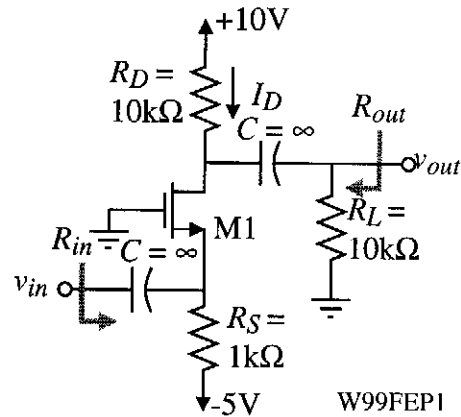


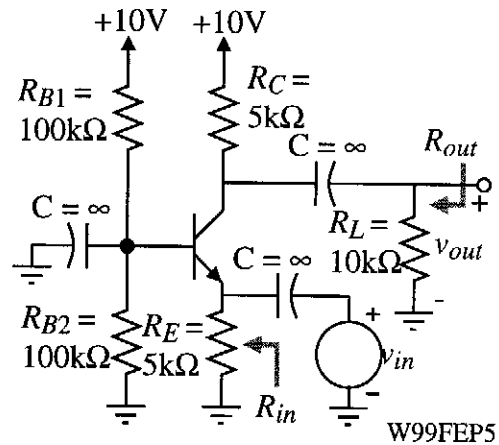
Homework Assignment No. 7

Due on Monday, October 7, 2002

1.) (a.) If $K = 0.1\text{mA/V}^2$ and $V_t = 1\text{V}$ for the n-channel MOSFET shown, find the dc value of I_D , V_{GS} , and V_{DS} . (b.) If the dc value of $I_D = 1\text{mA}$ (not necessarily the answer above) find the value of the small-signal input resistance, R_{in} , voltage gain, v_{out}/v_{in} , and output resistance, R_{out} .



2.) (a.) If $\beta = 100$ and $V_T = 25\text{mV}$ of the NPN transistor shown, solve for the dc value of collector current. (b.) If this collector current is 1mA (so if you found I_C incorrectly, you will not be penalized on the rest of the problem) find the small signal values of the input resistance, R_{in} , output resistance, R_{out} , and voltage gain, v_{out}/v_{in} .



- 3.) Problem 14.29 of the text.
- 4.) Problem 14.31 of the text.
- 5.) Problem 14.33 of the text.