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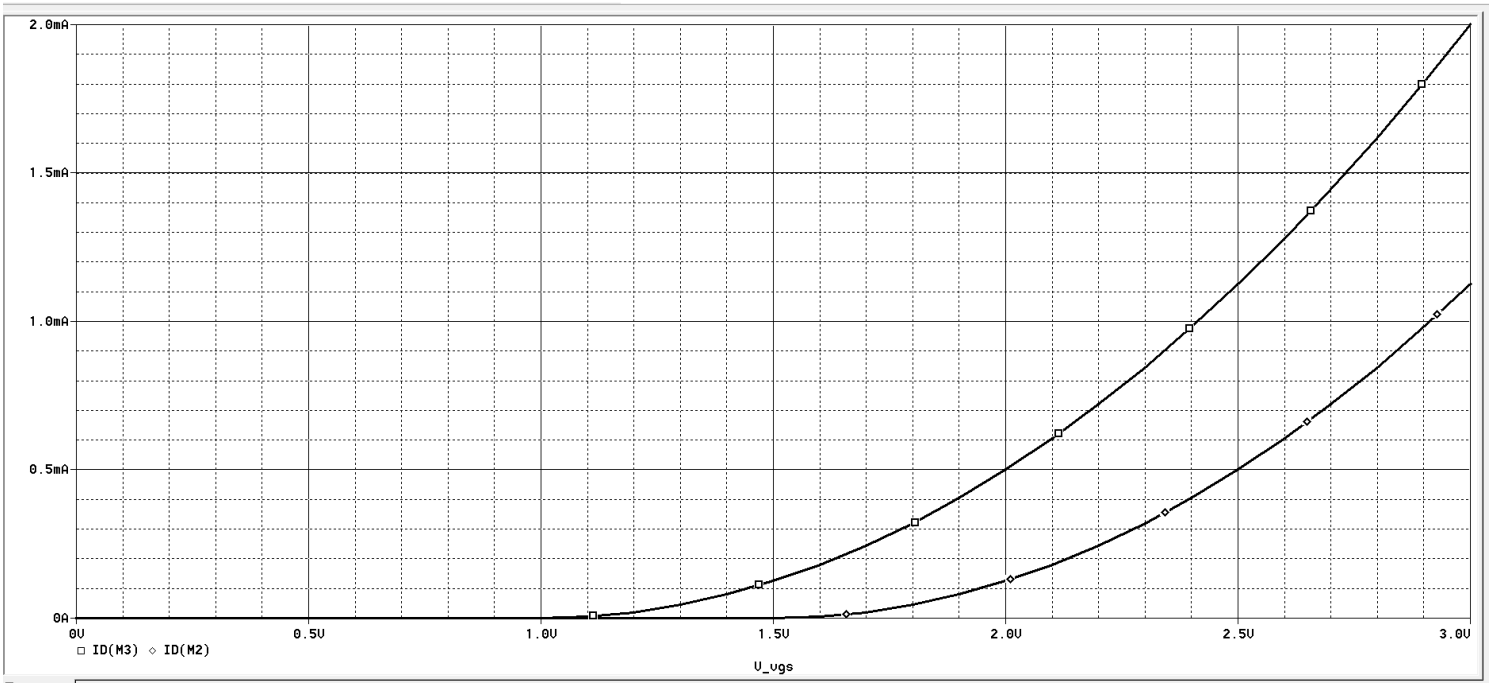
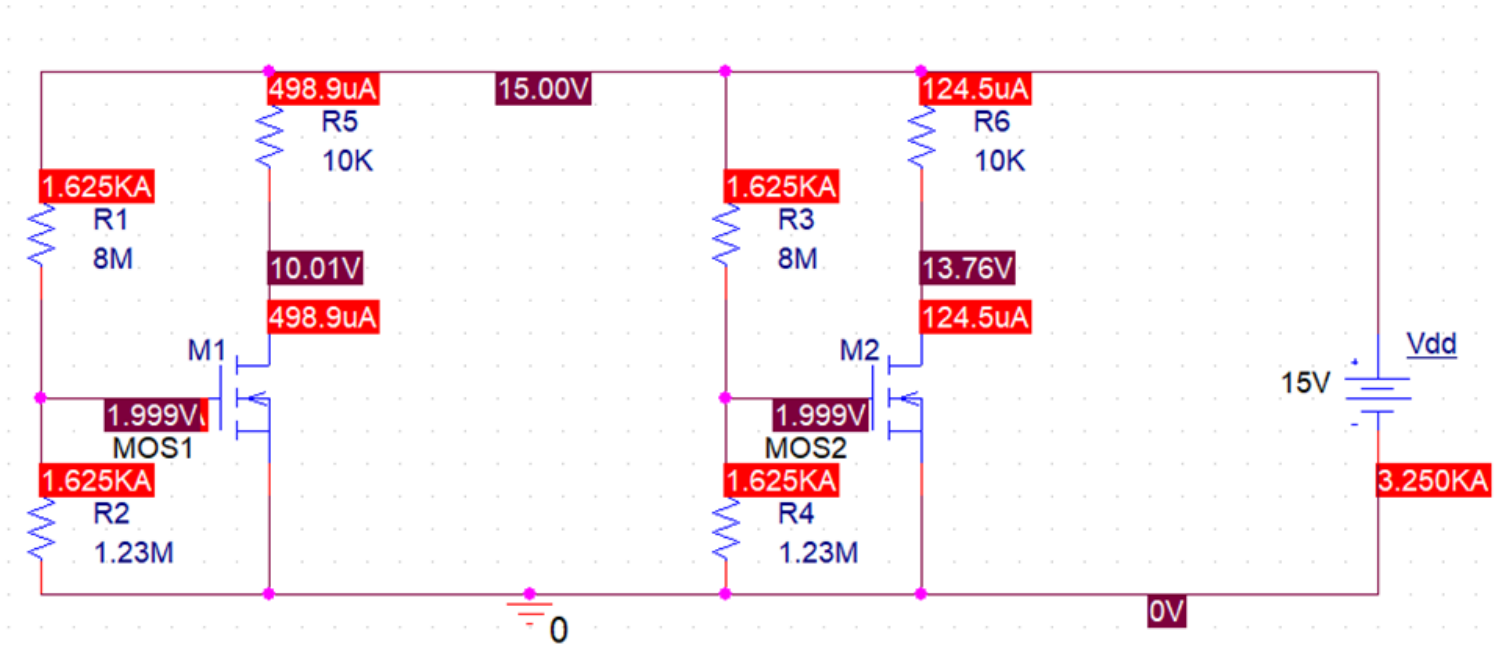
Task 2:



Task 3:



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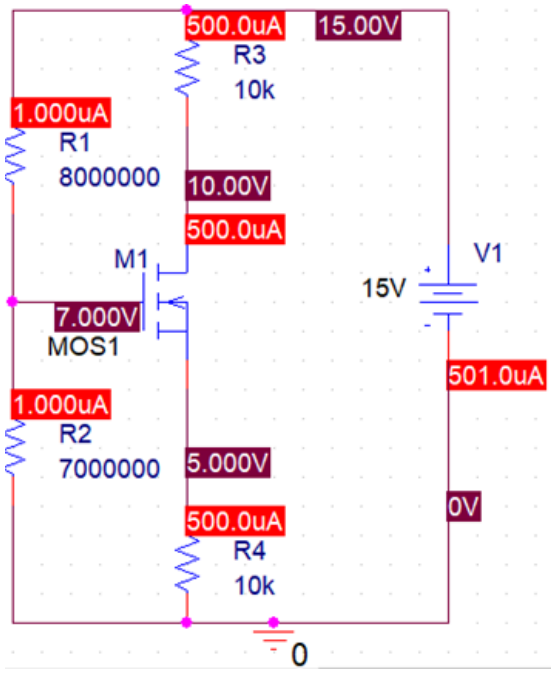
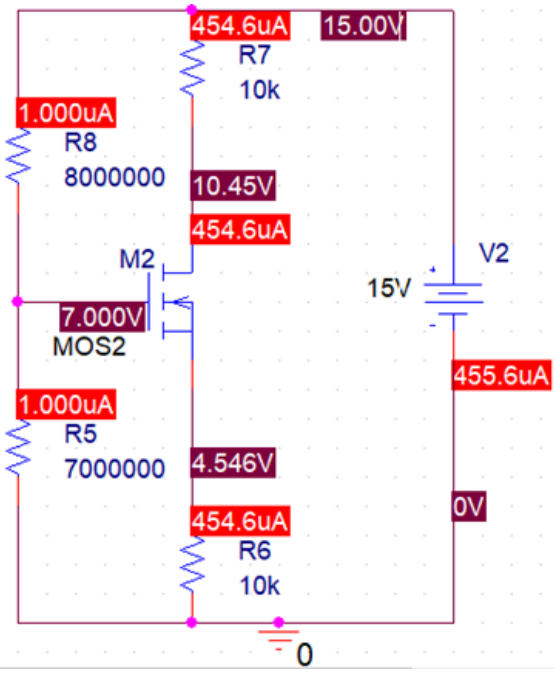
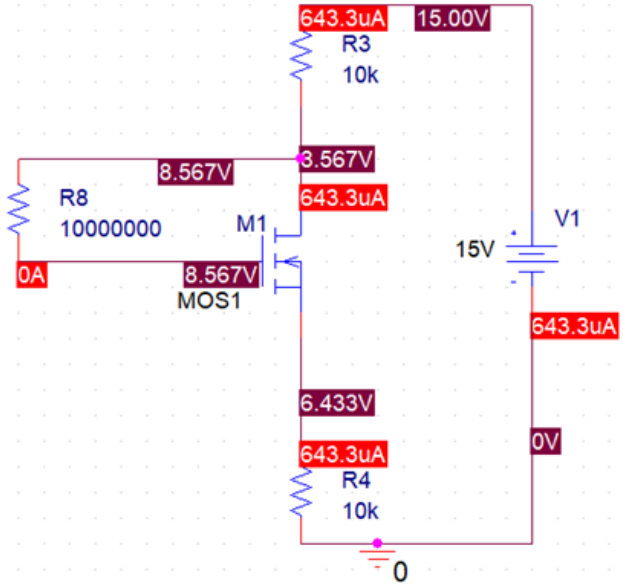
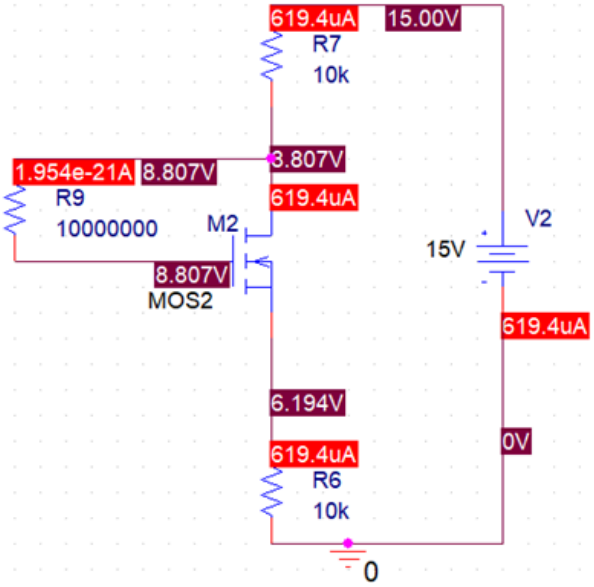
task4:





Task5:





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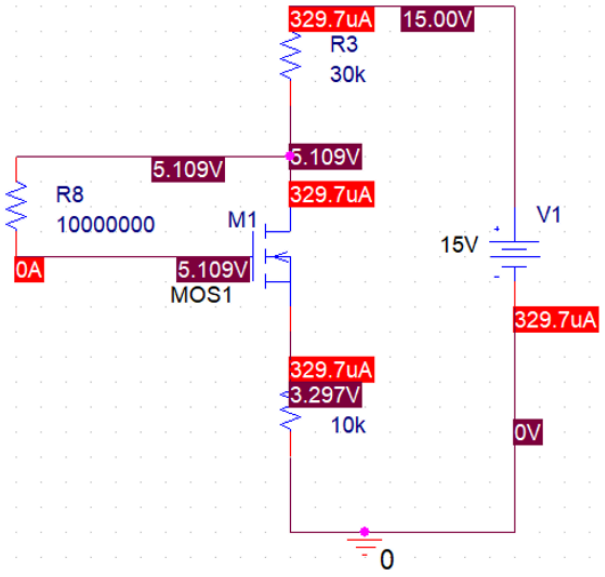
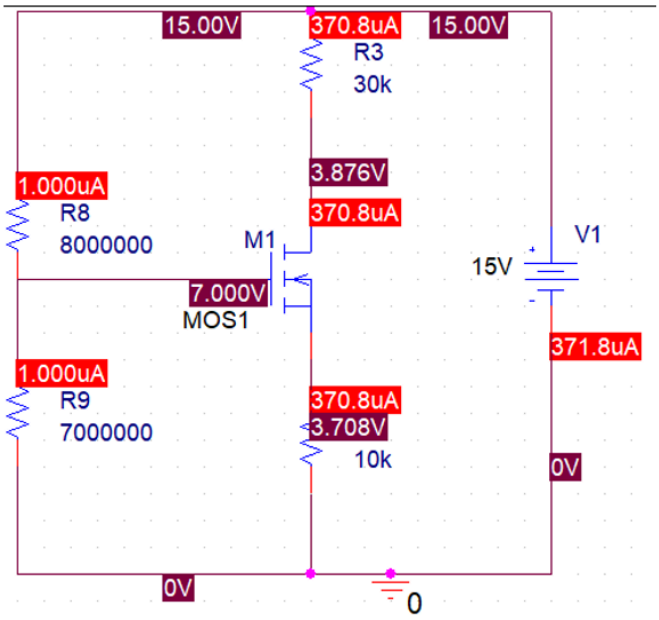
Task7:





Post lab

Task 8:

1a) There is a 50% difference in the threshold voltage between the two MOSFETs in all setups. In the Fixed VGS setup, the drain current changes by 75.04%. In this case, the source is directly grounded. In Fixed VGS with RS, the change in drain current is smaller by 9.08% because the source resistor acts as negative feedback. Since VG stays the same, when the drain current goes up, VGS should go down to raise the source voltage, which lowers the drain current. The variation in drain current is 3.715% in the Self-Bias design, which is less than the others. This is because there is a feedback resistor between the gate and drain that makes the VG and VD almost equal, which decreases ID.

1b): The voltage drop at RD is low because RD has become of greater value. This makes VDS low, which causes VGS to rise. This changes the mode of operation from saturation to triode region. One circuit has a feedback loop that keeps the changes in VDS and VGS small. This keeps them from going up to the point where the mode of operation changes, so the circuit stays in the saturation region.

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