Homework 1

ECE 627

Due April,26, 2024

Consider the 4-bit binary-weighted resistor DAC shown below.

1. Find R_F such that V_{out} can change from 0 to V_{ref} - V_{LSB}.
2. If the error in resistor values in the DAC is +/-1%, considering worst scenario, calculate maximum value of DNL and INL in terms of ideal LSB unit.
3. [Optional] What is the largest value of such error in the resistor values to keep the max INL below $V_{LSB}/2$?
   [Note: Operational amplifier can be considered ideal]