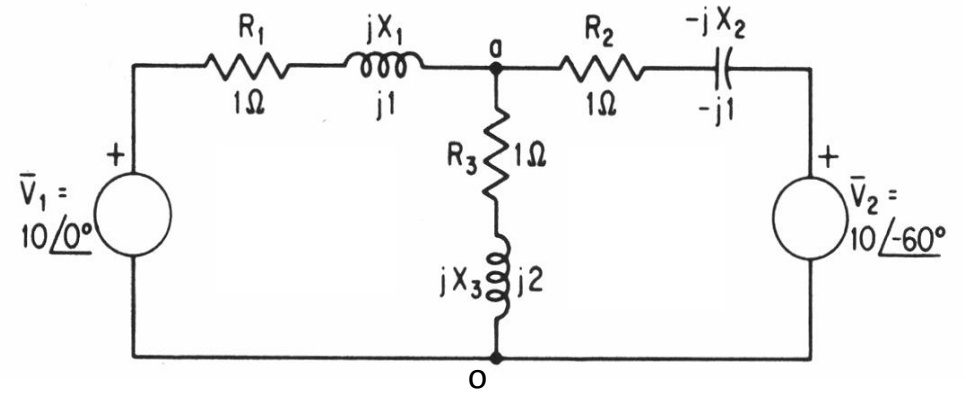
EE101
Tutorial-5 (11 Sep 2014)

Q1. Use Norton's theorem to find the current through R_3, X_3 branch in the circuit shown below.



Q2. For the transistor amplifier circuit with collector-emitter feedback biasing shown in Figure 1, find the value of

a. I_B
b. V_C
c. V_E
d. V_{CE}

(Assume that $V_{BE} = 0.7\ V$ in forward biased condition)

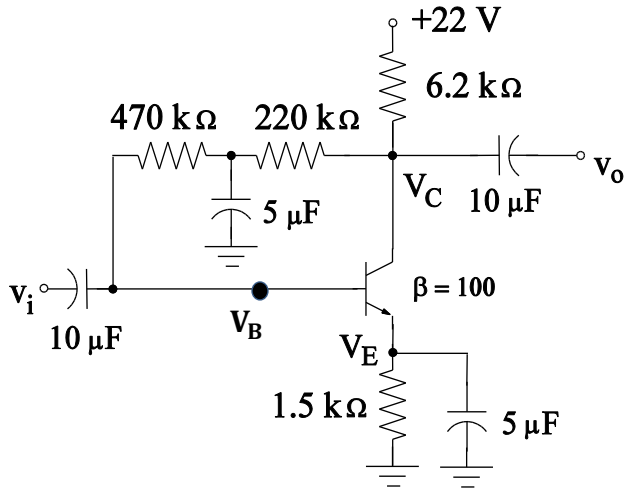


Figure 1

Q3. In Figure 2, the transistor is in active region with the quiescent C-E voltage $V_{CEQ} = 4\ V$. Assume that $V_{BE} = 0.7\ V$, $V_T = 26\ mV$, BJT output resistance r_o is very high (> 100 kΩ), and all capacitors are short-circuited at applied signal frequency. Find the value of

a. R_1
b. r_e
c. $A_v = \frac{v_o}{v_i}$
d. A_v , if a load $R_L = 2\ k\Omega$ is connected across A-B.
e. $A_{v_s} = \frac{v_o}{v_s}$, if $R_L = 2\ k\Omega$ is connected across A-B and assuming that applied voltage source has a resistance of $R_s = 0.5\ k\Omega$.

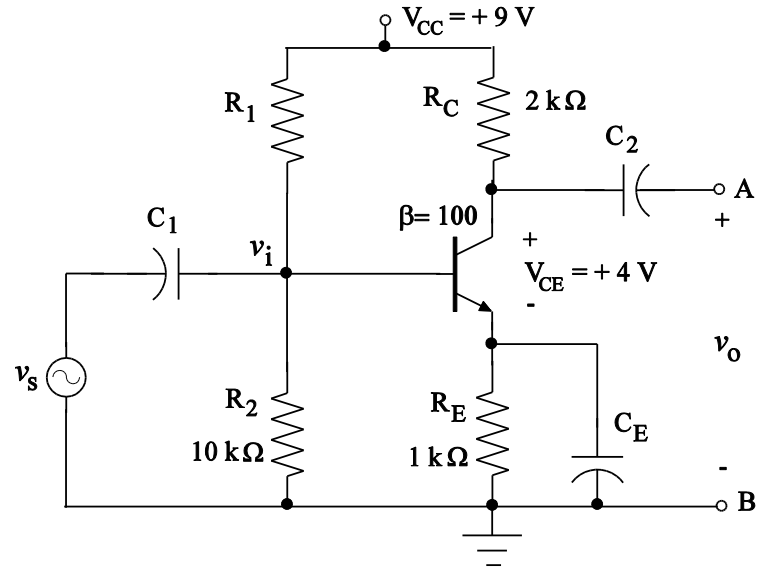


Figure 2