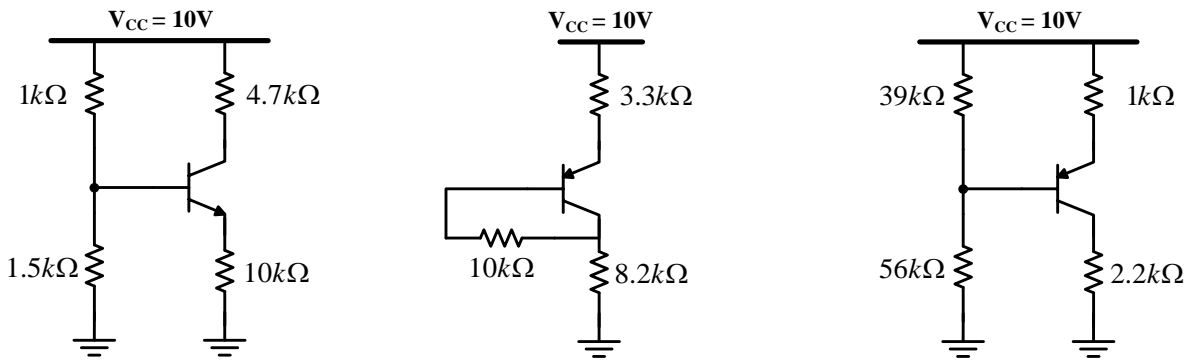


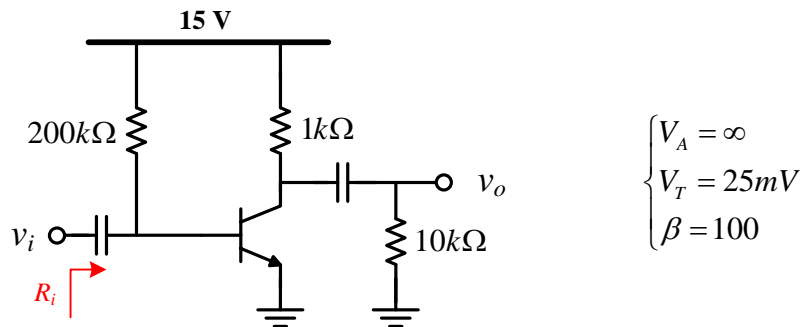
Electronics 2, Assignment #1, Review of Electronics 1 (BJT transistors).

- 1- Determine bias points in the following circuits. In which of the following circuits, the base current can be neglected?

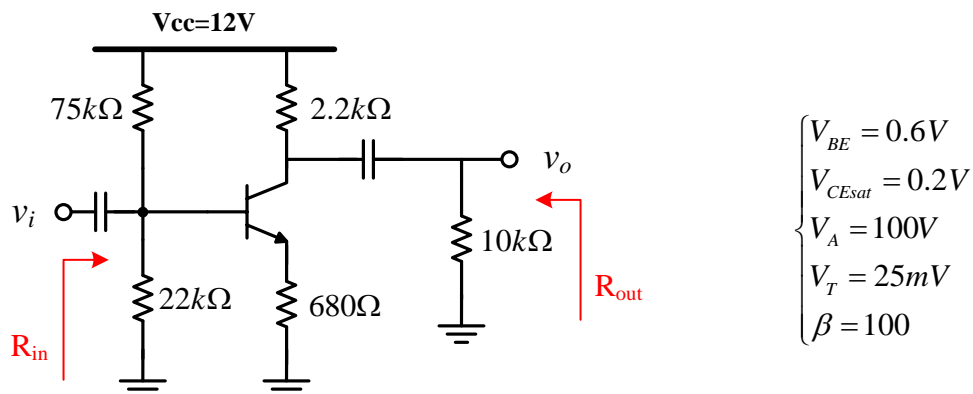
$$\beta = 100, |V_{BE,ON}| = 0.7V, |V_{CE,sat}| = 0.2V$$



- 2- Calculate the input resistance (R_i) as well as the voltage gain ($A_v = v_o/v_i$) in the circuit shown below.

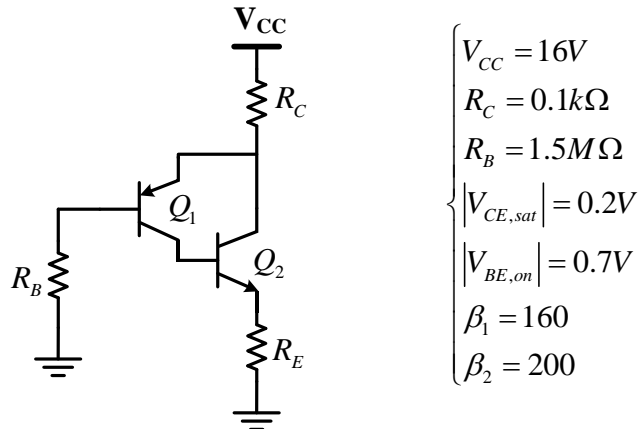


- 3- In the following circuit, calculate the voltage gain ($A_v = v_o/v_i$), input resistance (R_{in}) and the output resistance (R_{out}).

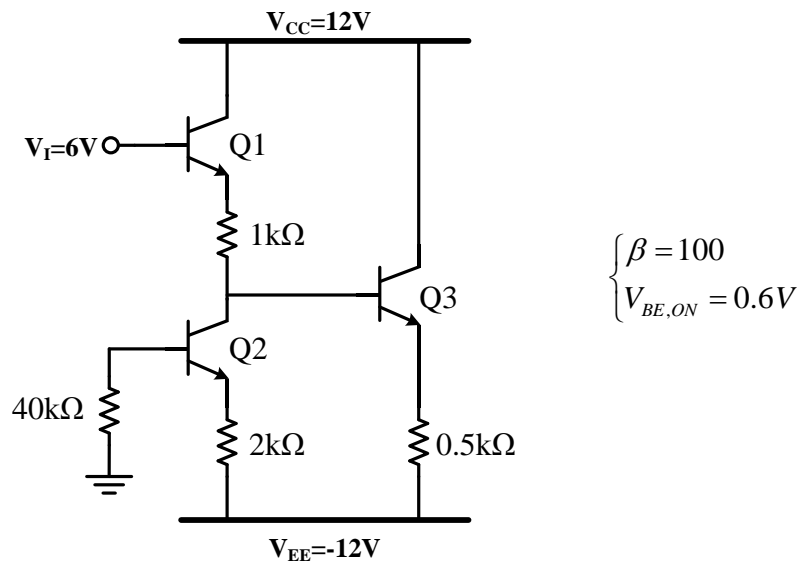


4- In the following circuit,

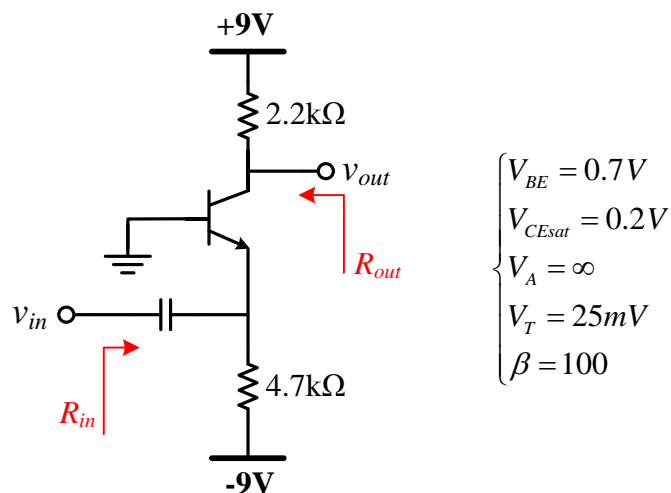
- Determine the bias points of the transistors. Assume $R_E = 0$.
- Calculate the maximum value of R_E for which Q_1 remains in the active region.



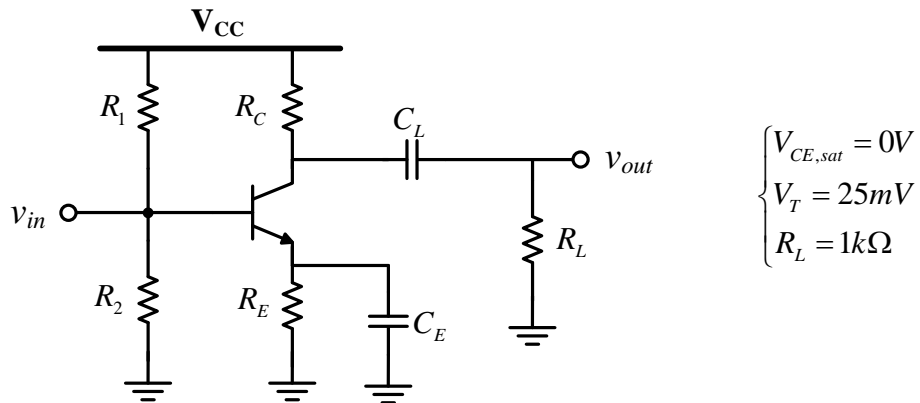
5- In the circuit shown below, the transistors are the same. Determine the bias points.



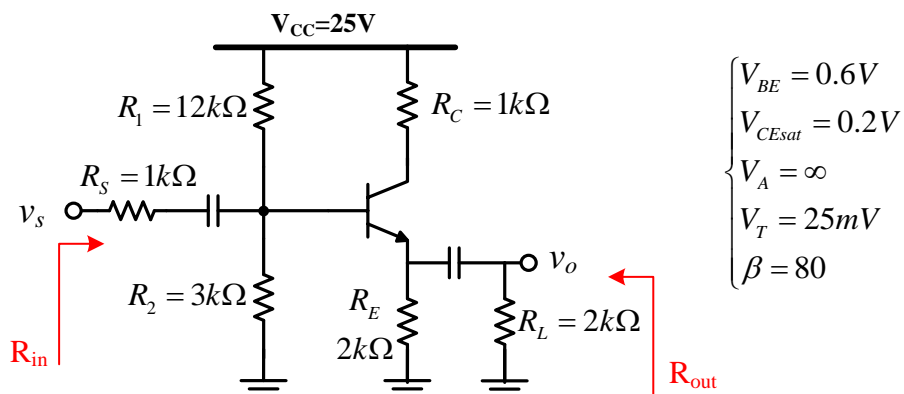
6- Calculate the voltage gain, input resistance and output resistance of the following scheme.



- 6- In the following circuit, the voltage gain and the DC voltage drop on R_C is -48 V/V and 3 V , respectively. Determine R_C .



- 8- In the following circuit,
- Calculate the voltage gain ($V_{BE,ON}=0.7V$).
 - Determine the output voltage (v_o) swing.
 - Modify R_1 in order to maximize the output voltage swing.



Good Luck- M.R. Ashraf