1. For the common-base amplifier shown, calculate the Y parameters, stability factor $K$, and ideal power gain $G_{T_{\text{max}}}$ at 2.4 GHz. Neglect $R_B$, $R_E$ and $R_C$ and treat $C_{\text{decouple}}$ as a short.

2. Approximate the amplifier as an unilateral amplifier ($y_{12} \rightarrow 0$), recalculate $G_{T_{\text{max}}}$.
Match the input to a 50 Ω source and the output to a 200 Ω load. Use simple (two component) resonant matching networks, selecting a topology that does not interfere with the biasing of the circuit (i.e. a network that inherently AC-couples the circuit to source and load). Redraw the schematic including these networks, label all component values.

3. Simulate your circuit in SPICE. Check the accuracy of the impedance matches at 2.4 GHz, that is, simulate for $Z_{\text{in}}$ and $Z_{\text{out}}$ of the amplifier plus matching networks, compare them with 50 Ω and 200 Ω. Find the transducer gain $G_{T}$ of the matched circuit and compare this to the ideal gain found above... can you explain any discrepancies?... does the finite decoupling capacitor have an effect?