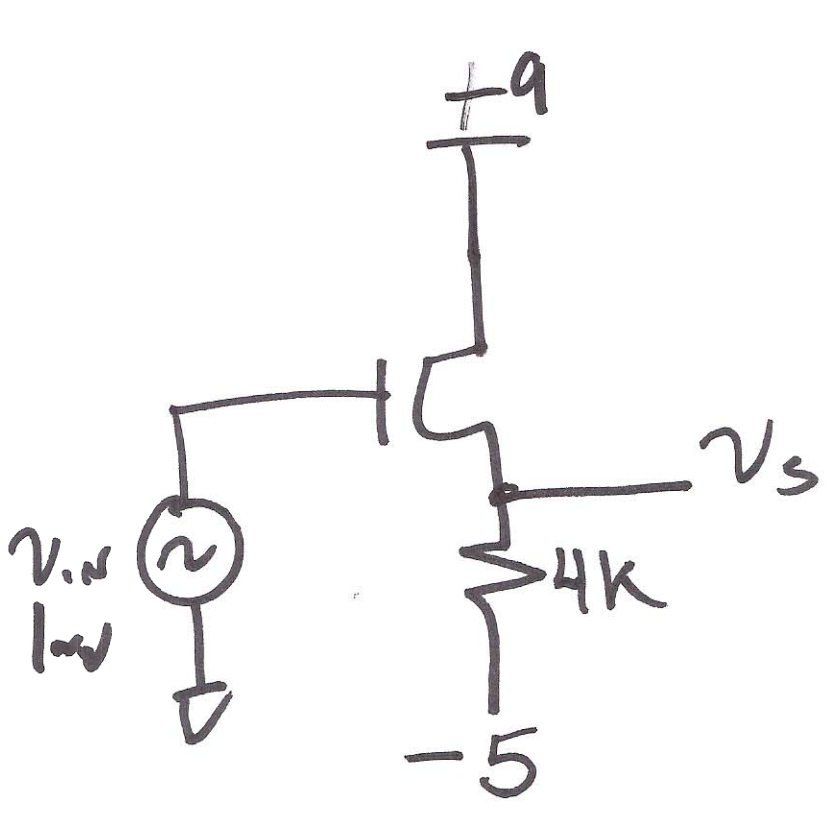
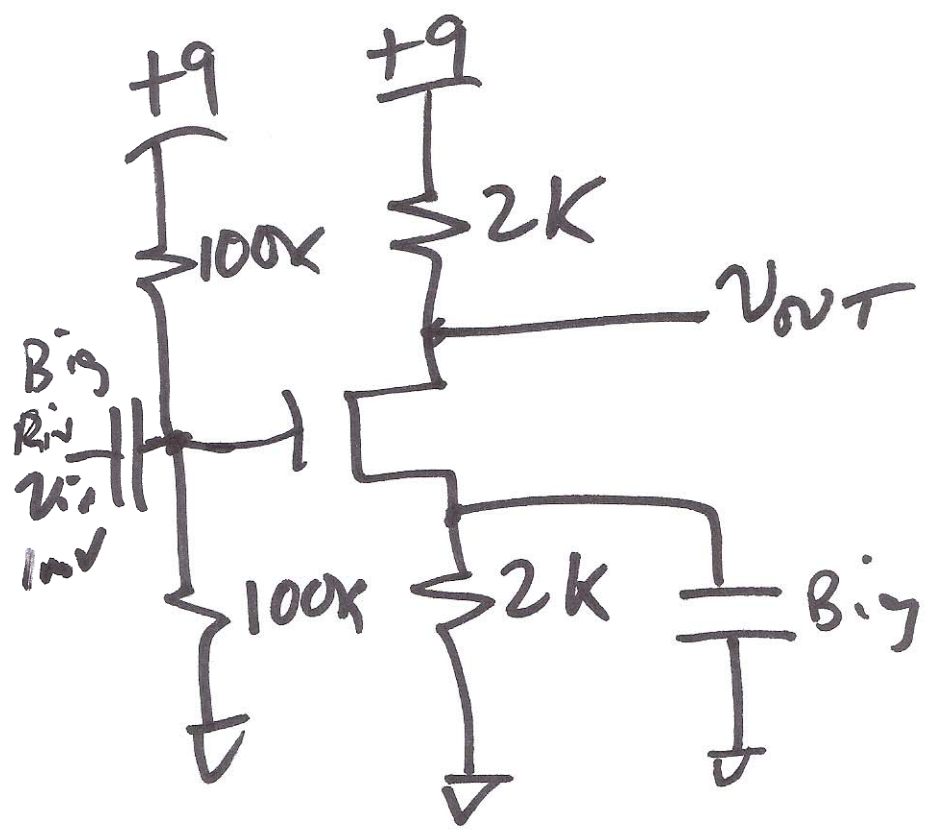
$V_{THN} = 1$, $V_{THP} = 1$

find DC & AC voltages & currents



b)

In these also find R_w .

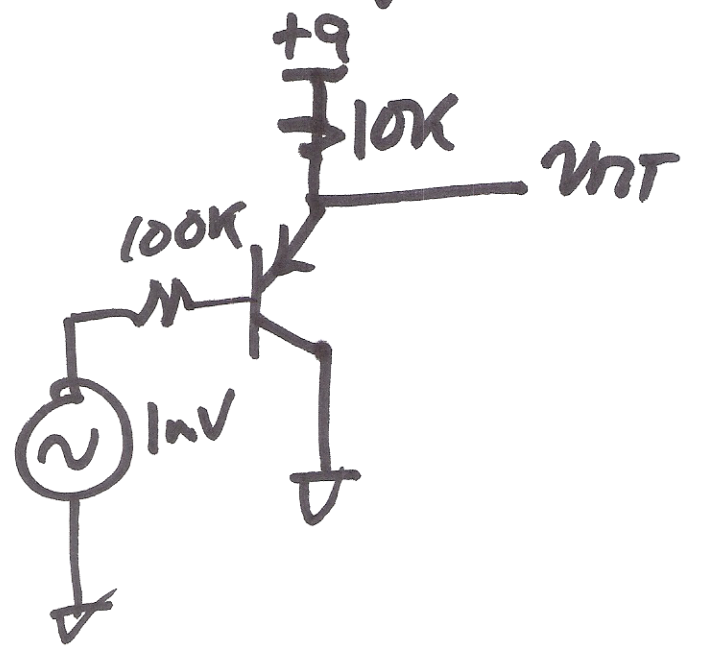
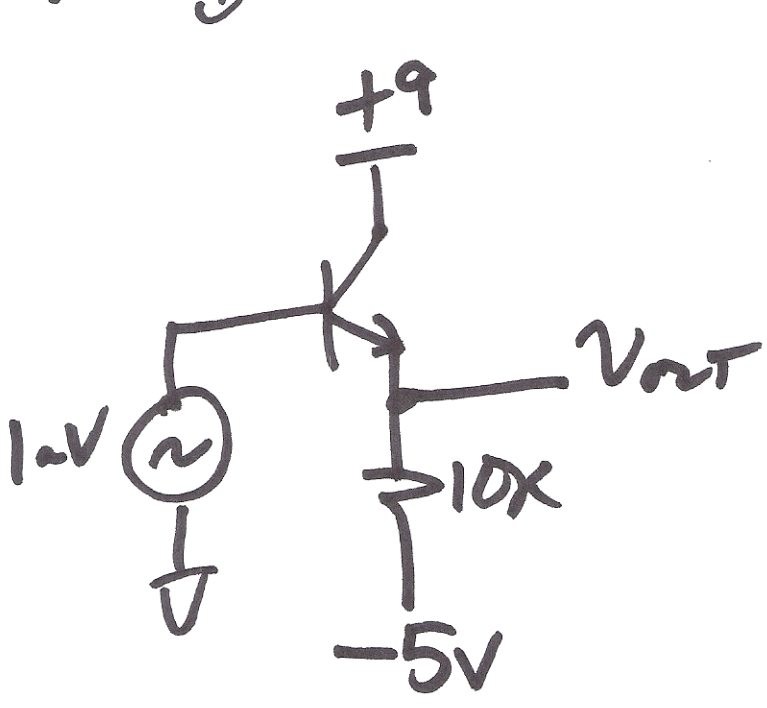
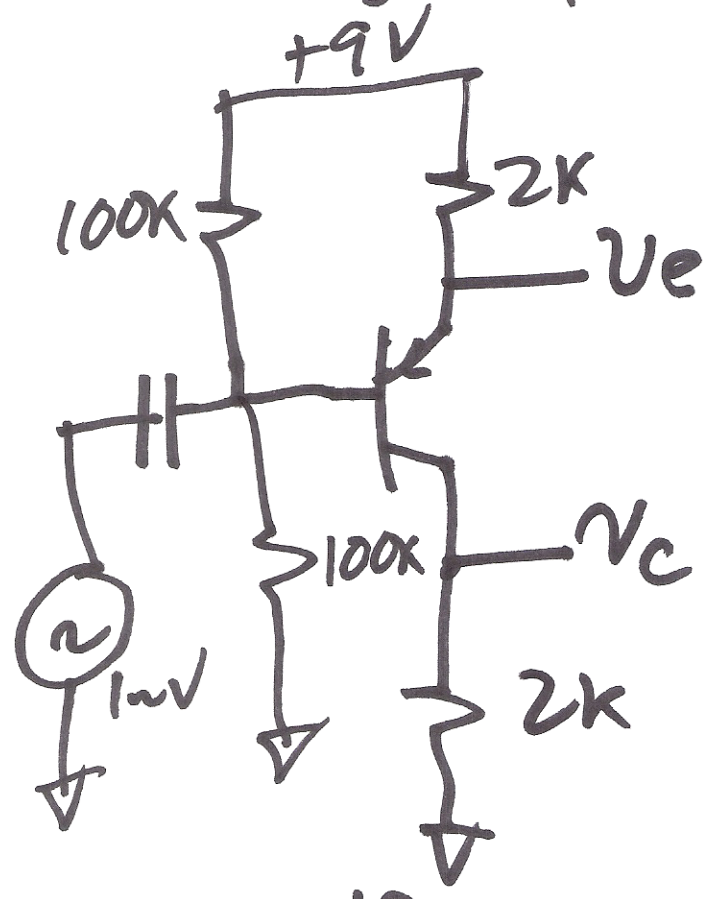
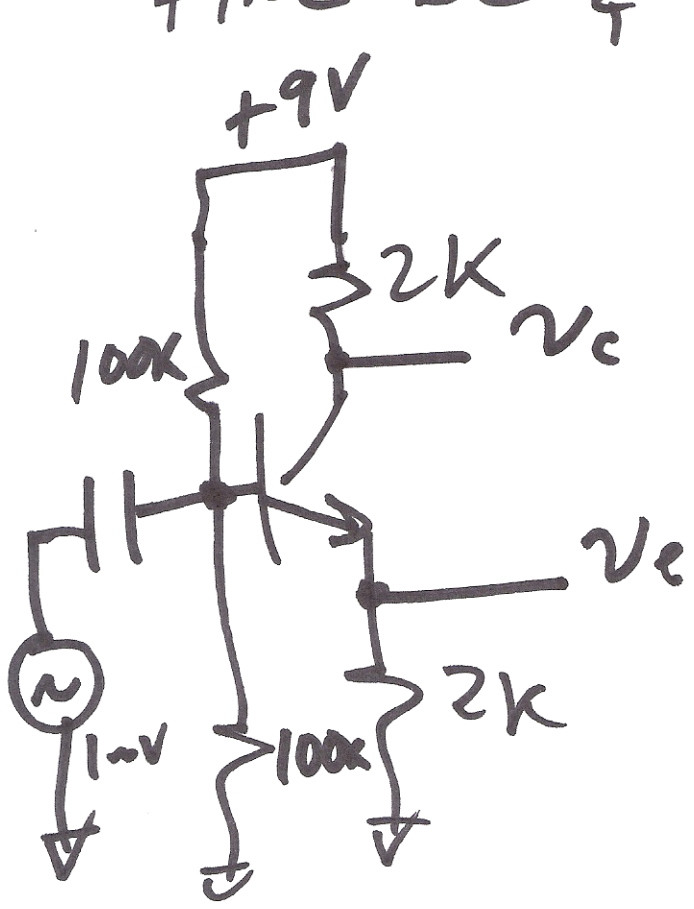


)

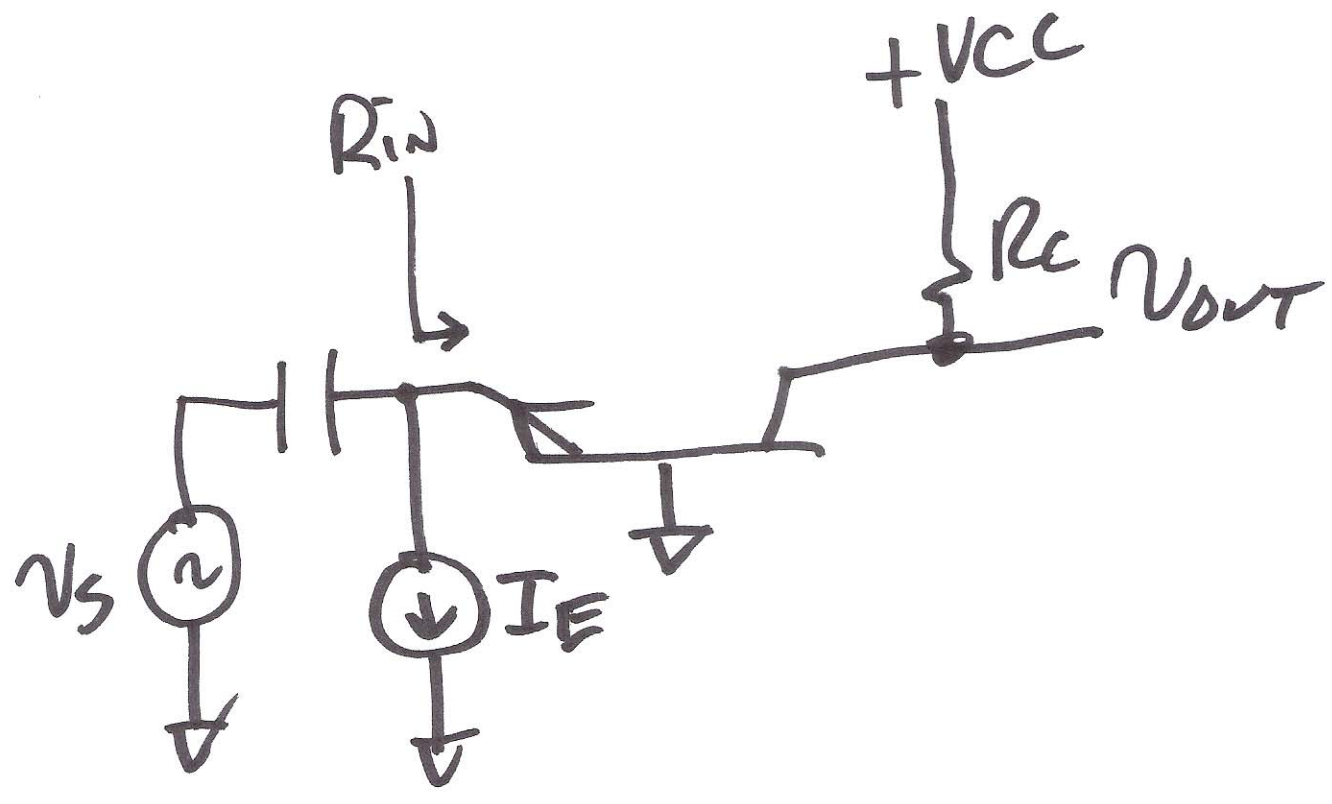
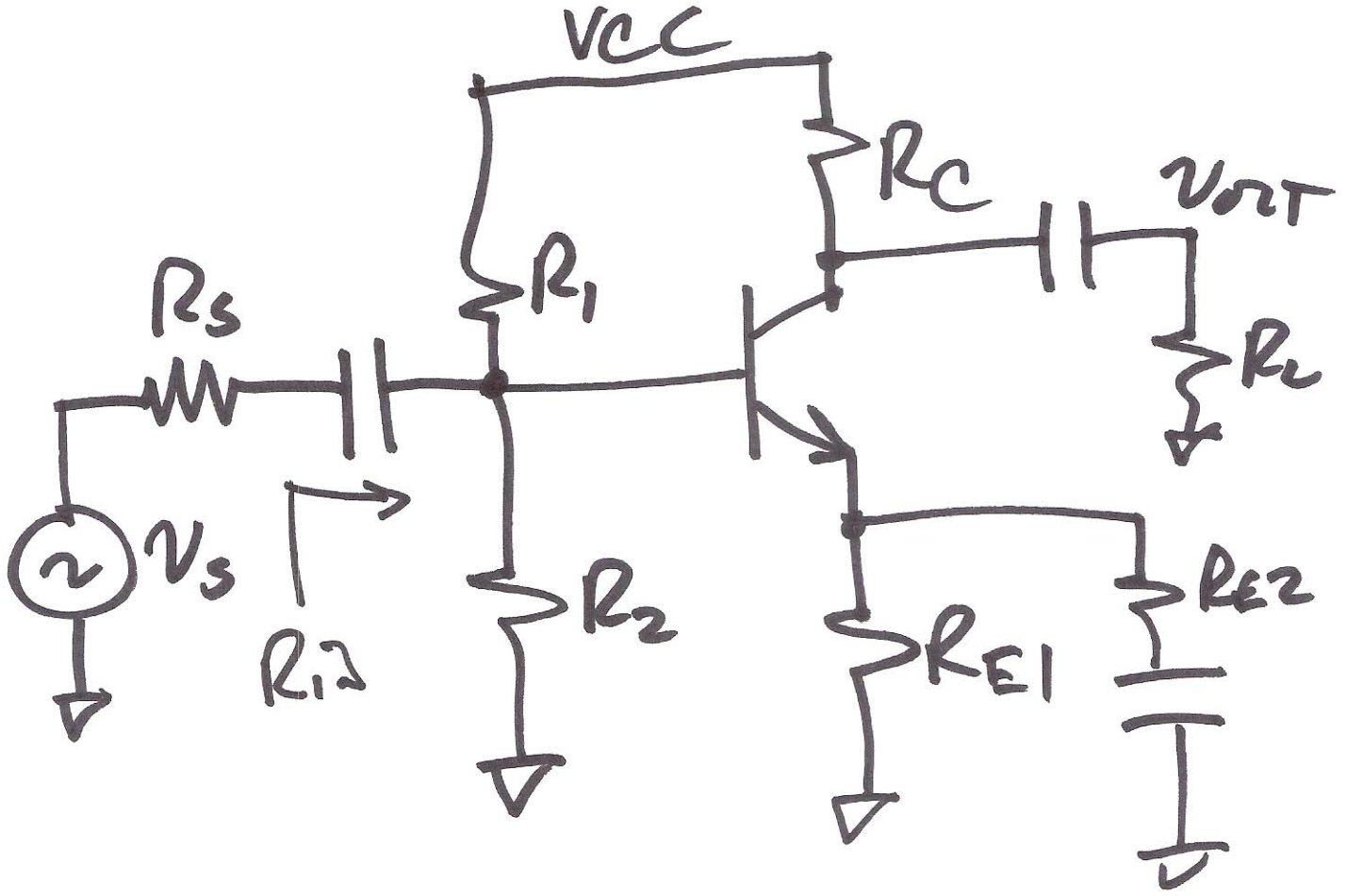
Again study H.W. & quizzes

Assume $\beta = 100$

Find DC & AC voltages & currents



8)



a)