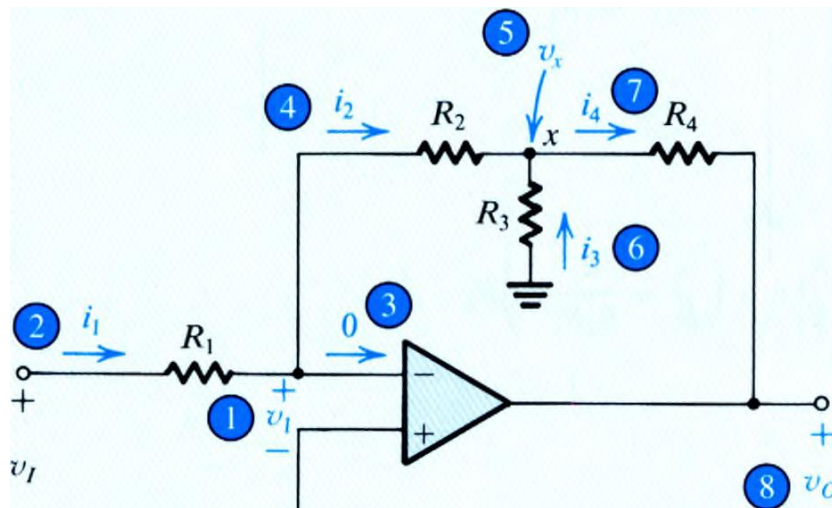HW #2

1. Derive the equation for gain of the differential opamp.   10pts
2. Design an inverting op-amp circuit for which the gain is -4V/V and total resistance used is 100kΩ.
   10pts
3. For the circuit shown below, R1=R2=R4=1MΩ. Find R3 to obtain the following gains.   15pts

   a. -200V/V
   b. b.-20V/V
   c. c. -2V/V

4.   What is CMRR. How can you achieve high CMRR for differential opamp.
                                                                     5pts

5.   What is open loop and closed loop gain of an opamp. What is the relation between open loop and closed loop gains?   5pts

6. An ideal op amp is connected in the weighted summer configuration. The feedback resistor
Rf = 100 kohm, and six 10kohm resistors are connected to the inverting input terminal of the op amp. Show, by sketching the various circuit configurations, how this basic circuit can be used to implement the following functions:
   (a) v_0=-(v_1 +2 v_2 + 3v_3)

(b) $v_0 = -(v_1 + v_2 + 2v_3 + 2v_4)$

(c) $v_0 = -(v_1 + 5v_2)$

(d) $v_0 = -(6v_1)$ 40pts