ENEE 307: Lab 6 Upgrade, Fall 2022

Design a difference amplifier that is composed of N-MOSFETs with W=20um and L=2um. Use the C5 NMOS ON 0.5 MOSFETs like we used in the rest of Lab 6. Use a current mirror to provide the DC bias current. Let VDD=10V and VSS=-5V. Have the input go into the gate of one of the transistors and ground the other gate. Make sure the bodies of all the NMOSFETs are connected to the lowest voltage in the circuit (-5V). Make sure the small signal voltage gain is greater than four. (Vo/Vin > 4.0). Also, show the DC values for all the relevant quantities: Id, Is, Vd, Vs, etc. You will have to choose the appropriate resistor values to obtain the specified voltage gain and working DC bias. Hand in the circuit schematic and appropriate graphs and CoolSPICE results to your TA in a short write up (less than two pages) to support your results. You don't have to provide a detailed analytical writeup of your design, just the schematic, the hand analytical analysis and CoolSPICE simulation results.